



**Performance Audit Report of the
Comptroller and Auditor General of India
on
Capital Acquisition in Indian Air Force**



लोकहितार्थ सत्यनिष्ठा
Dedicated to Truth in Public Interest

**Union Government (Defence Services)
Air Force
Report No. 3 of 2019**

**Performance Audit Report of the
Comptroller and Auditor General of India
on
Capital Acquisition in Indian Air Force**

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Preface

This report of the CAG of India contains significant results of the Performance Audit on “Capital Acquisition in Indian Air Force”. Audit has examined eleven contracts of capital acquisition which were signed between 2012-13 and 2017-18 with a total value of approximately ₹95,000 crore. The report has been prepared for submission to the President of India under Article 151 of the Constitution.

This report contains two volumes – Volume I consisting seven chapters brings out the systemic issues in the acquisition planning and process. It also contains details of ten acquisition contracts. Volume-II consists of audit findings emanating from examination of procurement process of 36 (Medium Multi-Role Combat Aircraft) MMRCA through an Inter-Governmental Agreement with the Government of France. The systemic issues pertaining to this acquisition have also been included in Volume I where ever relevant.

The Ministry of Defence vide its letter dated 15 January 2019 had requested this Office to redact commercial details of MMRCA in the Audit Report, citing reference to Article 10 of the Inter-Governmental Agreement (IGA) for acquisition of 36 Rafale Aircraft and the provisions of an Indo French Agreement “concerning the Protection of Classified Information and Material in the field of Defence” signed on 25 January 2008.. This Office had taken up the issue with MoD vide letter dated 05 February 2019, wherein Ministry was intimated about CAG’s reluctance/refusal to carry out the redaction of price information, on account of difficulties in comprehension and lack of precedence of redaction of commercial details in the Audit Reports. However, Ministry has strongly reiterated their stand for redaction of commercial details in MMRCA case on the grounds of security concerns and the said Agreement vide their letter dated 06 February 2019. Accordingly, commercial details in the Volume II on Audit findings of the MMRCA contract have been redacted.

Audit is in the process of finalisation of a separate Performance Audit report on Management of Defence Offsets and relevant observations on Offsets Contract related to these eleven contracts would be included in that Report.

The Audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Executive Summary

The Indian Air Force (IAF) is tasked to defend the nation and its airspace against air threats for which it must maintain high state of operational preparedness. Acquisition of the required air assets, at the right time is critical for the preparedness and modernization of IAF. Audit, therefore examined the system of capital acquisition of air assets to assess its ability to meet the required capabilities, at the optimum price and the given timeframe. To acquire the right product at the right price, it is essential that the qualitative requirements (Air Staff Qualitative Requirements in the IAF-ASQRs) truly reflect the users functional need; maximum possible competition is generated; and technical and price evaluation is done objectively.

Audit noted that IAF, instead of defining the ASQRs in terms of functional parameters, made it exhaustive and included detailed technical or design specifications. That had several consequences such as none of the vendors could fully meet the ASQRs; user needs were sometimes overridden; ASQRs were changed repeatedly during the procurement process; waivers had to be obtained for some ASQRs; and some ASQRs were shifted to Contract Negotiations Committee (CNC) to negotiate, though these were technical issues. The objectivity, equity and consistency of the technical evaluation process was consequently affected. This created difficulties during technical and price evaluation and affected the integrity of competitive tendering, and also became one of the main reasons for delays in acquisition process.

Audit noted that the vendor response to solicitation of offers was low, which restricted competition. Number of vendors who responded to the Request For Proposal (RFP) was far less than the number of vendors who were invited to bid. The complexities and delays in the acquisition system, narrow, over defined ASQRs and selection on basis of L1 rather than quantitative methods of best value for money seem to be some of the reasons for poor response from vendors.

The CNC repeatedly failed in realistically estimating the Benchmark price, making it difficult to establish the reasonability of price. This also caused delay in price evaluation and contract negotiations. The model used for calculating the life cycle cost of acquisitions had several deficiencies and needs to be fine-tuned and improved further.

There were severe delays at various stages of the acquisition process. Against three years envisaged in Defence Procurement Process, four cases took more than three years and seven cases took more than five years to reach the contract conclusion stage. Delays in acquisition was essentially due to a complex and multi-level approval process, where objections could be raised at any stage.

Overall the capital acquisition system, as it exists, is unlikely to effectively support the IAF in its operational preparedness and modernization.

Audit, therefore recommends that IAF should improve its process of formulation of ASQRs to ensure that they correctly reflect the users functional parameters. Exhaustive ASQRs with detailed technical or design specifications should be avoided, unless they are functionally necessary. In the process of acquisition, involvement of academic experts, in relevant fields, such as aerospace engineering is advisable in the view of the fact that latest and most complex technologies, evolving rapidly, are being used in almost all defence systems and weapons. It would be impractical to expect that in service officers, doing full time jobs, can keep up with the rapid development to the extent that academicians, devoted to that subject, might.

Audit is of the view that it needs to be considered whether the present ‘Lowest Price Technically Acceptable (LPTA)’ method of bid evaluation wherein the contract is awarded to the lowest priced offer which is technically acceptable, is suitable for all procurements. For procuring highly technical products use of the Best Value method or a “Quality cum Cost” assessment may yield better value for money.

Ministry needs to revisit the entire process of acquisition, to weed out redundant activities and simplify the process. The acquisition wing, headed by the DG(Acquisition) was envisaged as an integrated defence organization. In reality, this has perhaps not happened, with bulk of the acquisition related activities still carried out in the Services’ Headquarters; which is not unexpected and is needed. However, in that case, it needs to be seen if the Acquisition wing is serving the purpose it was set up for, or some Business Process Reengineering is required to achieve the purpose.

Volume-I

Chapter-1: Introduction

A sound defence acquisition system is vital for the nation's security as it ensures the preparedness and modernization of the Armed Forces. The defence capital acquisition's mandate is to acquire capabilities required by the Armed Forces, within a stipulated time and at an optimal cost. Defence acquisition has certain unique features such as supplier constraints, technological complexity, foreign suppliers, high cost, foreign exchange implications and geo-political ramifications. As a result, decision making pertaining to defence procurement remains unique and complex. India is a leading importer of arms and spends about ₹78,000 crore on an average annually on capital acquisition of defence system. The share of Indian Air Force (IAF) is about 40 *per cent* of the total defence capital acquisition budget. Further, IAF spends 65 *per cent* of its total budget on capital acquisitions.

The effectiveness and efficiency of the defence capital acquisition system has been a major concern for the government and other stake holders. Several committees have been constituted by the government since 2000 to address the issues related to defence capital procurement. Apart from Group of Ministers set up by the Prime Minister in April 2000, Kelkar Committee (2005), Dhirendra Singh Committee (2016), Pritam Singh Committee (2017) are some of the Committees which were set up by the Ministry of Defence. Many recommendations to reform the defence acquisition structure and processes have been made from time to time by these Committees.

This performance audit was undertaken not merely to verify compliance to procedures but also to identify such issues in capital acquisition subsequent to these recommendations which might still need to be addressed to achieve systemic corrections. This audit therefore studied organisation, systems and procedures of the entire defence capital acquisition process.

1.1 Defence Acquisition Planning and Organizations

Defence procurement structure in the Ministry of Defence (Ministry) consists of the following:

- Defence Acquisition Council (DAC), chaired by the Raksha Mantri,
- Defence Procurement Board (DPB) chaired by the Defence Secretary,

- Acquisition Wing headed by Director General (Acquisition), is an integrated set up with officers from Department of Defence, Finance Division and Services Headquarters. It is divided into Divisions viz. Land, Air, Maritime and Systems and each of the divisions consists of:
 - Acquisition Manager- a Joint Secretary (JS) level officer,
 - Finance Manager- an Additional Financial Advisor (FA), a JS level officer,
 - Technical Manager- a Service officer of the rank of Air Vice Marshall/Major General/Naval Commander.

In addition, in case of Air Force acquisitions, Directorate of Air Staff Requirements at Air Headquarters, under the Deputy Chief of Air Staff serve as the actual procurement desk.

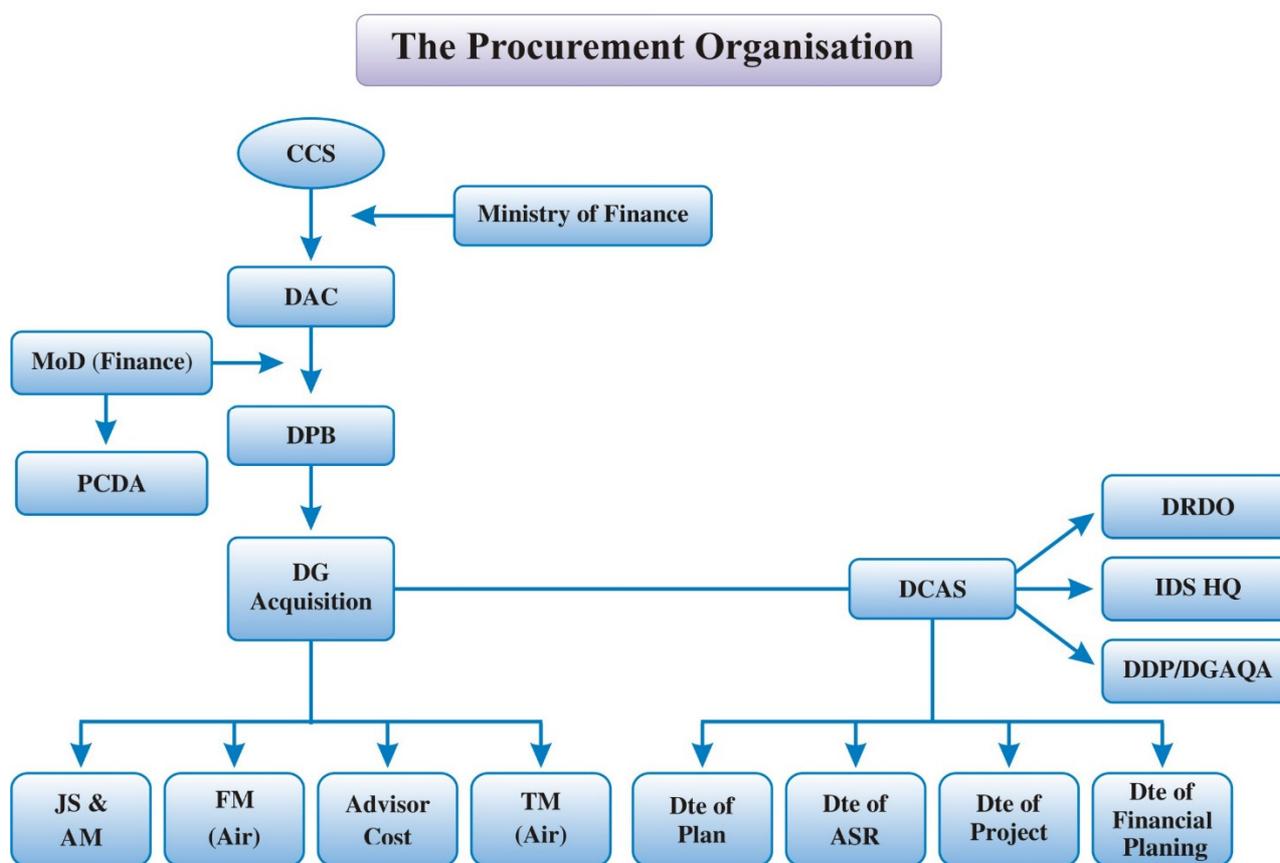
Proposals for acquisition of capital assets flow from defence procurement planning process, which covers long-term, medium-term and short-term perspectives as under:-

- (a) 15 years Long Term Integrated Perspective Plan (LTIPP).
- (b) 5 years Services Capital Acquisition Plan (SCAP).
- (c) Annual Acquisition Plan (AAP).

The planning process is under the overall guidance of Defence Acquisition Council (DAC). DAC's decisions flow down for implementation to the Defence Procurement Board (DPB). Headquarters Integrated Defence Staff (HQ IDS), in consultation with the Service Headquarters (SHQs), formulates the 15 years LTIPP for the Armed Forces. The Five Year Defence Plans for the Services is also formulated by HQ IDS, which includes requirements for the next five years under the SCAP. The SCAP indicates list of equipment to be acquired, keeping in view operational exigencies and likely availability of funds. While LTIPP and SCAP are approved by the DAC, the Annual Acquisition Plan, is approved by the DPB.

The Organizational Chart for capital procurement pertaining to Air Force is shown in **Figure-I**.

Figure I



1.2 Defence Procurement Process

All capital acquisitions for Defence Services are guided by Defence Procurement Procedure (DPP) since 2002, which is a compendium of instructions related to Defence Procurement Management Structures and Systems. Capital Acquisition proposals are broadly categorized as “Buy”, “Buy and Make” and “Make”. “Buy” category refers to an outright purchase of equipment. Under “Buy and Make” an initial procurement of equipment in Fully Formed (FF) state is made, followed by indigenous production in a phased manner through Transfer of Technology (ToT).

Further, for leveraging capital acquisitions to develop Indian defence industry by fostering development of internationally competitive enterprises and augmenting capacity for Research, Design and Development related to defence products, Ministry has enunciated a Defence Offset Policy. These offset provisions are applicable for a minimum of 30 *per cent* of the value of the contract including ToT in case of capital procurement above ₹2000 crore¹ under ‘Buy (Global)’ and ‘Buy and Make’.

¹ Prior to April 2016, offset provisions were applicable in capital procurements above ₹300 crore.

Audit is in the process of finalisation of a separate Performance Audit report on Management of Defence Offsets and relevant observations on Offsets Contract related to these eleven contracts would be included in that Report.

The procurement process starts with the initiation of the proposal by the Air Headquarters and after passing through distinct stages ends with the signing of contract. The acquisition process for the five categories of procurement under the “Buy” and “Buy & Make”, categories involve the following stages:-

- (a) Request for Information (RFI)
- (b) Air Staff Qualitative Requirements (ASQRs)
- (c) Acceptance of Necessity (AoN)
- (d) Solicitation of offers
- (e) Evaluation of Technical offers by Technical Evaluation Committee (TEC).
- (f) Field Evaluation
- (g) Staff Evaluation
- (h) Oversight by Technical Oversight Committee (TOC)
- (j) Commercial negotiations by Contract Negotiation Committee (CNC)
- (k) Approval of the Competent Financial Authority (CFA)
- (l) Award of Contract/Supply Order (SO)
- (m) Post-Contract Management.

The process flow chart for the processing of capital procurements is as at **Flow Chart-I**.

Flow Chart-I

Procurement Process Flow Chart

Process	Responsibility centre
Acquisition planning ↓	- Integrated Defence Staff HQ - Acquisition Wing
Formulation of ASQR ↓	- User Dte, Dte of Air Staff Requirements (ASR)
Acceptance of Necessity ↓	- User Dte, Dte of ASR, DAC
Solicitation of offers ↓	- Technical Manager (Air) - Air HQ
Technical Evaluation ↓	- Technical Evaluation Committee
Field Evaluation ↓	- Field Evaluation Trials Team
Staff Evaluation Report ↓	- Deputy CAS (Air HQ) - Air Acquisition Wing (MoD) (for deviations)
Technical Oversight (If applicable)	- Technical Oversight committee
Commercial Negotiation ↓	- Contract Negotiation Committee
CFA Approval ↓	- Defence Procurement Board, Defence Acquisition Council, Cabinet Committee on Security
Award of Contract ↓	- Air Acquisition Wing (MoD)
Implementation and post contract management ↓	- Service HQs/ Air Acquisition Wing (MoD) - Principal Controller of Defence Accounts
Receipt, Inspection and utilisation ↓	- User Directorate - DGA Quality Assurance

1.3 Scope of Audit

This Performance Audit assessed the Capital Acquisition process of the Ministry by examining capital acquisition contracts pertaining to Air Force. Out of a total of thirty-one contracts signed during 2012-13 to 2016-17, seven contracts above ₹1000 crore and four contracts above ₹100 crore were selected for detailed examination. This selection was based on risk assessment, method of procurements and types of air systems. The list of these selected contracts is as follows:-

Table-1: List of Contracts of Capital Acquisition selected in Audit

Sl. No	Name of contract	Date of the Contract	Amount of contract (₹ in crore)	Probable/Actual date of completion
1	Medium Multi-Role Combat Aircraft (MMRCA)	23.09.2016	“BXX”	September 2022
2.	Attack Helicopter (Apache)	28.09.2015	11,420.05	March 2020
3.	Heavy Lift Helicopters (Chinook)	28.09.2015	6333.11	March 2020
4.	PC-7 MK-II Basic Trainer Aircraft and associated equipment (Pilatus)	24.05.2012	2895.63	May 2017
5.	‘PP’ pods	7.08.2016	1745.52	August 2019
6.	‘Ma’ missiles and associated equipment for ‘AC1’ aircraft	04.07.2014	2197.93	January 2019
7.	Addl. C-130 J30 aircraft	27.12.2013	6119.83	December 2019
	Addl. C-130 J30 aircraft	15.09.2016	644.44	
8.	‘WW’ Munitions and associated equipment	24.04.2012	638.95	September 2015
	‘WW’ Munition	25.06.2013	672.32	April 2019
9	Reconnaissance Systems	27.03.2017	1326.19	March 2020
10.	Full Mission Simulator for Su-30	2.01.2016	322.70	November 2019
11.	Doppler Weather Radar	26.09.2012	106.79	March 2016

1.4 Audit objectives

Performance Audit on Capital Acquisition of Air systems was conducted with the following objectives:-

- a) To assess whether the capital acquisition system ensures that:
 - (i) air assets that are acquired meet the user requirements;
 - (ii) air assets are acquired within the required timeframe to meet the operational needs;
 - (iii) air assets are acquired at an optimal or best possible price.

- b) To assess whether objectivity, transparency, fair play and integrity is maintained at all stages of procurement and the same is evident in all decision making.
- c) To assess whether the acquisition activity is well organized to achieve the above objectives.

1.5 Audit criteria

Following audit criteria were used to assess the acquisition system:

Aspects of the procurement process to be evaluated	Criteria for evaluation
<i>Ability to deliver quality</i>	Air Staff Qualitative Requirements (ASQRs) and operational needs of the users, Technical Evaluation Committee (TEC), Field Evaluation Trials (FET) and Staff Evaluation Reports (SER).
<i>Ability to render cost effectiveness</i>	Cost estimates, RFP, Bench Marking (BM) pricing, Life Cycle Costing (LCC) Model, CNC etc.
<i>Ability to acquire assets within reasonable time</i>	Timelines prescribed by Defence Procurement Procedure (DPP), requirement of the Users
<i>Objectivity, Transparency, fair play and integrity in the procurement process</i>	Approval process and the provisions of DPP, General Financial Rules (GFR), etc.

1.6 Audit methodology

The Audit started with an Entry Conference with DG Acquisition, Ministry on 08 August 2017, in which Ministry and IAF were briefed about the objectives, scope and methodology of audit. A workshop on audit of Capital Acquisition was conducted in February 2018 involving various stakeholders, officers who dealt with capital acquisitions and think tank agencies. Inputs from the workshop were used in planning and audit. Inputs during field audit, preliminary observations/questionnaire on each contract was issued to Air Headquarters and response of Air Headquarters obtained for validation of audit observations. The findings were discussed in exit conference with Ministry on 31 January 2019.

Chapter-2: Planning and Pre-tendering process

2.1 Planning

The DPP envisages a planning process which would form the basis of all Capital acquisition. This involves preparation of a 15 years Long Term Perspective Plan (LTPP), 5 years Capital Acquisition Plan (SCAP) and Annual Acquisition Plan (AAP) for the Air Force. The planning process is under the overall guidance of the Defence Acquisition Council which approves these plans. The HQ IDS is responsible for consolidation of the plans prepared by the Service HQ and to categorise the acquisition proposals into 'BUY' 'Make' or 'BUY & Make'. MoD then puts up these plans to the DAC and obtain its approval and overall Acceptance of Necessity, after which the acquisition activity is progressed.

2.1.1 Delay in initiating procurement proposal

Audit noted that for replacement of air assets which had outlived their life, significant delays occurred in initiating the procurement process. In cases where procurement was initiated before expiry of the existing air assets, procurement process did not follow the time frame stipulated in DPP, rendering the procurement planning of respective items irrelevant. As a result, the required aircraft, weapons or systems were delivered much after the life of the existing assets was over. This left a gap in the operational preparedness of IAF. This was seen in the acquisition of Basic Trainer Aircraft, 'PP' Pods, 'WW' Munitions and 'Ma' Missiles for 'AC1'.

Ministry contested that there was no delay in initiating procurement action as the proposals were initiated much in advance. It stated that IAF had started developing the ASQRs for the indigenous development of the trainer aircraft in 2003 which were finalized and given to HAL in 2009. HAL was given five years to develop the aircraft by which time the existing aircraft (HPT-32) was to be phased out. The reply of the Ministry shows that IAF took six years to develop ASQRs for the aircraft but expected HAL to develop the aircraft in five years. Secondly, the procurement proposal for New Generation 'Ma' Missile was moved by IAF only in May 2008 while the life of the existing missiles ended in 2009. In the case of 'WW' Munition, IAF started the process of formulation of ASQRs and identification of vendors only in June 2002. The life of the existing munitions had expired in October 2003. This shows that while planning IAF ignored the fact that the DPP itself prescribes a timeline of 34 months for procurement.

2.1.2 Under-utilization of the acquired assets

In order to equip newly upgraded aircraft, DAC accorded approval (August 2010) for procurement of 'PP' Pods and the contract was signed in March 2016. Audit observed that though the 'PP' pods were delivered, they were underutilized. In case of 'AC4' aircraft, IAF discovered that the system could not be integrated into the aircraft because they were incompatible. Further, by the time the 'PP' pods could be delivered, 'AC2' aircraft on which 'na' number of 'PP' pods had to be fitted, had almost completed their life rendering their procurement infructuous. In case of 'AC1', the aircraft was still undergoing upgradation and was not yet ready for integration.

Ministry stated that 'PP' pods was successfully integrated on 'AAC1' and 'AC2'. However, ASTE Bangalore² reported (June 2016) that the functions of 'PP' pods might not be fully exploited if integrated on 'AAC1' aircraft. Hence, it was proposed by IAF that 'PP' pods would be integrated on 'AAC2' upgraded aircraft. Ministry's reply was silent on the issue of non-compatibility of 'PP' pods on 'AC4' upgrade aircraft. Integration on 'AC2' would not be much beneficial because these aircraft would be phased out by March 2020.

2.1.3 Delay in creation of infrastructure

Induction of new air assets in IAF requires adequate infrastructure to be in place by the time the air assets are received. Timely creation of infrastructure ensures optimal utilisation of the costly assets.

Audit observed delays in creation of infrastructure in two cases. For instance, hangars and buildings for induction of Basic Trainer Aircraft was yet to be completed at the designated air force stations even after five years of receipt of the aircraft. Infrastructure work for Heavy Lift Helicopter, which was to be completed by 2021, is yet to commence, even though the aircraft are scheduled to be delivered between September 2018 and March 2020.

2.2 Framing of Staff Qualitative Requirements

The process of acquisition of an air asset starts with the formulation of user requirements known as the Air Staff Qualitative Requirements (ASQR). The ASQR is formulated by the user directorates of the Air headquarters. Formulation of ASQRs is the most crucial stage in the defence acquisition process as it determines the quality, price and competition. It impacts all other important decisions in the acquisition process. To help the users in drafting the ASQR and the tender documents the DPP

² ASTE (Aircraft and System Testing Establishment) conducts flight testing of aircraft, airborne systems and weapon stores prior to their induction into the Indian Air Force (IAF)

allows them to gather market information about the product and its vendors through a process called Request for Information (RFI). RFIs are issued to known vendors or Defence Attaches posted in the Indian embassies around the world, seeking information.

The DPPs have stipulated that the ASQRs must be broad based and must not be tailored for a particular product and must result in procurement of the items that best meet the requirements of the forces. Best practices dictate that for acquiring Commercially-Off-The-Shelf (COTS) products the user requirements should be defined in terms of Functional Specifications³. Specifying detailed technical or design parameters restrict competition and choice; and therefore, do not enable selection of the most optimal product.

In the CAG's Performance Audit Report of 2007 on "Defence Capital Acquisition", it was recommended that ASQRs should be stated in terms of functional parameters, which are verifiable and measurable. This was accepted by Ministry and incorporated in DPP 2008 which stated that "The QRs must express the user's requirement in terms of functional characteristics and its formulation must not prejudice the technical choices by being narrow and tailor-made."

However, Audit noted that IAF did not adhere to the above principles while drafting of Air Staff Qualitative Requirements (QRs specific to Air Force). This created difficulties during technical and price evaluation; besides affecting the integrity of competitive tendering. Audit could not derive assurance that the products acquired actually met the users need. Faulty framing of ASQRs was also the one of the main reasons for delay in Capital acquisition. This is explained below.

2.2.1 Repeated changes in ASQRs during the procurement process

Audit noted that repeated changes or adjustments were made in the ASQRs during the procurement process. These changes were sometimes made to avoid a 'resultant single vendor' situation⁴ or when the method of procurement was changed from single source to competitive procurement as seen in cases of Basic Trainer Aircraft and 'Ma' Missile. Further, in procurement of Heavy Lift Helicopter (Chinook), repeated changes were also made after obtaining feedback from the vendors in a piecemeal manner. ASQRs were also changed when during technical evaluation none of the bids could fully meet the ASQR parameters. ASQR parameters which could not be met by any vendor were

³ **Functional specification** means the basic function or duty to be fulfilled by the product. For example, "Gun capable of firing targets at a minimum distance of 5 km", "Vehicle capable of carrying a load of 10 Tons". **Technical specifications** detail the physical description of the item including size, tolerances, materials, design or technology.

⁴ A situation where only one vendor is technically qualified

removed or diluted. This was seen in the acquisition of Attack Helicopter and Doppler Weather Radar

Audit also noticed that ASQRs were modified without any recorded reason. For instance, in case of Medium Multi Role Combat Aircraft (MMRCA), IAF in 2000 required six to nine of a certain weapon on each aircraft. However, in 2004, it was reduced to two per aircraft and later in 2007, IAF again increased it to four. With regard to the range of these weapons, the ASQRs of the year 2000 prescribed “more than ‘nb’ km”, which was reduced to ‘nc’ km in 2004 and again increased to ‘nb’ km in 2007.

2.2.2 Vendor driven ASQRs

Audit further noticed that IAF drafted ASQRs by copying the technical specifications of products available in the market. ASQRs were also based on inputs provided by vendors in response to Request for Information (RFI) issued to them. The DPP envisages RFI as a process for gathering information about the product and its vendors so as to formulate broader QRs which could facilitate a more competitive and smoother tendering process. But Audit noted that in many cases the process of RFI was used to engage in consultation with one or two vendors and modify the existing ASQR based on their feedback. Audit noted that in case of acquisition of Apache Attack Helicopters and Chinook Heavy Lift Helicopters, the ASQRs were aligned to products of a particular vendor.

2.2.3 Exhaustive ASQRs with narrow details

DPP states that ASQRs must express the user’s requirement in terms of capability desired, with minimum required verifiable functional characteristics; and its formulation must not prejudice the technical choices by being narrow and tailor made. Audit noted that, instead of defining the capabilities sought, in terms of functional parameters, ASQRs were stated in terms of detailed technical specifications, often asking for specific design or technology. Staff Equipment Policy Committee (SEPC) which approves the ASQR has time and again opined that the ASQRs framed by IAF were very exhaustive and included unwanted specifications.

For example, the ASQR for MMRCA contained 660 parameters, for Attack Helicopter there were 166 parameters and even for a simple item that included Doppler Weather Radar there were 42 parameters. This created bottlenecks during technical evaluation because in almost all the cases none of the vendor could fully meet all the ASQR parameters.

ASQRs are made very exhaustive and detailed by including technical and design specifications, apparently putting together product specifications of various vendors

and it becomes difficult for any technical bid to perfectly meet all the ASQR parameters. In the procurement case of MMRCA, the design or technology stipulated in the ASQRs were found to be inconsistent with the technology offered by the world market. The vendors had sometimes offered better technology or alternative design to meet the same functions desired by IAF. In these cases, the ASQRs became so unique that vendors could claim that they had to customise their standard products to meet the unique Indian ASQRs, which entailed additional cost. In the acquisition of C130 J30 aircraft some of the ASQR parameters were not even available with the US Airforce or yet to be developed by the US.

In such situations there are two alternatives- either to cancel the ongoing tendering and retender or waive the non-meeting of ASQRs by the vendors. To prevent the scope for manipulation of technical evaluation, the DPP attempts to control such waivers. The DPP till 2002 stipulated that any alteration or waiver of the Qualitative Requirements (QRs) after the issue of RFP would require the approval of the Raksha Mantri. In a previous CAG's Audit Report (No. 4 of 2007), Audit had noted that waiver of ASQR parameters had to be obtained in almost 50 *per cent* of the cases. As a result, the procurement process was delayed by at least four to six months. However, in DPP 2005 the provision for waiver was removed. Further, DPP-2013 prohibited any amendment to ASQRs after the accord of AON by the DAC. If at all change in ASQR is necessitated due to unforeseen situations, then fresh AON had to be obtained from the DAC. As a result, entire procurement process had to be sometimes cancelled and retendered for even few non-compliances, causing further delay.

Ministry accepted that only functional parameters should be specified in the ASQRs. However, it further stated that for complex systems it is inevitable that details are elaborated to avoid ambiguity. Repeated modifications of ASQRs were attributed to the additional inputs received from vendors, evolving operational concepts and upgradation of technology. Refinement in ASQRs led to inclusion of contemporary technology and widened the vendor base. Further modifications in ASQRs were carried out to ensure multi-vendor scenario and avoid single vendor situation.

Contrary to the claim of the Ministry the refinement in ASQRs did not always lead to inclusion of contemporary technology or widen the vendor base. In some cases including MMRCA the vendors were non-compliant with the ASQR because they offered more advanced technology than that prescribed in the ASQRs.

Recommendations

1. *ASQRs should be stated in terms of functional parameters which are measurable and verifiable. Stipulation of detailed technical or design specifications should be avoided, unless they are functionally necessary.*
2. *Ministry may consider grading of ASQR parameters in accordance with their functional/operational importance so as to select the best available option. DPP 2016 also envisages grading of parameters as essential and enhanced performance parameters. Ministry needs to design the ASQR/RFP/Bid document accordingly.*
3. *Technical experts and academics from leading institutions like IITs/IISs, etc who have extensive knowledge/experience on the equipment/systems under consideration could be involved in the technical aspects of the acquisition process.*
4. *ASQRs cannot be a collation of specifications or functions provided by different vendors. No single vendor may be able to provide all the different functionalities provided by various vendors. The 'wish list' has to be realistic.*

Chapter-3: Solicitation of Offers

DPP prescribes “Single Stage - Two Bid System” for solicitation of offers. A Request for Proposal (RFP) is issued soliciting the technical and commercial bids together, but in two separate and sealed envelopes. DPP, in case of ‘Buy’ and ‘Buy and Make’, provides that open tendering should be adopted. However, Audit noted that Ministry adopted only Limited Competitive Tendering in all the selected cases. Even for non-strategic products that included Basic Trainer Aircraft and Doppler Weather Radar, open tendering was not adopted. Further, there was no record to show as to how the limited vendors were selected for issue of Request for Proposal (RFP). Observations on the process of solicitation of offers are as follows:

3.1 Provisions for Single Source Procurement

Audit noted that in the case of acquisition of Apache attack helicopters and MMRCA IAF had initiated the proposal for procurement of a specific aircraft or weapon from a particular vendor on a Single Source Basis. But upon the insistence of Ministry, Single Vendor proposal had to be converted into competitive tendering process. This resulted in a delay of two to seven years in procurement of MMRCA and Apache Attack Helicopters.

In some cases, especially the acquisition of controlled weapons that included missiles, the response to RFI clearly indicated that there was only one vendor who could meet IAFs requirement. Further, the vendors required approval from their host government for supplying the weapons or its components. Time and effort was spent by Ministry in including more vendors, to create a competitive tendering situation. But contract was ultimately awarded to the pre-identified vendor capable of meeting the requirement. If indeed the equipment or capability sought is unique and proprietary, acquiring such assets through single source procurement or Inter Government Agreements (IGA) could be considered to be more appropriate.

The Ministry stated that the DPP provisions for IGA could be invoked after duly considering the strategic partnerships, diplomatic, political or military benefits. Ministry further stated that the provision of ab initio single vendor is mentioned in the DPP. It is seen that a provision for processing a single vendor proposal is available in DPP 2016 but it has not been stated by the Ministry whether in cases the same has been applied and, if so, in how many such cases.

3.2 Inadequate vendor response restricted competition

Audit noted that the number of vendors who responded to the RFP was far less than the number of vendors who were invited through RFP as shown in table below.

Table-2: Details of vendors' response to RFP

Sl. No.	Name of Case	No. of vendors to whom RFP issued	Responses received
1	Procurement of Apache Attack Helicopter	6	3
2	Procurement of Chinook Heavy Lift Helicopter	6	2
3	Procurement of Basic Trainer Aircraft (Pilatus)	12	7
4	Procurement of 'Ma' missiles, Helmet mounted display launchers and associated equipment for 'AC1' aircraft	5	2
5	Procurement of 'nd' number of 'WW' munition and associated equipment	9	2
6	Procurement of Doppler Weather Radar	10	2
7	Procurement of 'ne' number of 'PP' pods	8	2
8	Procurement of 126 number of MMRCA	6	6

In 5 out of 8 cases, only two vendors had responded though RFP was issued to 5 to 10 vendors. India was the largest importer of arms from 2008 to 2017 and that the global sales of arms showed an increasing trend⁵; still there was a poor response by the arms industry. Plausible reasons for the poor response of vendors could be the formulation of ASQRs which were restrictive and exhaustive and other reasons earlier discussed in this Report. Ambiguity about IAFs requirement was also conveyed through repeated changes in ASQR. Many vendors which showed interest when RFI was issued, did not respond to RFP. In some cases vendors who participated in the first round, withdrew when the procurement was cancelled and retendered. Other reasons could be the long delays and the protracted procurement process followed.

Acquisition wing of the Ministry also did not fully document the issue of RFP to the vendor or acknowledgement of RFP by the vendor.

3.3 Vendor database

Another area of weakness was the system of vendor identification. Since 2004, the Technical Managers in the Acquisition Wing and Service Headquarters are required to

⁵ SIPRI Year Book 2018

maintain a vendor data base. **Air Headquarters did not maintain any vendor data base. Details of vendor data base maintained, if available, was not made available to Audit by Ministry.** Not maintaining an updated data about the vendors, products available and details of all procurements made by Ministry adversely affected capacity to identify suitable vendors.

The Ministry attributed the poor vendor response to host governmental restrictions on export of high-end technology. However, the reply does not explain poor vendor response in non-restricted items and non-maintenance of an updated vendor data base.

Recommendations

- 1. Ministry should explore open competitive tendering in case of non-strategic items*
- 2. In case of highly strategic weapons with unique capabilities or controlled items where the benefits of competitive tendering are not evident, acquisition through Inter Government Agreement or single source procurement should be used with due diligence.*
- 3. Market research should be improved by providing for it by a specialised activity centre with academic/ proven professional excellence and integrity. Technical experts such as from IITs/IISc may also be involved who would not only identify sources of supply but also identify appropriate technology for meeting the specified needs. They can also provide price and cost inputs and verify the capability and authenticity of the vendors.*
- 4. The vendor database should be made more comprehensive and integrated by such a specialised centre. It should be backed by sound market intelligence by coordinating the efforts of the existing mechanism of Defence Attache and other agencies of Ministry. System of vendor rating could also be considered to enable monitoring the performance of the vendors.*

Chapter-4: Technical Evaluation

4.1 Technical Evaluation

According to the Defence Procurement Procedure the technical evaluation consists of an initial technical screening by a Technical Evaluation Committee (TEC) and the subsequent Field Evaluation Trial (FET) of the assets which are cleared by the TEC. The findings of FET are submitted as a FET Report to the Deputy Chief of Air Staff (DCAS) by the field evaluation committee. The IAF then submits the overall technical evaluation and recommendations to the DG (Acquisition) in the form of Staff Evaluation Report (SER).

In 90 *per cent* cases none of the technical bids could meet all the ASQR parameters. This created difficulties in technical evaluation which needed to be overcome through one of the three means:

- Obtaining waivers from the RM for the non-meeting of the ASQRs
- Cancel the tendering process and retender after modifying the ASQRs
- Allow the vendor to customise the product to meet the shortfall in ASQRs

Each of these options had its attendant difficulties. The issues faced in technical evaluation due to faulty ASQRs are discussed below.

4.1.1 Assessment of Consistency in Technical Evaluation

Audit noted a lack of consistency in the technical evaluation across procurement cases. In some cases, viz. procurement of Doppler Weather Radars and Attack Helicopters, technical bids were rejected when the vendors failed to meet all the ASQR parameters. But in other cases that included MMRCA, Heavy Lift Helicopters and C130 J30 aircraft, bids were technically qualified even when they did not meet critical ASQRs based on the assurance given by the respective vendors.

Ministry stated that rejection or acceptance of the technical bid is based on several factors other than mere ASQRs. Ministry has not enumerated these factors. Audit noted that the contention of the Ministry is contrary to the very concept of technical evaluation. Moreover, in all the cases mentioned by Audit, the vendors either were rejected or waivers granted for not meeting the ASQRs. The reply is silent about the inconsistency in technical evaluation.

4.1.2 Assessment of objectivity in Technical Evaluation

- a. DPP (Para 35) states that material deviations from ASQR should not be technically accepted. Minor variations may be accepted which does not significantly modify the bid. This implies that waivers can be granted only for minor deviations which do not significantly impact the operational need. In the absence of grading of ASQR parameters it was difficult to objectively assess whether the deviation from the ASQRs were material or minor. Further, products were selected or rejected based on ASQR parameters for which there were no objective and verifiable evaluation criteria in the RFP.
- b. Para 35 of DPP-2006 further stated that the technical offer once submitted by the vendor should not be materially changed subsequently. It further stipulated that no extra time should be given to any vendor to upgrade its products to make it compliant with the QRs. But Audit noted that in case of MMRCA, opportunity was provided to the vendors to significantly modify their technical bid. This was in violation of DPP.
- c. Audit also noted that during Field Evaluation Trials' equity was not maintained while evaluating the products of different vendors. All aspects of one product ('WW' munition) was fully trial evaluated according to the trial directive. However, another product was not fully trial evaluated and accepted based on mere presentation or assurance given by the vendor that the required features would be included in the delivered product. Therefore, the objectivity and equity of technical evaluation was not evident in the Technical Evaluation Report (TER).

Ministry justified the technical selection of bids which did not meet the ASQRs on the grounds that DPP allows for such deviations under para 75. However, DPP (Para 35) does not allow for material deviations and, as pointed out earlier, in absence of grading of parameters, distinguishing between material and minor deviations cannot be done objectively.

Ministry also stated that it is not practically feasible to trial evaluate all aspects of a product and therefore the FET depends on lab tests, certification and documentation. However, Audit noted that critical features of an air asset cannot be accepted merely on the presentation/commitment made by the vendor.

4.1.3 Commercial terms evaluated during technical evaluation

The single stage, two bid system envisages a clear segregation between the technical and commercial bids which are evaluated by two distinct committees. Technical bid

contains the ASQRs and other Technical requirements that included maintenance, spares etc. Delivery schedule is also considered as part of technical bid. Technical bid is evaluated by the users/IAF Officers and the evaluation is qualificatory in nature i.e. the bid is accepted or rejected. The Commercial bids includes commercial term and conditions which can be the subject of negotiations and price adjustments.

Audit noted that Ministry included commercial terms that included warranty, option clause etc. in the Technical Bid and as a result the commercial aspects were being evaluated by TEC as a part of Technical Evaluation. This also delayed the process because the TEC had to obtain clarifications from the vendor on these issues which should have been addressed during CNC. It is seen that the General Financial Rules, 2017 provides that Tender Committee (meant for both technical and commercial evaluations) should also have a Financial Advisor as its member. In case of Defence Procurements, representatives from Finance are not involved in technical evaluation. Thus evaluation of bids for its compliance to commercial requirements, remains dependent on user directorates.

Ministry stated that this process was followed in accordance with the provisions of DPP. Audit is of the view that the DPP needs a revision to address the deficiency.

Recommendations

- 1. In view of the correct preference for multi-vendor bids, the IAF should formulate ASQRs that cover only user requirements. Alternatively, Ministry should review its policy of fully restricting waivers; instead ASQR parameters should be graded objectively so that material deviations from ASQR could be rejected while minor deviations accepted with waiver.*
- 2. A professional, quantitative method of technical evaluation wherein there is an objective selection of the different offers according to criteria and weights for the various parameters should be followed.*
- 3. Ministry needs to ensure a clear segregation between the technical and commercial issues in the two bids. If not feasible, Ministry may consider including a representative of Ministry of Defence (Finance) at the TEC stage.*

Chapter-5: Commercial Evaluation

5.1 Commercial Evaluation

A Contract Negotiation Committee (CNC) is constituted by the DG (Acquisition) to evaluate the price bid and to negotiate the final contract to be signed by Ministry. The CNC consists of Acquisition Manager as Chairman, Technical Manager, Finance Manager, Advisor Cost and representatives of DGAQA⁶, Users, or other agencies involved in the procurement or maintenance of the asset. Audit noted the following deficiencies in the commercial evaluation process.

5.2 Estimation of benchmark prices

Before opening of the price bid the CNC is required to estimate the benchmark price against which the price reasonability of the various bids are to be assessed. Proper estimation of benchmark price can be important for price evaluation because according to the DPP, if the bid price is less than the benchmark price then there would be no negotiation with the lowest (L1) bidder. Audit noted that in four cases, the benchmark price was significantly higher than the bid price while in another four cases it was much lower than the bid price. Only in two cases, the benchmark prices were somewhat near the price bid by the vendor/s. This is shown in table below:

Table-3: Comparative details of Benchmark and Bid Prices

Sl. No.	Name of contract	Bench Mark Price	Bid price	Percentage variation
1	Procurement of Doppler Weather Radar (DWR)	₹109.24 crore	₹106.79 crore	+(2.30)
2	Procurement of Attack Helicopter (Apache)	2013.918 MUSD	1928. 666 MUSD	+(4.50)
3	Procurement of 75 Basic Trainer Aircraft (Pilatus)	₹3906.69 crore	₹2895.63 crore	+(35.00)
4	Procurement of 'WW' Munitions	₹805.7534 crore	₹564.5126 crore	+(42.80)
5	Procurement of 'ne' number of 'PP' Pods	₹4995.33 crore	₹1745.52 crore	+(186.18)
6	Procurement of 'Ma' Missiles & associated equipment	₹4354 crore	₹2197.93 crore	+(98.01)
7	Procurement of 15 Heavy Lift Helicopter (Chinook)	₹4119.72 crore	₹6473.91 crore	-(36.37)

⁶ Directorate General of Aeronautical Quality Assurance

8	Procurement of five Full Mission Simulator (FMS) (Repeat order)	44.48 MUSD	79.61 MUSD	-(44.13)
9	Procurement of 'na' number of 'SS' Pods (Repeat Order)	144.78 MUSD	368 MUSD	-(60.66)
10	Procurement of six additional C-130 J30 aircraft (Repeat Order)	Not conducted	₹6333.11 crore	-
11	Procurement of 126 number of MMRCA/36 number of Rafale IGA			-(47) -(56.67)

It was difficult to establish the reasonability of price with such large gap between bid price and the benchmark price. In many cases, the CNC had dissent and disagreement between its members over the reasonability of prices.

In four cases (Sl. No. 7, 8, 9 and 11 in the table above) the lowest price bid was found to be much higher than the benchmark price. The CNC revised the benchmark prices upward in these cases, so as to bring them nearer to the price bids. Such adjustment of the benchmark price may seem aimed at justifying the award of contract to the lowest bidder. Revising the benchmark after opening of the price bid defeated the very purpose of benchmarking, which was to verify the reasonability of the prices. In the case of MMRCA procurement, during both the 126 number of MMRCA procurement and 36 number of IGA, the benchmark prices estimated by the benchmarking committees were unrealistically low.

Repeated off the mark benchmarking reveals lack of costing expertise in the defence acquisition system. CNC mostly relied on the last purchase price to estimate the benchmark price. These last purchases were very old and the products were also not identical. Even in cases where indicative price was quoted in response to RFI this was not used for estimating the benchmark price.

Audit noted that much of the costing, price estimation and price comparison exercise are generally done by the Air Headquarters with or without the help of the cost advisors in the Ministry of Defence. But the onus of all financial decisions and costing lies with the Finance Manager of the Acquisition wing or the Contract Negotiation Committee (CNC).

Ministry replied that the price provided by vendor in response to RFI cannot be considered as a correct reflection of price. The estimated benchmark price is of higher accuracy. However, the table above clearly shows the inaccuracy of the benchmark prices. Moreover, if prices indicated in response to RFI are not usable then seeking price details in RFI may be a futile exercise.

5.3 Non-Firm & Fixed bid price for tendering

In acquisitions which may take longer (months or even years) to complete, the cost of production (materials and labour) will vary with the economic conditions that included inflation. If the price bids are invited for a Firm & Fixed price then the seller will have to factor for price variation in the bid price. Since the future variation in the price of production factors are uncertain, this risk would have to be fully borne by the seller and therefore the bid price would be cushioned accordingly. MoD needs to examine whether a better method is to invite Non- Firm and Fixed price bids where the quoted prices are based on the prices prevailing at the time of bid evaluation, and indexed to the standard indices applicable to the various factors of production. The actual payments are then regulated according to this standard price variation factor. This makes the price bid more transparent. Audit noted that Ministry had always called for Firm & Fixed Price bids in accordance with the DPP.

Audit also noted that only in case of MMRC, Indian Negotiation Team (INT) advised M/s DA to provide a Non-Firm & Fixed offer in 2016, although the RFP of 2007 had invited firm and fixed prices. This change proved to be more beneficial. Initially (15 January 2016) Firm & Fixed price bid was invited by the Ministry and M/s DA had quoted 'AX13' Million Euros. This was found to be too high and Ministry called (21 January 2016) for Non-Firm & Fixed price bid. The firm had quoted 'T' Million Euros. Audit noted that at this price the total outgo of cash payments to the vendor till the completion of the contract would have been 'EU' Million Euros (applying the vendor's price variation formula). Therefore, when compared to the Firm & Fixed offer of 'AX13' Million Euros the cash outgo was 'BX' billion Euro lesser in case of Non Firm & Fixed offer.

It is seen that General Financial Rules (GFRs) provide a Price Variation Clause for all contracts where the scheduled delivery exceeds 18 months. Rule 225(viii) of the GFRs state that where a price variation clause is provided, the price agreed upon should specify the base level *viz*, the month and year to which the price is linked, to enable variations being calculated with reference to the price levels prevailing in that month and year. A formula for calculation of the price variations that have taken place between the Base level and the Scheduled Delivery Date should be included in this clause. The variations are calculated by using published indices.

5.3.1 Adoption of price escalation factor

Ministry has been using a simple thumb- rule price escalation factors for estimation of benchmark prices or AON cost. For instance, for all procurements from Russia or CIS countries 5 *per cent* annual price escalation rate was used and even included in the

Indo-Russian agreement. Similarly, for European suppliers 3.5 *per cent* annual escalation was used. The actual increase of the respective price indices of these countries has been much less (in the region of 1.35 *per cent* for the developed European countries). This is also one of the reasons for the estimated benchmark price to be far off from the bid price as seen in para 5.2. There is a need for adopting a transparent price escalation/variation method.

5.4 Assessment of objectivity, equity and fair play in price evaluation

Audit noted several instances where parity was not maintained while evaluating the price bid of different vendors. For instance in the acquisition of 126 number of MMRCA M/s DA did not quote for the Capital Expenditure for setting up of license production of aircraft and stated that the price would be provided later. M/s EADS on the other hand had quoted Capital Expenditure. CNC while comparing the prices took the price of Capital Expenditure for M/s DA as 'nil'. Similarly, in case of procurement of Basic Trainer Aircraft, M/s Pilatus did not quote the price of Special Maintenance Tools (SMTs)/Special Test Equipment (STE) and was shown as 'Local Supply'. Similarly, the firm had treated computer hardware for Ground Based Training System as 'Buyer Furnished Equipment' the cost of which was excluded from its price bid. The other two vendors had included the cost of these items in their total bid price. After opening of the price bid and before determination of the lowest bid, clarification was sought from M/s Pilatus. The firm stated that these items should no longer be treated as Local Supply or Buyer Furnished Equipment and that the cost of these items may be considered inclusive in the total bid price already quoted.

As per DPP, if the price bid of a vendor does not contain complete information required to assess the total cost of the product for pricing comparison such bids are to be considered as unresponsive and rejected. Comparing the price of bidders based on incomplete information of one bidder would vitiate the whole price evaluation process. Audit noted that, in 126 MMRCA procurement, when a vendor did not submit complete price information, CNC tried to derive the missing cost elements on its own (2012). This distorted equity in price comparison of the bids.

Ministry replied that when vendors do not submit the price bid in the specified format the CNC puts the information in the correct format to evaluate the prices on a common datum. Ministry has however not explained the reason for not maintaining parity while doing this exercise which was pointed out by Audit.

5.5 Usage of Total Life Cycle Cost model for evaluation

To ensure value for money in acquisitions it is prudent to evaluate the various products on the criteria of total cost of ownership. This would include the total expenditure to be incurred throughout the life of the assets *i.e.* the cost of operating, repair, servicing,

upgrading and finally discarding the asset. Life Cycle Costing (LCC) assumes importance in case of defence equipment, because once inducted into service, they are used for decades; and the cost of operating and maintaining them is much higher than the cost of initial procurement. Moreover, an asset may be cheaper to procure but costlier to operate and maintain. However, the use of LCC requires an extremely sophisticated model which is able to correctly identify all the cost elements and properly estimate all the cash outflows throughout the life of the asset. An improper model may not only produce incorrect estimation but also distort fair play among the bidders. Different countries and sectors are reportedly in the process of evolving different models suiting their conditions.

Audit noted that the model used by Ministry for calculating the life cycle cost of acquisitions had several deficiencies. Out of eight cases, LCC model was used in four cases for determining the L1 vendor. All the relevant cost elements required to be considered while computing LCC were not considered. For example, it is a common experience that most of the aircraft or equipment which have long technical life undergo mid-life upgrades for sustainment of the capabilities, if not for enhancement. However, cost of upgrades was not considered while computing LCC.

In many cases, there was inconsistency in considering the life of the asset because some costs were calculated on the basis of number of years while others on number of flying hours, with mismatch between the two. For instance, the time period for ascertaining the Total Life Cycle Cost of Apache attack helicopter was considered as 6000 flying hours or 25 years. Cost of maintenance elements was considered as 360 hours per helicopter per year. This works out to 9000 flying hours. Such inconsistency in evaluating key parameter is fraught with risks to both the bidders as well as the buyer.

LCC method is a very complex method for price evaluation which is still evolving the world over and different models are being used for this purpose.

Further, Audit noted Ministry was able to calculate the Net Present Value (NPV) of the payments only for Direct Acquisition because the timelines for payment were specified in the bids. It was unable to calculate the NPV of the other cost components of Life Cycle costing which were spread out for more than 20 years. Using Present Value of payments only for the Direct Acquisition price and not for the rest of the LCC elements, which have a significant price impact, rendered the price comparison incomplete.

Ministry stated that it has acknowledged the shortcomings of the LCC model and has decided to withhold LCC model in future procurements RFP till the shortcomings are addressed.

5.6 Submission of fresh price bids during the evaluation process

DPP provides that after the technical evaluation and before the price evaluation, if the validity of the price bids of the vendors expire due to delay in the procurement process, then either the vendors could extend the validity of their price bids or submit fresh price bid. Audit noted that submission of fresh bids by vendors during the ongoing process, especially when technical evaluation (TEC) is over, carries the risk of undermining competitive pricing.

Ministry accepted the Audit contention.

5.7 Method of Evaluation of Bids

Presently Ministry follows the 'Lowest Price Technically Acceptable (LPTA)' method of bid evaluation wherein the contract is awarded to the lowest priced offer which is technically acceptable. It does not give value for money when used to procure items where quality is of high importance.

For procuring highly technical products use of the Best Value method or a quantitative assessment method may yield better value for money. This method gives higher weightage to quality / technical bid and uses a quantitative evaluation matrix. It would enhance objectivity and consistency. Such methods were already in practice in most of the Public Sector Undertakings that included National Thermal Power Corporation (NTPC), Power-grid, Bharat Heavy Electricals Limited (BHEL) etc. which evaluate the technical and price bids based on scoring or financial loading.

The C&AG Report on Performance Audit of Capital Acquisition of Army 2007 had also recommended the adoption of such a quantitative method of evaluation.

Ministry accepted the Audit contention and stated that DPP 2016 provided for more weightage to enhanced performance parameters. Audit is of the view that DPP 2016 does not fully address the recommendation of Audit observation. Ministry should look into the issue keeping in view the best practices.

Recommendations

1. *Ministry should consider whether adopting Non-Firm & Fixed price method for price evaluation on the lines of Price Variation Clauses in the GFRs, might be more beneficial.*
2. *A better and reliable total life cycle costing model needs to be evolved which includes all cost components over the life of the product.*
3. *Ministry may consider adopting a Best Value method of bid evaluation (both Technical and price) based on a quantitative assessment matrix in order to ensure value for money in acquisitions.*

Chapter-6: Timeliness of Acquisition

6.1 Internal lead time of procurement

Audit noted that as against three years envisaged by DPP the total time taken for acquisition of air assets was very high. Four cases took more than three years and seven cases took more than five years to just sign the contract. The external lead time *i.e.* the time taken to complete the delivery after the signing of the contract was another three years to five years.

The time taken for each of the 11 contracts is shown below.

Table-4: Time Taken for Acquisition

Asset	Time taken for signing of contract (in months)
Attack Helicopter (Apache)	105
Heavy Lift Helicopter (Chinook)	113
Basic Trainer Aircraft (Pilatus)	36
‘Ma’ Missiles for ‘AC1’ aircraft	74
‘WW’ Munition	94
Doppler Weather Radar (DWR)	96
‘PP’ Pods	76
Additional C-130J30 aircraft	36
Recce System	54
Full Mission Simulator	48
126 Medium Multi Role Combat Aircraft (MMRCA)/36 IGA	180/24

Even procurement of non-complex products *viz.* Doppler Weather Radar took eight years to conclude the contract. Exactly the same radar was procured by the Indian Meteorological Department in just nine months. On the other hand, Ministry took eight months for contract negotiation which were completed in one month by the Indian Meteorological Department.

Repeat orders on the same vendor for procurement of additional quantities also took substantially longer time (2 to 5 years). In the procurement of Recce System⁷, the original contract was signed in three and half years while the repeat order took more than four years. One of the main reasons for such delays was incorrect benchmarking by CNC in the repeat procurement wherein the additionalities were not factored in.

The delay caused by other activities is analysed below:

a. *Delay in issue of RFP*

RFP is a self-contained document that enables vendors to make their offer after consideration of full requirements of the acquisition. A standardised RFP document is a part of DPP. RFP is required to be issued within 24 months⁸ after approval of 'Acceptance of Necessity' by the Defence Acquisition Council. Audit observed that in nine out of eleven cases, Ministry took 7 to 48 months to issue RFP after obtaining AON. The delays were mainly due to incorrect assessment of AON cost and revision of ASQRs. This delay was also on account of vetting of the RFP by Acquisition Manager, Finance Manager and Technical Manager before its issue. This was despite the fact that the DPP prescribes standard format for RFP and the vetting of RFP was to be carried in a collegiate manner. Further, despite the time and effort spent on vetting of RFP, in three cases, the RFP was withdrawn and revised because of errors.

Ministry stated that preparation of RFP is time intensive due to complexities of defence procurement. However, Ministry had itself prescribed these timelines in DPP presumably after considering all facts. Moreover, Audit noted that the time taken in preparation of RFP can be reduced with professionalisation, proper planning and coordination.

b. *Delay in Technical Evaluation of Offsets*

According to DPP, commercial negotiations should commence only after acceptance of Staff Evaluation Report and the Technical Offset Evaluation Committee Report (TOEC). There was an inordinate delay in the completion of Technical Evaluation of the Offsets proposals submitted by the vendors. As a result, the commencement of price evaluation and contract negotiations also got delayed. The same is tabulated below:

⁷ A reconnaissance (Recce) system is used to collect intelligence data for operational needs.

⁸ From DPP 2013 onwards RFP is required to be issued within 12 months (one year) of AON.

Table-5: Delay in TOEC (in months)

Item	Time Taken (in months)	Prescribed time in DPP (in months)	Delay in TOEC report (in months)
Heavy Lift Helicopter (Chinook)	24	2-3	21
Attack Helicopters (APACHE)	25	2-3	22
‘PP’ Pods	15	2-3	12
Recce System	11	2-3	08

c. Delay in Contract Negotiations

Competitive tendering is based on market price discovery wherein tender evaluation has to be based on the price quoted by the vendor. Further, CVC guidelines stipulate that contract has to be awarded to the vendor with the lowest price bid and that there should be no negotiations. Negotiation are permitted with the L-1 vendor only in exceptional circumstances.

DPP states that if the lowest bid price (L-1 bid) is less than the Benchmark price estimated by the CNC then there is no need for price negotiation. In six out of 11 cases the price quoted by L1 vendor was less than the benchmark price. Though there was no need for price negotiation, yet CNC took 5 to 27 months to just finalize the terms and conditions of the contract with the vendor.

Table-6: Time taken in CNC where L1 was less than benchmark price

Item	Prescribed timelines as per DPP (in months)	Time taken in CNC (in months)
Doppler Weather Radar (DWR)	1 ½	8
Attack Helicopter (Apache)	4 ½ - 6 ½	27
Basic Trainer Aircraft (Pilatus)	1 ½	5 ½
‘WW’ Munitions	1 ½	7
‘PP’ Pods	1 ½	14
‘Ma’ Missiles & associated equipment	4 ½ - 6 ½	11

It may be noted that the term and conditions of the contract has already been specified in the RFP and the Technical Evaluation Committee has already checked the compliance of the bid to these conditions.

In remaining four procurement cases, where the price of the lowest bidder (L1) was higher than the benchmark. There were inordinate delays in price evaluation and contract negotiation as shown below.

Table-7: Time taken in CNC where L1 was higher than benchmark price

Item	Prescribed timelines as per DPP (in months)	Time taken in CNC from the date of Constitution (in months)
Heavy Lift Helicopter (Chinook)	1 ½	26 ½
Full Mission Simulator (FMS) (Repeat order)	Not prescribed	18 ½
'SS' Pods (Repeat Order)	Not prescribed	20
Additional C-130 J30 aircraft (Repeat Order)	Not conducted	-
Medium Multi Role Combat Aircraft	1 ½	48

The main reason for this delay was incorrect price benchmarking as discussed earlier. Ministry has attributed the delay in CNC to the quality and timeliness of vendors response.

d. Delay in approval by the Competent Authority

DPP prescribes that after the bid is selected and the terms of the contract to be signed is finalised, the approval of the Competent Financial Authority (CFA) has to be obtained before signing of the contract. Contracts above ₹1000 crore are to be approved by the Cabinet Committee on Security (CCS)⁹; contracts valuing ₹1000 crore and above ₹500 crore are to be approved by Finance Minister (FM); while contracts below this threshold are approved by the RM¹⁰. In 80 per cent of the cases there was significant delay in obtaining approval of the CFA.

⁹ Cabinet Committee on Security consists of Prime Minister, Finance Minister, Raksha Mantri, Home Minister and Minister of External affairs

¹⁰ From 08 February 2017, contract approval powers of the CFAs have been revised. now contracts above ₹3000 crore are to be approved by the CCS; contracts valuing ₹3000 crore and above ₹2000 crore are to be approved by FM; and contracts below this threshold are approved by the RM.

Table-8: Time taken in approval by Competent Authority

Item	Prescribed timelines as per DPP (in months)	Time taken in CFA approval (in months)
Doppler Weather Radar (DWR)	1-4	2
Attack Helicopter (Apache)	1-4	10 ½
Basic Trainer Aircraft (Pilatus)	1-4	9 ½
‘WW’ Munitions	1-4	7
‘PP’ Pods	1-4	19
‘Ma’ Missiles & associated equipment	1-4	8
Heavy Lift Helicopter (Chinook)	1-4	10 ½
Full Mission Simulator (FMS) (Repeat order)	1-4	3
‘SS’ Pods (Repeat Order)	1-4	9
Additional C-130 J30 aircraft (Repeat Order)	1-4	9

In eight out of 10 cases the CFA approval took more than six months. The delay was mainly due to repeated observations or clarifications sought by the Finance wing of Ministry of Defence (Ministry Finance) which processed the case before it was put up to the CCS. In the procurement of ‘PP’ Pods, the file moved many times between Ministry (Fin), Air HQs and Ministry between July 2014 to February 2016 because of the numerous queries raised by Ministry (Fin). This was despite the fact that DG (Acquisition) is supported by a Finance Manager and Finance wing was involved at each stage of the procurement.

Audit also noted that the DPP timelines are uniformly applicable to all procurements, irrespective of their complexities.

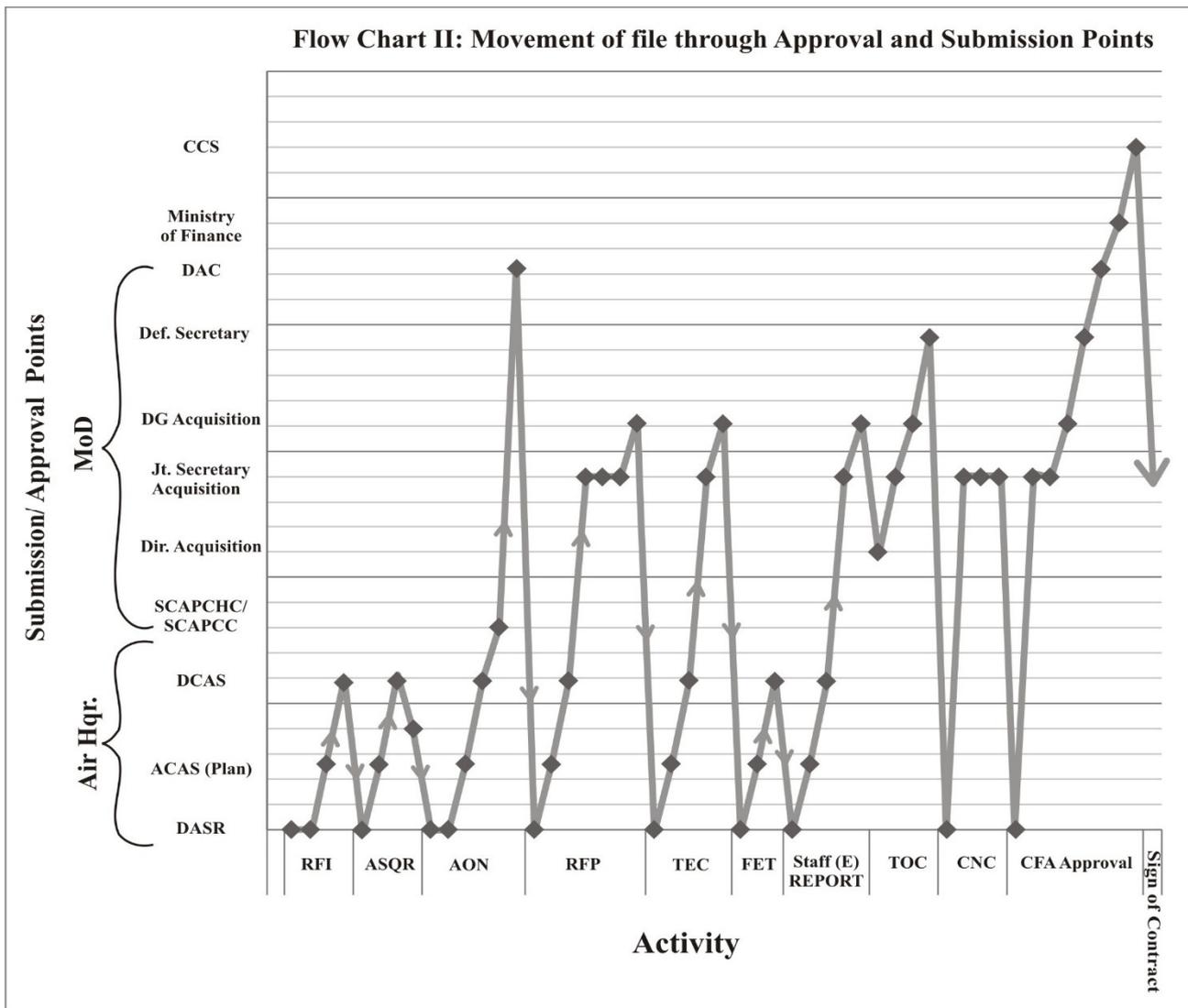
Recommendations

- 1. Recommendations on Business Process Engineering in Chapter 7 are relevant here also.*
- 2. Ministry may review the timelines prescribed in DPP to ensure realistic and flexible timelines for activities such as negotiations, where time limit can reduce the ability to negotiate. Strict adherence to timelines, should be ensured in case where L1 is lower than benchmark price.*

Chapter-7: Organisational Issues

7.1 Complex and lengthy procurement process

Time and work flow analysis of the acquisition process showed that delay was essentially due to a complex and multi-level approval process, as depicted in the Flow Chart II.



From the initiation of the case to the signing of the contract each procurement case had to sequentially go through 11 stages. At each stage, approval of a competent authority (approval point) was obtained before moving to the next stage. Each of these approval points had about five submission points at which different subordinate officers

processed the file before putting it up to the approving authority. The number of points gets multiplied each time a query or objection is raised by someone, as the file has to travel right down the chain to respond to the queries. For example, before obtaining the approval of CFA for signing the contract for the procurement of 'PP' Pods, MoD (Fin) and Ministry of Finance made queries five times and the file had to go through another 75 submissions between the various desks in Air HQrs, Ministry of Defence, MoD (Fin) and Ministry of Finance.

This multiple layer of control and oversight only reduced the efficiency of the system without adding much to the effectiveness. Despite such scrutiny and oversight external Audit could detect several irregularities and improprieties. Therefore, there is an urgent need for simplifying the process and weeding out redundant submission and approval points. Some of the areas which could be reviewed as discussed below:

a) *Process of 'Request for Information'*

The DPP requires that, before obtaining the Acceptance of Necessity (AON) and before drafting the RFP, information should be obtained about the product and its market by issuing a 'Request for Information' to known vendors. The stated aim of this exercise is to ensure:

- a. Better formulation of Qualitative Requirements.
- b. Better drafting of RFP, an RFP which is better aligned to the market, so as to ensure smooth procurement.
- c. To obtain indicative prices of the product for price estimation.

In most of the cases against the detailed information sought, the vendors provided only the brochures of their products, information which was already available in public domain. In many cases that included those for Pilatus and Apache, the vendors only gave a confirmation that they would be able to meet IAFs requirement, without sharing the technical details. In most of the cases where price information was sought, the vendors did not provide any information about the price of the aircraft and its various components. Even where, the vendor provided indicative price, the same was not used for estimating the benchmark during price evaluation.

The activity of RFI as a market intelligence gathering exercise could be reviewed as Ministry already has following standing arrangement to gather market information:

- The Technical Managers in the acquisition wing are required to maintain vendor data base.

- Service HQrs. and Director General of Aeronautical Quality Assurance (DGAQA) are also required to maintain vendor information.
- The Defence Attaches in various Indian embassies around the globe, gather information about products and vendors.
- Advisor (Cost) in the acquisition wing is supposed to maintain cost data to help estimate costs of the various products.
- Defence Exhibition Organisation through various defence expo and aero shows gather information about products and vendors.

b) Oversight by Technical Oversight Committee (TOC)

According to DPP, all acquisition above ₹300 crore have to undergo Technical Oversight by a TOC which is constituted by the Defence Secretary. This is done after the completion of Field Evaluation and after the Staff Evaluation Report has been accepted by DG Acquisition. TOC report is submitted to the Defence Secretary. TOC is responsible to see whether the trials, trial evaluations, compliance to QRs and selection of vendors were done according to prescribed procedures. In the selected cases, TOC did not make any observation. Moreover, to exercise technical oversight and to assist the DG Acquisition on technical matters, a post of Technical Manager has been created in the acquisition wing who is an Air Vice Marshall from the IAF (for the Air Force acquisition) who reports to the DG Acquisition and is thus independent from the Air Headquarters. The contribution of such an oversight committee may be reviewed by the Ministry.

c) Categorisation by Services Capital Acquisition Plan Categorisation Committee (SCAPCC)

Every capital acquisition proposal prepared by the Service HQ (Air HQ) goes through the SCAPCC or the SCAPCHC (Higher Committee) which decides the method of acquisition i.e. whether to Make the product indigenously, Buy and Make (through TOT) or outright purchase. They also recommend appropriate production agency in cases of acquisition through ToT. The SCAPCC is headed by the Deputy Chief of Perspective Plans and has JS-level representatives of all other departments of Ministry such as DoD, DDP, DRDO, Defence Finance etc. The SCAPCHC is chaired by the Chief of IDS-HQ and has the 3 vice chiefs and additional secretary ranking officers of all departments of the Ministry as members. The route of acquisition to be adopted i.e. whether to 'make', 'buy' or 'buy and make' is best decided by the Service HQrs/IAF, Ministry and Defence Finance. Leaving this decision to another organization i.e. IDS which is not a primary stakeholder serves little purpose while diffusing accountability.

The presence of two separate committees, having representatives of all stakeholders in both, results in duplication of efforts which further lengthens the procurement process.

d) Staff Equipment Policy Committee (SEPC)

ASQRs are drafted by the user directorate at Air HQ and finally approved by SEPC, while approving the ASQRs the SEPC obtains the comment of other possible user directorates, maintenance directorate, HQ IDS, DRDO, DDP, DGAQA, Directorate of Standardisation, Technical Managers and any other department, as deemed necessary.

ASQRs reflect the operational need of the users which are formulated by the user's directorate and approved by the competent authority of IAF. The contribution of an SEPC to approve ASQRs may be reviewed by Ministry.

e) Acceptance of Necessity (AON)

It is seen that the approved Annual Acquisition Plan *inter-alia* contains the quantities of the equipment to be procured and the cost estimate. Therefore, a separate Acceptance of Necessity (AoN) in each case may not be necessary. While taking up the procurement only a brief scrutiny would be required to cater for any change in scenario.

Ministry accepted the need for improving the process and stated that process re-engineering is being undertaken.

7.2 Frequent revisions in DPP

The activity of Capital Acquisition is guided by the Defence Procurement Procedure (DPP). The objective of the DPP is to ensure expeditious procurement of the approved requirements of the Armed Forces, in terms of capabilities sought and time frame prescribed, by optimally utilizing the allocated budgetary resources, while demonstrating the highest degree of probity and public accountability, transparency in operations, free competition and impartiality keeping in mind the goal of achieving self-reliance in defence equipment.

Every two to three years a new DPP is introduced with significant changes in procedures. The DPP was revised seven times since 2002 (2005, 2006, 2008, 2011, 2013 and 2016 and amendment in 2016). Further, DPP rules state that the DPP under which the AON is obtained / RFP is issued would apply till the signing of the contract, even if new DPPs have been introduced. Thus, procurement cases for which RFP was issued in 2006, was processed under DPP 2006 till the contract was signed in 2016, though four new versions of DPP were issued. This caused confusion and delay, diffusing the very objective of DPP. The following cases illustrate this point:

- i. In the procurement of 'WW' munition which was governed by DPP 2005, RFP was issued to eight firms in December 2005. However, by the time the firms responded and their bids were being evaluated, the new DPP 2006 was issued in September 2006. DPP 2006 required the bidders to submit an Integrity Pact before being allowed to participate in the tendering process. As one of the firms did not submit the Integrity Pact, the procurement process had to be cancelled and retendered causing delay of about two years.
- ii. DPP 2002 stated that after the issue of RFP there would be no change in QRs. If at all waiver of QR parameters was required, it should be approved by the Raksha Mantri. DPP 2005 fully prohibited any kind of waiver of ASQR after the issue of RFP. DPP 2013 stated that there would be no revision of ASQRs after the accord of AON by the DAC. However, if there are compelling circumstances, the AON has to be revised with the approval of DAC.

Ministry stated that DPP had to be amended based on the experience of earlier procurement process. Audit agrees with the response of Ministry. However, it needs to be examined, if and how the procurements that are underway are not disrupted by the amendment.

7.3 Need for an integrated autonomous procurement organisation

There are eight different agencies involved in capital acquisition, as shown in Figure 1. The key procurement activities viz. initiation of the case, framing of ASQRs, Technical and trial evaluation is carried out by Air HQ with Directorate of ASR (DASR) as the actual procurement wing. The DASR does the basic work of preparation of draft RFP, brief for Contract Negotiating Committee (CNC), minutes of CNC meetings and annual budgetary forecasting. Besides, solicitation of offers and Price negotiations, the Acquisition wing is involved in scrutiny and approval.

The procurement case has to pass the scrutiny of eight committees besides being approved by the Cabinet Committee on Security in case of high value contract. These committees on average have 10 members. Staff Equipment Policy Committee (SEPC) the Committee responsible for approving the ASQR has 12 members. Contract Negotiation Committee has 12 members. Such an organisation has resulted in diffused accountability.

At each stage, the case moves between Air HQ and the Acquisition wing of Ministry. The Group of Ministers in April 2000 and many subsequent reform committees have reiterated the need for an autonomous organisation for defence procurement integrating all the procurement functions. Study of the acquisition system of various countries showed that most countries had a separate integrated defence acquisition organisation

which brought the Service, technical, finance, quality assurance and administrative elements under one accountability centre. The services are involved only while defining user needs and Field trials. All other activities are undertaken by specialists within the procurement organisation. DGA of France, the Defence Procurement Agency (DPA) of UK, the Armament Corporation of South Africa and DGA of Germany are cross-functional, integrated acquisition organisations. In Ministry, such an integrated, autonomous structure is yet to be created.

Ministry replied that the acquisition wing of Ministry is an integrated and autonomous structure. Further a process re-engineering exercise is underway to fine tune the system. Audit noted that the Ministry's contention is factually incorrect because there are seven different agencies other than the Acquisition Wing involved in acquisition. Much of the acquisition work is done by Air HQ which is organisationally independent of the acquisition wing.

7.4 Lack of a Management Information System

There is no management information system to support the complex activity of acquisition by assisting the multiple agencies in decision making, monitoring and control. Full information on the status of all acquisition cases at any point of time, was not centrally available anywhere in the system. Information was extracted from files as and when required. There was no data base of vendors, details of previous procurements, products, prices, industrial data of price indices of different arms producing countries. Defence Procurement Procedure - 2002, 2005 and 2006 had envisaged a defence procurement network, electronically connecting all agencies involved in defence procurement. No efforts for development of an information system to support the acquisition organisation were taken till date.

Ministry stated that vendor database and a project database is maintained by IAF. However, IAF stated that it had no data base on this matter.

Recommendations

- 1. Ministry may undertake Business Process Re-engineering of the entire process of acquisition to remove redundant activities.*
- 2. The Acquisition wing, headed by the DG (Acquisition) was envisaged as an integrated defence organization. However, bulk of the acquisition related activities are still carried out in the Services' Headquarters. It needs to be seen if the Acquisition wing is serving the purpose it was set up for, or some Business Process Reengineering is required to achieve the purpose.*
- 3. A suitable integrated management information system should be put in place to support the acquisition process. This would bring about transparency, accountability and speed up the acquisition process.*

Conclusion

The defence acquisition system in India was fraught with inordinate delays and inefficiency. The system was not geared to assure value for money i.e., the air assets were acquired of the required quality, at the optimum price and within the given time.

There were serious shortcomings in formulation of the ASQRs. The ASQRs are exhaustive and contain narrow technical details, rather than prescribing functional specifications. ASQRs are sometimes vendor driven rather than user driven. This approach to formulation of ASQRs had the risk of pre-selection or inherent bias to a particular product and was against the best practices¹¹ of defence procurement. It restricted competition and choice; and therefore did not ensure selection of the most optimal product.

Evaluation of Technical and Commercial bids did not demonstrate consistency, objectivity and fair play in selection. The DPP which governs defence capital acquisitions, itself had several deficiencies.

The present acquisition organisation and process involves numerous redundant activities and moves through layers of scrutiny. The process was unjustifiably lengthy and cumbersome. The procurement organisation was made up of dispersed centres of accountability and lacked specialisation to ensure effectiveness of procurement.

Overall, the Acquisition process could not effectively support the Indian Air Force in its operational preparedness and modernisation.

These issues and deficiencies can only be overcome by a thorough overhaul of the acquisition system and business process re-engineering. More professionalism is needed; involvement of acknowledged experts, in the relevant field, from respected institutions should be considered. The officers manning the acquisition function should be trained in project and procurement management.

¹¹ Common Wealth Defence Procurement Guidelines, Defence Procurement Manual (DPM), Australia, Procurement Guidelines for Non-Development Items, Department of Defence, USA.

I. Acquisition of Apache Attack Helicopter

1. Introduction

Attack Helicopters (AH) are deployed to support the combat operations of Indian Army. Indian Air Force (IAF) is responsible for procurement, maintenance, training and manning of the Attack Helicopter squadrons, however, their operational control is with the Indian Army.

In November 2005/January 2006, Indian Army requested IAF for AH support to one of its fighting formation. As the available AH were inadequate, IAF proposed (2007) to procure 'AC2' Attack Helicopter, on a Single Vendor basis from M/s ROE, Russia. These helicopters were to be subsequently upgraded for night operations, also on Single Vendor basis, from M/s IAI, Israel as the firm had previously upgraded 'AC2' AH. Army's requirement was that the new helicopters should at least meet the ASQRs of the existing night upgraded 'AC2' AH. The Ministry rejected the proposal for single vendor case and directed for competitive tendering. The proposal for multi-vendor tender was approved (23 May 2007) by Defence Acquisition Council (DAC) based on ASQR of 'AC2' Helicopter. Initial ASQRs based on 'AC2' helicopter had 15 parameters which reflected most of the functions that included weight, speed, ceiling (height at which the helicopters can fly), range etc. However, before issue of RFP ASQRs were expanded to 166 parameters giving detailed technical and design parameters.

2. Initial Request for Proposal (RFP) and anomalies in its Evaluation

Request for Proposal (RFP) with 166 ASQR parameters was issued by Ministry of Defence (Ministry) to seven¹² vendors in May 2008. Only three¹³ vendors responded but all the three vendors were rejected in Technical Evaluation as they did not fully meet the Air Staff Qualitative Requirements (ASQRs) prescribed in the RFP. Out of the three vendors, 'AC3' of Augusta Westland met all ASQRs except the following two:

¹² M/s Kamov company, Russia, M/s Bell Helicopters Textron, USA, M/s AugustaWestland, UK, M/s Rosoboronexport, Russia, The Boeing company, USA, M/s Sikorsky aircraft corporation, USA, M/s EADS, France

¹³ M/s Eurocopter, France, M/s AgustaWestland, Italy and M/s Rosoboronexport

- As against the requirement of operating in the ‘temperature range from -40⁰ C to 55⁰ C’, the ‘AC3’ helicopter operated in the ‘temperature range from -32⁰ C to 50⁰ C’.
- As against the requirement of ‘pod mounted guns of 20 mm or higher calibre’, ‘AC3’ had provision of 12.7 mm calibre pod mounted guns.

The other vendors EADS and ROE did not meet 11 and 15 ASQRs respectively. Ministry recommended cancellation of tendering process and issue of fresh RFP after reformulating the ASQRs to make them more broad based. RFP was accordingly retracted in March 2009.

3. Reformulation of ASQRs

After retraction of RFP, RFI was issued (20 March 2009) to four¹⁴ vendors to confirm whether they complied with 10 of the ASQR parameters which were not met by any of the vendors during technical evaluation. M/s EADS did not respond to the RFI. M/s AgustaWestland without sharing the required details confirmed (March 09) that ‘AC3’ will meet these ASQRs. M/s Bell responded that it cannot disclose the requested technical information in the absence of any agreement with the Indian Government. Another vendor M/s Boeing confirmed (April 2009) compliance of eight specifications but refused to confirm specification relating to Electro Optical (EO) and Electronic Warfare (EW) system as it was considered classified information and requested that Government of India (GoI) must directly request US Government for these capabilities. Confirmation was not obtained by IAF from M/s Rosoboronexport, Russia, and M/s Sikorsky aircraft corporation, USA which were also leading manufacturers of Attack Helicopters.

Audit also noted that M/s Boeing had made further suggestions for deleting/modifying few other ASQRs on which comments were not even sought for from the vendors in the RFI issued in March 2009. M/s Boeing had further stated that it would not respond to RFP with these parameters.

The Staff Equipment Policy Committee¹⁵ reviewed the ASQR on 30 March 2009. It admitted that the ASQRs were very stringent. Therefore, out of 166 ASQR parameters, 35 parameters were modified, of which 09 parameters were removed and 26 were diluted. Two of these parameters were those which were not met by AW. The required temperature range was reduced to -30⁰ C to 45⁰ C, which ‘AC3’ could have met in the first procurement itself. Similarly, the requirement of 20 mm pod mounted gun was

¹⁴ M/s Bell Helicopter India, M/s Boeing International Corporation, M/s EADS and M/s AgustaWestland

¹⁵ Committee which is responsible for approving the ASQR

totally removed in the revised ASQR of 2009. As a result, 'AC3' could have met the ASQR in the first procurement itself. Further, were these parameters not operationally important, then they could have been waived in the technical evaluation of 2008 itself, and 'AC3' would have qualified, obviating the need for retendering.

Ministry stated that DPP-2008 does not allow modification of ASQRs after issue of RFP, however, in the present case, RFP of 2008 was withdrawn prior to modification of the ASQRs and all the laid down procedures were followed while modifying the ASQRs.

Audit further noted that while revising the ASQRs in 2009, SEPC/IAF deleted 3 parameters and diluted one operational parameter based on the *suo moto* suggestion of M/s Boeing, USA though M/s Augusta Westland was able to meet these parameters.

Ministry stated that RFIs were issued to seek the technical details of the equipment being offered so that the RFP could be better aligned to global technologies and operational requirements are appropriately met. Ministry also stated that ASQRs were refined to bring them in line with the prevalent global technologies while ensuring a wider vendor base and as per provisions of DPP. Ministry clarified that ASQRs were not modified on the inputs of any single company but based on the information available from different sources. Ministry further stated that the finalisation of ASQRs regarding the temperature for operations was carried out considering the environmental conditions under which operations are conducted in the desert.

Audit is of the view that the process of formulating ASQRs through interaction with few vendors poses the risk of aligning the ASQRs according to the select vendors. Further the purpose of aligning the ASQRs to global technologies and broadening the vendor base could not be achieved. RFIs was issued to selected vendors for confirmation of limited ASQRs parameter which were not met by any of the vendors during technical evaluation of 2008. RFI was not issued to all the leading manufacturers of Attack Helicopters. Further, if the IAF's operational need was an upper temperature limit of 45 degree then the previous ASQR of 2008 should not have prescribed 55 degrees.

4. Retendering

Fresh RFP was issued in May 2009 to six¹⁶ vendors. Three vendors responded, of which two¹⁷ were the same who responded in earlier process. Thus, even after issue of

¹⁶ M/s Rosoboronexport, Russia, M/s AugustaWestland, UK, M/s Eurocopter, France, M/s Bell Helicopters Textron, USA, M/s The Boeing company, USA and M/s Sikorsky aircraft corporation, USA

¹⁷ M/s AugustaWestland, Italy and M/s Rosoboronexport, Russia

RFP to six vendors twice, only three firms responded in both cases of which two were same. Further one of the vendor M/s Eurocopter did not respond as its Attack Helicopter Tiger HAD was under final phase of development and the vendor did not want to commit for lifetime repair and maintenance support as required under the life cycle costing method prescribed in the RFP for determining the L1 vendor. This shows that Ministry needs to improve its knowledge gathering and vendor base along with engagement of experts in the field.

5. Technical Evaluation

TEC found all the three vendors (AgustaWestland, ROE and Boeing) to be compliant with all ASQR parameters. However, M/s AgustaWestland and M/s ROE had not provided details of certain important system/sub-systems¹⁸ and agreed to provide them but demanded additional price for these alterations. The two firms had also not submitted the proposal for Follow On Support (FOS) and MToT and stated that they will submit the offer after site survey of the facilities available with the IAF.

TEC cleared all the three helicopters for Field Evaluation Trials (FET) and recommended that waiver be granted to M/s Augusta Westland and M/s ROE for not submitting the detailed information as mentioned above and to allow them to submit additional price quote for these additionalities. TEC also recommended that cost of FOS may be obtained from the two firms before opening of price bid and the price of MToT after site survey of IAF facilities.

DG (Acq) again wanted to foreclose the case and retender, instead of forwarding the case for waiver. But IAF insisted that since the bids are fully compliant to the technical requirement of the ASQRs and only non-compliant to some of the RFP requirements there would be no gain in retendering and instead it will delay the procurement, adversely affecting the operational preparedness. Thus, the three helicopters were cleared for FET and simultaneously approval of DPB was sought for the above deviations. Audit noted that M/s Augusta Westland did not participate in the FET. ROE was found non-compliant in 17 ASQR parameters and M/s Boeing was technically qualified in the FET.

Thus, it may be seen that even after retendering, the vendors could not meet the RFP requirements and Ministry was contemplating retendering for the second time. In July 2010, DPB approved the deviations.

¹⁸ HUMS ground station, EW ground station software for the EW Systems, test equipment for calibration of STE, Cost of TTL determined reserves.

Therefore, it took Ministry 36 weeks to approve the TEC report against the laid down period of 4 weeks after obtaining deviation from DAC under Para 75 of DPP. Carefully formulated ASQRs would have avoided the occurrence of such delays.

Ministry in its reply reiterated the facts and stated that TEC report was vetted by the TOC and TOC was approved by DAC after due deliberation. Ministry further stated DPP 2008 provides for seeking minor deviations provided necessary DAC approval are obtained.

Para 35 of DPP-2008, states that the technical offer once submitted should not be materially changed subsequently; however, minor variations which do not affect the basic character/profile of the offer may be accepted. It further stipulates that no extra time should be given to any vendor to upgrade his products to make it compliant with QRs and the original commercial quote submitted earlier must also remain firm and fixed. As such the opportunity provided to M/s AgustaWestland and M/s ROE to modify its technical bid and price bid was technically in violation of DPP.

6. Price Evaluation by Contract Negotiation Committee (CNC)

As per DPP, the process of commercial negotiations should commence after acceptance of Staff Evaluation Report and TOC/TOEC Report. The TOC was approved by Defence Secretary in October 2011, but the CNC was constituted after a lapse of nine months in August 2012. This was on account of delay in technical evaluation of the offset proposal of the vendor, which was finalised in June 2012, after nine months.

6.1 Difficulties in Benchmarking

Price estimates of attack helicopter were not obtained initially through RFI. The only available attack helicopter with IAF was 'AC2', which was procured in 1989. Therefore, the benchmarking was done by IAF on the basis of the AW-101, AgustaWestland VIP helicopter which was procured by IAF in 2010.

To the basic cost of AW-101 helicopter, an annual escalation factor of 5 *per cent* (based on thumb rule) was applied to arrive at the price as in 2012. The price of Systems/equipment which were available in the AW-101, but not available in the AH-64D were deducted. The price of additional equipment and modification such as armament systems, target acquisition and designation systems, etc. which were available on AH-64D but not available on AW-101 was added. The price of additional equipment was assessed on the basis of the cost available in previous contracts.

Committee had benchmarked the price as under:

Table-9: Benchmark Prices

Item	Cost (in MUSD)
Direct Acquisition cost of aircraft equipment other systems and services	2013.918
Total Cost of Acquisition	3230.434

6.2 Price Evaluation

Commercial proposal and offset proposal of the sole technically qualified vendor M/s Boeing were opened on 14th September 2012. The Direct Acquisition price quoted by Boeing was 1928.67 MUSD and the Total Cost of Acquisition quoted by the firm was 2037.17 MUSD. Since the prices quoted by M/s Boeing were less than benchmark price (DAC-2013.918 MUSD and TCA-3230.43 MUSD) therefore price was not negotiated in CNC meetings.

The draft main contract submitted by M/s Boeing was not as per the standard document given in the DPP and the offset proposal submitted by the M/s Boeing was not as per the offset guidelines of DPP-08. Therefore, it took over two years to finalise the draft contract after nineteen internal and eight external¹⁹ CNC meetings between September 2012 and October 2014.

CNC finally submitted their report in November 2014 and recommended procurement of 'nh' number of Attack Helicopter along with associated equipment and missile at a cost of MUSD 2086.997.

Audit observed that in spite of L1 price being less than the benchmark price, CNC took two years three months to complete the price evaluation and negotiations against the laid down period of 18 to 26 weeks. The delay was primarily due to finalisation of terms and conditions of main contract and offset contract with M/s Boeing.

Ministry in its reply reiterated the facts and stated that considering the complexity of the case and aligning the procedures between the FMS and DPP, several round of negotiations had to be conducted to ensure alignment of the draft with the provisions of DPP. Ministry further stated that as a result of requesting USG to waive all non-recurring recoupment costs associated with the FMS component of the proposal, the CNC was able to achieve a saving of 40.5 MUSD in the overall procurement cost.

¹⁹ Internal CNC meeting is held among the CNC members
External CNC meetings are meetings of the CNC with the vendor

However, request for waiver of all non-recurring recoupment cost associated with FMS component of the proposal was made based on earlier FMS procurement cases and accepted by USG. The fact remains that CNC took inordinate time in finalising the Contract.

7. Procurement of Maintenance Transfer of Technology

The RFP required the vendors to offer ToT for maintenance of the helicopters. The contract for MTOT was to be signed after concluding the main acquisition contract. M/s Boeing offered MToT for a price of 22 MUS\$D. After surveying the existing maintenance facility of IAF, the firm stated that the IAF depot will require extensive infrastructure development before implementing MToT for Apache Helicopters. The cost of developing this infrastructure would have to be met by IAF. Since the support was required for only Apache helicopters, M/s Boeing suggested that instead of investing in infrastructure, IAF can get the Attack Helicopters repaired and maintained either at Boeing's own facilities or that of its suppliers. Further, M/s Boeing stated that the transfer of technology for D level maintenance was controlled by the US Government for which Ministry would have to approach the US Government. In view of the limited number of Apache Attack helicopters being procured, IAF decided that it would be prudent and cost-beneficial not to seek MToT.

Audit is of the view that in these circumstances maintenance agreement should have been finalised and signed along with main contract. Ministry would have been in a better position to negotiate the cost of such Long Term Maintenance Agreement.

Audit is also of the view that while doing the cost benefit analysis of MToT versus outsourcing of maintenance to M/s Boeing, the fact that MToT would have led to the development of indigenous capability should have been given due consideration and weightage. The strength of Apache helicopter was to increase with the passage of time as Army was buying another six helicopters. Therefore, IAF would be dependent on M/s Boeing for maintenance throughout the life of these helicopters. Further, there will be a cost of transporting the helicopters components to the vendor facility and the turnaround time which was not factored earlier.

Ministry reiterated the facts and stated that the Apache Attack helicopter adopts an 'On-Condition' based maintenance philosophy and therefore requires no schedule Depot level servicing. However, M/s Boeing in its bid quoted 22 MUS\$D for MToT and later on suggested to get the Attack Helicopters repaired and maintained either at Boeing's own facilities or that of its suppliers. Further, non-procurement of MToT was in deviation from AON for which approval of DAC was not taken.

8. Procurement of life expired Missiles

RFP stipulates that all the rockets and missiles should have a minimum life of 10 years extendable to 20 years with refurbishments (if required). GoI procured 'nj' number of Missile costing 49.6 MUSD from the stock through the US Army Supply system. It is also mentioned that the US Government will attempt to issue missiles from manufacturing lots 2003, 2004 and 2005 respectively. As per delivery schedule these missiles were to be delivered in 2018.

Thus Ministry had procured Missiles which were 14 to 16 year old at the time of delivery. By that time, these missiles will be delivered the life as well as 50 *per cent* of refurbished life of these missiles would have been expired.

Ministry in response stated that Missiles are not in current production and will be delivered to India from the existing stock of the US Army with new precursors²⁰. These missiles shall be regularly inspected through the US Army Stockpile Reliability Program to ensure adequate life is available. However, Audit noted that United States Government is supplying missile from their stock whose normal life of 10 years has expired.

9. Delay in signing of Contract

The contract for procurement of Attack helicopter was concluded with M/s Boeing, USA on 28th September 2015 for USD 1.15 billion with completion period of 77 months. Delivery of first consignment of attack helicopters was scheduled between 46 to 48 months i.e. between July 2019 and September 2019 and balance between 51 to 54 months i.e. December 2019 and March 2020. Government of India (GoI) had also entered into Letter of Offer and Acceptance (LOA) with United State Government (USG) in September 2015 for supply of US controlled items that included aero engines, missiles, radars, etc at a cost of USD 932,368,778.

DPP laid down a period of four to sixteen weeks after finalisation of CNC for signing of contract. The LCC model adopted in the present procurement became an unreliable decision making tool due to non-inclusion of all the required relevant cost element, IAF/ Ministries took 40 weeks for signing the contract due to incorrect adoption of LCC model.

Ministry reply was silent about delay in signing of contract.

²⁰ Precursor warhead is the biggest limiting factor on the life of missile

II. Acquisition of Heavy Lift Helicopter (CHINOOK)

1. Introduction

Heavy Lift Helicopters (HLH) are used to support combat operations of the Army by transporting troops, artillery gun and other equipment to combat locations. Though it is used in support of Army, these helicopters are operated by IAF. IAF had been utilizing Mi-26 heavy lift helicopters since 1987. Since the calendar life of Mi-26 helicopters was coming to an end, replacement of these helicopters became urgent to retain and enhance the operational heavy lift capability of the IAF. As of 2015, only few Mi-26 helicopters were left with IAF, which were also nearing completion of their lives.

Defence Acquisition Council (DAC) accorded AON on 21 January 2008 for procurement of 'nk' Heavy Lift Helicopter (HLH) at an estimated cost of ₹2461.41 crore along with offset and MToT.

2. Planning

Before Ministry issued RFP for the procurement of 'nk' HLH, IDS Headquarters in February 2009, decided that additional 'nm' helicopters should also be included in the procurement proposal. Ministry did not include this requirement on the ground that approval of higher authorities would be required to include this additional quantity which would delay the whole process. Ministry decided to go ahead with the already approved quantity of 'nk' helicopters and take up the procurement of 'nm' helicopters later. As a result the planning process was not comprehensive.

3. Formulation of ASQRs

3.1 User requirement and operational needs ignored while formulating QRs

In January 2006, during the Apex Body meeting for management of strategic assets, it was decided to procure the 'Chinook class' helicopter. Since the Indian Army wanted a Chinook class of helicopter, IAF in April 2006 prepared the ASQRs for HLH based on information sought from M/s Boeing, USA for its Chinook (CH-47) helicopter. Based on this ASQR, IAF initiated the procurement process. Meanwhile, Indian Army in October 2006 conveyed to IAF that the ASQR should include the requirement for transporting Artillery Gun as underslung load. Later in March 2007, Army conveyed to IAF that the helicopter should also be capable of carrying the Artillery Gun inside the

cabin of the helicopter. It is not clear what prompted the Army to change its requirement and, if it was that important, why they did not insist at the time of AON approval. But IAF did not include this requirement of the Army in the ASQR on the ground that, if this was included, only Mi-26 helicopter of ROE would be able to meet this parameter and may therefore restrict competition. The dimension of Chinook helicopter cabin could not have accommodated the gun inside the cabin. Further, before finalizing the ASQRs in December 2008, comments of the IAF unit which operates the HLH was sought. The unit replied that the kind of cargo the unit is tasked to carry cannot be carried by the Chinook or CH-53 of Sikorsky which were under consideration.

Ministry (Directorate. of standardization) in October 2007 suggested that since the helicopter has inter-service applicability, inputs from other two services should be obtained before formulation of ASQRs. However, IAF did not agree to this stating that the HLH would be flown and operated only by IAF, and therefore only IAF should decide. This was not correct because ASQRs or user requirements have to be based on the need of actual users and not just the need of the operator.

Ministry stated that the requirement to carry Artillery Gun inside the cabin was not considered because this operational need was later withdrawn by the Army in Jan 2008; indeed the Army withdrew its requirement after IAF submitted a note to SCAPCHC on 03 December 2007 stating that the Army's requirement to carry Artillery Gun internally would lead to a Single Vendor situation. It further stated that, the Army's requirement would be met by the existing fleet of Mi-26. Based on IAF's view SCAPCHC decided to delete this parameter. However, IAF's views were not supported by the fact that as of September 2015, only few Mi-26 helicopters were left with IAF, which were also nearing completion of its life.

3.2 ASQRs aligned to Chinook

Audit noted that though the existing Mi-26 helicopters were to be replaced with new HLH, the parameters formulated for procurement were much lower. The max pay load capacity was reduced to 11000 kgs as against the 20000 kgs of Mi 26 helicopters. Seating capacity was also reduced to 45 troops as against the 82 troops of Mi-26 helicopters. The max underslung load was reduced to 10,000 kgs as against the underslung load capacity of 20,000 kgs of Mi-26 helicopter. The revised ASQR parameters matched those of Chinook helicopter as indicated in the table given below:

Table-10: Comparison of ASQRs parameters

Helicopter	Max pay load capacity	Seating capacity	Underslung load capacity
Mi-26	20 Ton	82 troops	20 Ton
Chinook	11 Ton	45 troops	10 Ton
ASQR	Not less than 11 Ton	Not less than 45 troops	Not less than 10 Ton

Ministry stated that since it prefers multi-vendor bids, broad based ASQRs were necessary. Ministry also stated that no operational requirement has been compromised in any manner. The ASQR catered and ensured infusion of better technology and enhanced capability while ensuring the wider vendor base thereby ensuring competitive bidding. However, Audit noted that contrary to the Ministry's claim, the ASQR did not increase the vendor base and competition. Against the RFP issued to six, only two vendors had responded. Further, Ministry has not contested that the ASQRs were aligned to Chinook Helicopter.

3.3 Frequent revision of ASQRs

Based on the initial ASQRs proposed by IAF, DAC accorded AON on 21 January 2008 for procurement of Helicopters. Again, in March 2008, the ASQR was modified by IAF. In January 2009, RFI was issued to M/s Sikorsky, M/s Rostovertol Russia and M/s Boeing, USA. M/s Boeing and Sikorsky were asked to confirm six parameters and whereas M/s Rostovertol was asked to confirm five parameters. M/s Boeing confirmed six parameters as specified and M/s Rostovertol confirmed four parameters out of five. M/s Sikorsky did not respond. Again RFI was issued to three vendors in March 2009. M/s Boeing confirmed eight parameters out of nine and M/s Rostovertol confirmed fourteen parameters out of fifteen. M/s Sikorsky did not respond.

The ASQR parameters were revised five times between 2006 and 2009 (Annexure). Thus the ASQRs were being drafted in consultation with the vendors or in other words were being modified according to what was offered by them rather than the user need. The primary objective of these helicopters was to provide heavy lift support to the Army for its combat operation.

Ministry stated that based on the queries and subsequent replies from the vendors, the draft ASQR were formulated and finalized by SEPC. Audit noted that the reply of Ministry confirms the Audit finding.

3.4 ASQR parameter included without due care

The ASQR required that the helicopter should be fitted with a particular Identification of Friend & Foe (IFF) system. Later during Field Evaluation Trial (FET), it was decided that Indian made IFF manufactured by HAL would be installed in the helicopter. Since the HAL manufactured IFF system was already available, this should have been considered while making ASQR.

Ministry stated that during FET when it was found that the US Army IFF could not be fitted on the Helicopter, it was decided to fit the HAL manufactured IFF. Audit noted that the reply of the Ministry confirms the audit finding that if the indigenous IFF system was already available, IAF should have considered it while framing the ASQR and RFP.

4. Request for Proposal (RFP)

As per DPP 2008, RFP was required to be issued to vendors within 1 month (i.e. 4 weeks) from the date of AON. There was considerable delay of 15 months in issue of RFP to the vendors which was primarily due to delay in vetting of the RFP. Ministry wanted to adopt the LCC model for price evaluation and IAF accordingly included the LCC model.

RFP was issued in May 2009 to six²¹ vendors but only two vendors M/s Boeing and M/s ROE responded. Despite all the efforts taken in modifying the ASQRs which was purportedly done to increase the competition the vendor base did not increase.

The requirement of chaff and flares for Counter Measure Dispensing System was not included in the RFP, for which amendment to RFP was issued to vendors (September 2009).

Confirming the facts Ministry in reply stated that numerous agencies were involved in the formulation and vetting of RFP and time was required for due diligence on all aspects. Regarding issue of amendment in RFP Ministry stated that number of Chaff and flare required were missed out and were added through an amendment. This once again highlights the lack of professionalism in fixing ASQR in the defence acquisition process.

²¹ M/s Eurocopter, France; M/s Bell Helicopters, USA; M/s Augusta Westland, UK; M/s ROE, Russia; M/s Boeing, USA; M/s Skirosky, USA

5. Technical Evaluation

In the TEC, Chinook helicopters offered by M/s Boeing and Mi-26 of M/s ROE were technically qualified.

6. Field Evaluation Trial

6.1 Inadequate Field Evaluation Trials

Field Trials included flight trials, maintenance evaluation trial and quality assurance assessment trials. The trials were conducted in two phases. Phase-I was conducted in India and phase-II was conducted at vendor specified locations. Objective of the FET was to evaluate the performance and handling qualities of aircraft vis-a-vis the ASQRs.

During FET, it was noted that Chinook helicopter did not meet eight critical ASQR parameters.

Mi-26 of M/s ROE also did not meet five ASQR parameters.

Thus, despite these non-compliances, both MI-26 and Chinook were cleared based on the presentation/assurance of the vendor to rectify the ASQR non-compliance before delivery.

It was observed in Audit that in terms of capability, the Mi-26 helicopter offered by M/s ROE was almost double capacity than that of CH-47 helicopter offered by M/s Boeing as under :

Table-11: Comparison of load capacity

Sl. No.	Operational Capability	CH-47	Mi-26
1.	Max pay load capacity	11304 kgs	20000 kgs
2.	Max underslung load	11660 kgs	20000 kgs
3.	Seating Capacity	45 fully equipped	82 fully equipped

It would be seen from the above that there was large difference between the payload capacity of Mi-26 helicopter and CH-47. Mi-26 helicopter was capable of carrying 20 tons of load in a single drop mission as against pay load of 11 ton only by CH-47 helicopter. Seating capacity of Mi-26 helicopter was 82 with fully equipped troops whereas the seating capacity of Ch-47 Chinook was only 45.

Thus, for transporting weapons, equipment and men to support combat operation of army, CH-47 would have to make double the trips as compared to Mi-26 helicopter. The selection of Chinook was according to the Lowest priced technically acceptable model of bid evaluation prescribed in DPP.

Ministry confirmed that in case of Chinook, the equipment mentioned was not fitted on the trial helicopter. The compliance report was based on the presentations on the requisite equipment/ system (as per ASQR) provided by M/s Boeing during phase 2 of trials.

6.2 *Non-inclusion of Army representative in the FET*

The requirement for procurement of HLH was projected by Army. The main purpose of procurement of HLH was transportation of essential war fighting equipment and troops in remote/strategic locations which are not easily accessible by other means of transportation. It was however, observed that while conducting field trials of HLH, the representative of Indian Army was not associated.

Ministry's reply is silent about the non-inclusion of Army rep in the FET.

6.3 *Submission of revised bids due to delay in technical evaluation*

Phase-I & II of FET in respect of M/s Boeing was completed as per schedule. However, M/s ROE requested for postponement of dates by three months. After, Phase-I trials, M/s ROE again requested for postponement of dates for Phase-II. There was a delay of more than 3 months obtaining approval of RM for extension. FET were re-scheduled from 27 March 2011 to 15 April 2011. Meanwhile the validity of commercial offer submitted by both the vendors was expiring on 20 April 2011. It was not possible to complete the field evaluation before the expiry of validity of commercial proposal and both the vendors were asked to extend the validity of commercial offer up to 30 December 2011 or to submit fresh commercial bids. Both the vendors submitted fresh commercial offer with validity up to 31 December 2011. DPP provides that if there is delay in the technical evaluation stage then either the vendors could extend the validity of their price bids or submit fresh price bid. Since at this stage, only two vendors were left this may have resulted in non-competitive price.

Ministry stated that fresh commercial offers were returned unopened and there was no impact on the bid price due to this. Audit is of the view that providing for price variation factor in the price bid was a better method than calling for fresh price bids. DPP needs to be revisited in this regard.

7. Price Evaluation

It took one year after the TOC report (20 September 2011) to constitute the Contract Negotiation Committee (August 2012). This was because of the delay in technical evaluation of the offset offer. CNC was completed on 17th November 2014. The CNC took 27 months in negotiating the contract as against the one and half months prescribed in the DPP-2008.

7.1 Benchmarking of price

The benchmark price was estimated on the basis of Budgetary quote obtained from M/s Boeing which was USD 39.5 Million in 2006 and the price of Mi-26 helicopter purchased in 1986 (last purchase price). The average of these two prices was taken as the benchmark price.

The benchmark price for Total Life Cycle (TLC) was determined as 1.95 Billion USD. The TLC cost quoted by M/s Boeing was USD 1.472 million and that of M/s ROE was 8.395 billion Euro. Therefore, M/s Boeing emerged as L1 vendor.

According to RFP the L1 was to be determined on the basis of TLC, the acquisition contract was signed on the basis of Direct Acquisition Cost (DAC) i.e. M1 component of TLC. CNC found that as against the benchmark Direct Acquisition Cost of 737.64 MUS\$D, the price quoted by M/s Boeing was USD 1206.918 million and that of M/s ROE was Euro 1064.351 million. Since the price quoted by M/s Boeing was much higher than the benchmarked price, the benchmark price for direct acquisition was revised from USD 737.64 million (₹4119.72 crore) to USD 1196.21 million (₹6416.47 crore) which almost matched the price of M/s Boeing.

Revision of benchmark price after opening of the price bids was incorrect and against the spirit of para 51 of DPP-2008. This defeated the very purpose of benchmarking, which was to verify the reasonability of the prices.

Since Direct Acquisition Cost was a part of the Total Acquisition Cost, increasing the benchmark price of only Direct Acquisition Cost without increasing the benchmark of Total Cost of Acquisition was incorrect.

The justification given by Ministry for the revision of benchmark price of Direct Acquisition cost was that in its Budgetary Quote, M/s Boeing had quoted the price of the basic standard aircraft. The firm had charged an additional 13.8 MUS\$D per helicopter for Indian specific requirement This worked out to 18 *per cent* of the cost of each helicopter. In addition to this, the offset loading cost of maintenance data systems

and field logistic services was not taken into account while estimating the benchmark price.

Audit is of the view that the above justification should have been used to explain the difference between the benchmark price and the price quoted by M/s Boeing instead of revising the benchmark price.

Audit noted that Ministry in its reply had not contested the substance of the audit findings.

7.2 Assessment of price evaluation

As specified in the RFP, the L1 vendor was to be determined based on the Total Cost of Acquisition (TCA) and contract was to be signed for the Direct Acquisition Cost. The comparison of the price bids of the two firms for various components of LCC is tabulated below:

Table-12: Comparison of quoted rates

(Price ₹ in Cr at the applicable exchange rate)

Sl. No	Item	Component	Benchmark Price	M/s Boeing Bid	M/s ROE
1.	Direct Acquisition Cost	M1	4119.72	6474	7422
2.	Cost of TTL based reserve	M2	3862.70	293	9364
3.	Cost of schedule I level servicing	M3	11.08	2	19
4.	Cost of D level overhaul	M4	1029.93	333	8117
5.	Operating cost	M5	1901.90	1743	3152
	Total cost of acquisition		10925.33	8845	28074

The Total Cost of Acquisition of M/s Boeing was the lowest at ₹8845 crore in terms of the total payments to be made during the entire life of the aircraft, as compared to ₹28074 crore of M/s ROE. After negotiation of the final price, the Direct Acquisition price was reduced from USD 1206.91 million (₹6473.91 crore) to USD 1180.67 million (₹6333.11 crore).

The price quoted by M/s Boeing for the component M2 to M4, relating to maintenance was very low in comparison to the price of M/s ROE as well as the benchmark prices. For instance, for TTL based reserves and Cost of D level overhaul, Boeing's offer was 7.6 per cent and 17.5 per cent respectively. Difference in cost of the two helicopters was attributed to the maintenance philosophy of the two helicopters.

Operating cost mainly consists of fuel cost. The cost of fuel consumed for the total life of 9000 flying hours for the two helicopters is shown below:

Table-13: Comparison of operating cost

Sl. No.	Helicopter	Fuel consumed in one hour mission during FET (Kgs)	Total consumption for 9000 hours for 15 helicopters (kg)	Total operating cost (₹ in crore)	Operating Cost per Ton of load
1.	Ch-47 Chinook	1393.36	18,81,03,600	1742.97	158.45/T
2.	Mi26	2520	340,200,000	3152.29	157.61/T

(Cost of fuel is ₹92.66/kg.)

The operating cost of Chinook was ₹1742.97 crore while that of Mi-26 was ₹3152.29 crore which was twice that of Chinook. But the lift capability of Chinook helicopter was almost half the capability of Mi-26. Chinook helicopter would have to make two sorties to drop the same load as Mi-26 helicopter which would require only one sortie. If we factor in this aspect, the operating cost per Ton of load works out to be cheaper for Mi26 at ₹157.61/T as against ₹158.45/T for Chinook. In a value based bid evaluation method this aspect would have been factored.

Ministry stated that Mi-26 helicopter has highest pay load at MSL. The load can be transported by road /rail. The employment of the helicopter is at altitude and in hilly regions. Not only the Chinook has low operating cost, the compact size of it gives it an added advantage of landing in small helipads and a narrow valleys, thus giving more flexibility in its ops requirement as compare to Mi-26 helicopter. However, IAF had been using Mi-26 helicopter since 1987 for heavy lift at high altitude in hilly regions. Secondly, for transporting loads to small helipads and narrow valleys there are other helicopters that include Mi-17. Heavy lift helicopter are meant for lifting heavy loads.

7.3 LCC method for price evaluation

Ministry adopted the LCC method for price evaluation without complete knowledge or expertise in applying it. Audit noted that all elements of Life Cycle cost were not included during evaluation. For instance, cost of facility construction, cost of future upgrade and modifications were not taken into consideration.

While Ministry was able to calculate the NPV of the payments for Direct Acquisition because the timelines for payment were specified in the bids, it was unable to calculate the NPV of the component M2 to M5 which were spread out for more than 20 years.

Ministry stated that TLC model included all elements that contribute to the cost of procuring operating and maintaining the equipment over its stipulated life. However, because all elements of costing for determining the total life cycle cost was not considered as brought out above.

7.4 Delays in Contract Negotiations

Contract negotiations took 27 months wherein 19 internal meetings and six external meetings were held to negotiate the quoted price, terms & conditions of main contract and offset contract. After prolonged negotiations, M/s Boeing agreed to a price reduction of USD 1.75 million per helicopter, total USD 26.25 million (i.e. ₹144 crore) from the direct acquisition cost, which was 2.17 *per cent* lower than the quoted cost.

Thus, while CNC took a considerable period of 27 months as against one and half months prescribed in DPP-2008, it achieved a price reduction of 2.17 *per cent*.

Ministry while accepting the delay in CNC stated that Contract negotiation for the Chinook HLH were complex and required due deliberations. Valuation of each parameter was studied and analysed in detail.

8. Delay in CFA Approval

Audit observed that the case was initiated for the approval of CCS in October, 2014, however, the CCS approval was granted in September 2015. During this period the case was submitted to Ministry (Finance) and the case was returned five times with observation/queries. Further, the case was returned by Ministry of Finance two times with their observation/queries.

Thus 10 months were taken in obtaining approval of CFA as against four months prescribed in DPP.

While accepting the delay in CFA approval Ministry stated that the acquisition was complex and each aspect was deliberated. Each issue was analysed threadbare and when a reasonable conclusion was derived the case was approved.

9. Conclusion of contract

Contract was signed with M/s Boeing, USA on 28 September 2015 at a cost of USD 1.18 billion. An amount of ₹155.09 crore on not to exceed basis was sanctioned for creation of infrastructure for the new Helicopters Squadron to be inducted at an Air Force Station. As per contract, delivery will commence after 36 Months from the effective date of contract i.e. from September 2018 and to be completed within fifty-four months i.e. by March 2020.

10. Non creation of infrastructure for induction of HLH at an Air Force Station

As per CCS Note of September 2015, one new squadron of HLH was planned to be set up at a designated Air Force Station, for which necessary infrastructure was required to be created at the Station. As per contract schedule, the delivery will commence from September 2018 and will be completed by March 2020. It was noted that the work services for creation of necessary infrastructure which was sanctioned at a cost of ₹145.98 crore to be completed by 2021 were yet to commence.

Thus, the infrastructure would not likely be available at the station till March 2021 for induction of a new HLH Squadron.

Ministry stated that being a large project the time taken for costing, design, tendering and contracting has inherent procedural time periods. However, the sanction for infrastructure was accorded by Ministry in March 2018 whereas the contract for procurement of HLH was concluded in September 2015. Thus, there was a delay in the initiation of works procedure.

III. Procurement of Basic Trainer Aircraft

1. Introduction

The flying training of pilots in IAF is carried out in three phases. The Phase I training is meant to teach basic flying while Phase II teaches advanced level of flying, systems operations and armament work. Phase III teaches higher level of military aviation such as combat flying tactics and advanced armament work.

IAF had been utilising the Hindustan Primary Trainer (HPT)-32 aircraft as the Basic Trainer Aircraft for training of pilots under Phase I since 1988. The life of HPT-32 was to expire from 2014 onwards. The HPT-32 aircraft was also besieged with difficulties related to reliability and safety including engine failure, poor glide characteristics and absence of an ejection seat.

Due to a large number of accidents, the entire HPT-32 fleet was grounded in July 2009, thus immensely slowing down the basic training of pilots to a standstill. There was an urgent need to induct a suitable training aircraft.

IAF in August 2009 had initiated a proposal to procure 181 Basic Trainer Aircraft (BTA) which were to be indigenously produced at HAL. With the grounding of the entire HPT fleet, Ministry decided for outright purchase of 75 aircraft leaving the remaining 106 aircraft to be indigenously produced by HAL. Ministry in September 2009 sanctioned the urgent purchase of 75 Basic Trainer Aircraft through global tendering at an estimated cost of ₹4569.44 crore. It was also decided that in case HAL does not fly its first aircraft by the time the first imported aircraft arrives, then another 38 aircraft (50 *per cent*) would be procured under option clause of the import contract within three years of signing of contract i.e. by May 2015.

The contract for 75 aircraft was signed in May 2012 and its delivery was completed by November 2015. Audit noticed that Ministry had neither placed order under option clause nor indigenous aircraft could be made available by HAL.

Thus, the requirement of 181 aircraft have not been met by the IAF.

Ministry stated that the process for Preliminary Staff Qualitative Requirements (PSQRs) formulation for indigenously developed trainer aircraft commenced in 2003 which culminated with issue of PSQRs in March 2009, more than five years before the planned phasing out of HPT-32.

However, the Ministry had not given ‘Go-Ahead’ to the project and the DPR submitted by HAL in May 2013 was pending with the Ministry for approval. Therefore, even after almost ten years (January 2019), neither the BTA has been produced by HAL nor has order been placed for another 38 aircraft under the option clause.

2. Formulation of ASQRs

Before undertaking the procurement of 75 aircraft through competitive tendering Air HQrs issued (24th August 2009), Request for Information (RFI) to eleven²² vendors. Budgetary quotes i.e. approximate unit cost of the aircraft (in MUSD) were also called for. In addition, RFI was also issued to Defence Attaches in Germany, Korea, Poland, New Zealand, Brazil, Romania, USA, Russia, Italy, France, UK and Israel.

Seven vendors responded to RFI but responses of only three vendors were found in record. The response of four vendors were not available with IAF. Based on responses to RFI, IAF drew up a compliance table to compare if they met the ASQR of March 2009 which was given to HAL. All 7 vendors met most of the parameters. Later, (October 2009) 23 parameters of this ASQR were modified.

3. Technical Evaluation

Technical bids received (April 2010) from seven²³ vendors were evaluated (April 2010) by the Technical Evaluation Committee (TEC), which found the proposals of five vendors²⁴ to be compliant to all general and technical requirements of the RFP.

Two aircraft viz. M/s Alenia Aeremachi, Italy and M/s Aerostar were rejected. The aircraft of M/s Alenia Aeremachi, Italy did not meet essential ASQR parameters that included ejection seats, cockpit design and layout and the requirement of surviving a 2 lb bird impact on the front windscreen. M/s Alenia was also non-complaint to requirement of supply of associated equipment (Full mission flight simulator, Cockpit procedure trainers, Avionic Part Task Trainer and Computer Aided Learning System).

The aircraft from M/s Aerostar did not meet the basic and essential requirements of a turbo-prop engine and ejection seat and was rejected.

²² Pilatus aircraft Ltd., Switzerland; Korea Aerospace industries, Ltd. S. Korea; EADS-PZL, Poland; Grob aircraft, Germany; ALENIA AERMACCHI, Italy; Pacific Aerospace Corporation Ltd., New Zealand; Embraer, Brazil; Fuzi Heavy Industries Ltd, Japan; Aerostar, Romani; Hawker Beechcraft, USA; M/s Rosoboronexport, Russia.

²³ Pilatus aircraft Ltd., Switzerland (PC-7 Mk-II), Korea Aerospace industries, Ltd. S. Korea (KT-1), EADS-PZL, Poland (PZL 130 TC-II), Grob aircraft, Germany (G 120 TP), ALENIA AERMACCHI, Italy (SF-260 TP), Aerostar, Romani (IAK 52 W), Hawker Beechcraft, USA (T-6C)

²⁴ Pilatus aircraft Ltd., Switzerland (PC-7 Mk II), Korea Aerospace industries, Ltd. S. Korea (KT-1), EADS-PZL, Poland (PZL 130 TC-II), Grob aircraft, Germany (G 120 TP), Hawker Beechcraft, USA (T-6C)

TEC qualified (31 May 2010) the aircraft of five vendors viz. M/s Pilatus aircraft Ltd., M/s Korea Aerospace industries, Korea, M/s EADS-PZL, M/s Grob aircraft, and M/s Hawker Beechcraft for Field Evaluation Trials (FET).

It took seven weeks for Ministry to approve the TEC report, which was submitted by Air HQrs in June 2010 and was approved by Ministry (DG (Acq)) on 4th August 2010. The delay was mainly on the issue raised by Ministry on MToT. RFP required the vendors to provide complete Transfer of Technology to HAL for maintenance of the aircraft. With regard to the sub systems/components manufactured by the sub-vendors of the main vendor, the RFP required the main vendor to take the lead and to assist HAL in obtaining maintenance ToT from its sub-vendors/sub-contractors.

Ministry found that only one vendor (M/s Grob aircraft, Germany) had offered complete MToT including the MToT for components supplied by its sub vendors. The other four vendors had offered MToT only for their proprietary items. For components supplied by their sub-vendors, the firms stated that they would assist HAL to get MToT from their sub-vendors at a later stage. Ministry took two months to decide that the offers of vendors are in order. TEC cleared all and recommended that the issue of MToT by sub vendors would be addressed in CNC.

4. Field Evaluation

The Trial directives was issued (21st September 2010) by Air HQrs after a gap of six weeks for field evaluation trials of BTA. FET of all five aircraft were carried out in October 2010.

The aircraft offered by three vendors M/s Hawker Beechcraft (T-6C), M/s Korea Aerospace (KT-1), and M/s Pilatus (PC-7MK II) were found (December 2010) to meet all ASQRs and hence technically qualified. The proposals of M/s EADS aircraft (PZL-130 TC-II Orlik) and M/s Grob Aircraft (G-120TP) were found to be non-compliant to six and eleven ASQRs respectively and were hence rejected.

5. Price Evaluation

5.1 Adoption of LCC Model

At the start of the procurement, the Defence Procurement Board in February 2009 had decided to adopt the same Life Cycle Costing (LCC) model as used for MMRCA. The MMRCA LCC model included the following elements:

- (a) Direct Acquisition Cost (M1)
- (b) Cost of TTL based reserves (M2)
- (c) Cost of TBO/MTBF based reserves (M3)

- (d) Cost of Scheduled Intermediate Level Servicing (M4)
- (e) Cost of Depot Level Overhaul and repair (M5)
- (f) Operating Cost (M6)

However, unlike the model adopted for MMRCAs, Ministry decided to exclude the component M3 (cost of Time Between Overhaul (TBO) and Mean Time Between Failures (MTBF) based reserves *i.e.* scheduled and unscheduled maintenance spares). The reason for exclusion was that the cost of such spares was already included as Manufacturer Recommended List of Spares (MRLS) in the Direct Cost of Acquisition. Audit considers this to be unjustified because MRLS is part of the aircraft package and M3 is a separate component. As a result, the total life cycle costing remained incomplete.

Ministry stated that LCC/TCA model used world over is primarily a decision-making tool at the time of making the procurement decision. It is not meant to measure the absolute expenditure that would be incurred over the life time.

Audit's view is that LCC/TCA model needs to be applied for assessing the reasonability of price quoted by the vendor since L1 was to be evaluated based on the Total Cost of Acquisition. Further while according approval to procurement of Attack Helicopter, Ministry acknowledged the shortcomings/drawbacks of the TCA model adopted by IAF and accordingly decided not to issue fresh RFP on LCC/TCA model till amendments to DPP on the issue.

5.2 Incorrect Benchmarking of Price

As required by the RFP, the lowest price bid was to be determined on the basis of the total life cycle cost which included the following components:

1. Direct Acquisition Costs of Aircraft, Equipment and other systems (M1)
2. Cost of TTL Based Reserves (M2)
3. Cost of Scheduled Intermediate Level Servicing (M3)
4. Cost of Depot Level Overhaul (M4)
5. Operating Cost (M5)

As per the RFP, contract was to be signed only for the Direct Acquisition cost (M1). The benchmark price and the price quoted by the vendors is tabulated below:

Table-14: Comparison of benchmark price and quoted price

Sl. No.	Cost of component	Bench- marked Price (₹ in crore)	Pilatus (L1)	KAI (L2)	HBC (L3)
			(₹ in crore)	(₹ in crore)	(₹ in crore)
1	Direct Acquisition Costs of Aircraft, Equipment and other systems (M1) that included Role Equipment, Ground Handling Equipment/ Ground Support Equipment/ Special Maintenance Tools and Testers, Manufacturer Recommended List of Spares, Cost of Training Manual etc.	3906.69	2895.63	3261.47	5357.27
2	Cost of TTL Based Reserves (M2)	5631.03	189.31	77.86	3466.08
3	Cost of Scheduled Intermediate Level Servicing (M3)	45.07	5.49	32.64	8.64
4	Cost of Depot Level Overhaul (M4)	976.67	594.09	563.31	797.81
5	Operating Cost (M5)	588.13	475.53	600.15	688.70
Total		11147.59	4160.05	4535.42	10318.50

The benchmarked price for Total Cost of Acquisition (TCA) was ₹11147.59 crore, against which the lowest bid was that of M/s Pilatus which was ₹4160.05 crore. The purpose of price benchmarking is to verify the reasonableness of the price quoted by vendors. Benchmarking committee, based on an average of ROM cost provided by three vendors in response to the RFI, considered the basic cost of aircraft as USD 6 million at 2010 rates. After including costs towards implementation of offsets, delivery of aircraft in India and escalations up to the mean delivery year (2014), the unit cost of the aircraft under procurement was estimated at USD 7.575 Million. Cost of other elements²⁵ which constituted Direct Cost of Acquisition (DCA) was calculated as percentages of the basic aircraft cost obtained from Intermediate Jet Trainer (IJT) contract and cost of direct acquisition (M1) was benchmarked at ₹3906.69 crore. Audit observed that the benchmarking committee had included five *per cent* as the additional cost to be incurred by the bidders for customization of certain ASQR parameters²⁶. There was apparently no justification for doing so.

²⁵ Role Equipment, Ground Handling Equipment/Ground Support Equipment/Special Maintenance Tools and Testers, Manufacturer Recommended List of Spares, Cost of Training, Manual, etc.

²⁶ Specific override facility, IFF with mode S transponder, Light weight integrated helmet, Health monitoring and debrief tools, and Pilot vision camera.

IJT is a jet aircraft, whose maintenance is different from PC VII Mk-II, which is a turboprop aircraft, therefore adoption of price of various elements from IJT aircraft (except for the cost of aircraft) had perhaps resulted in an incorrect benchmark price. Thus, benchmarking did not serve any purpose as it was over estimated by about 26 *per cent* and 63 *per cent* for Direct Cost of Acquisition and Total Cost of Acquisition respectively *vis-à-vis* cost quoted by the L1 vendor. While the benchmark for direct purchase price was closer to bid price, TLC price bench was much higher than the bid price.

Ministry justified the difference in costs quoted by vendor *vis-à-vis* the benchmark cost as having accrued primarily due to the competitive environment in which the bids were received and also the large quantity of aircraft involved in this procurement.

Audit's view is that the benchmark prices determined for Direct Cost of Acquisition and Total Cost of Acquisition were unrealistic. The LCC model needs to be further fine-tuned.

5.3 Assessment of price evaluation

The price bids of the three vendors - M/s Hawker Beechcraft, USA, M/s Korea Aerospace Industries Ltd, South Korea, and M/s Pilatus Aircraft Ltd, Switzerland were opened in May 2011. The CNC found the offer of M/s Pilatus, Switzerland lowest (L1).

Audit noted that in the price evaluation of the various components of LCC:

- a. M/s Pilatus and KAI had quoted very low M2 costs which were 3.4 *per cent* and 1.4 *per cent* of the benchmark prices for M2. In case of M4, both Pilatus and KA1 quoted about 60 *per cent* of the benchmark prices. As these components were used for evaluating L1 under LCC method, the reasonability of these quotes could have been checked by the CNC. This had consequences as discussed later.
- b. In the price bid of April 2010, M/s Pilatus did not quote the price of Special Maintenance Tools (SMTs)/Special Test Equipment (STE). Under the price column it was mentioned as 'Local Supply'. Similarly, the firm had treated computer hardware for Ground Based Training System as 'Buyer Furnished Equipment' the cost of which was excluded from its price bid. The other two vendors had included the cost of these items in their total bid price. The price bids were opened on 19 May 2010 and the CNC read out the summary of quoted price to the representatives of the three vendors. The representatives confirmed the quoted price.

Before determination of the lowest bid, clarification was sought from M/s Pilatus (10 June 2010). The firm stated that SMT/STE should no longer be treated as Local Supply and the price of SMT/STE should be considered included in the total bid price. Similarly the firm also stated that the computer hardware for GBTS should not be considered as Buyer Furnished Equipment and that the cost of this item also may be considered included in the total bid price already quoted.

Audit noted that this amounted to changing of the price bid or accepting a discount from the firm before the determination of lowest bidder (L-1). CVC guidelines prohibit accepting any discount from a vendor prior to determination of L-1. It is pertinent to mention that M/s KAI and M/s HBC had quoted ₹100.85 crore and ₹170.03 respectively for SMT/STE.

Ministry replied that M/s Pilatus had later informed the CNC that these items were offered free of cost and therefore these cost elements were not included for M/s Pilatus, during evaluation.

- c. According to the norm followed by IAF the cost of MRLS was taken as 20 per cent of the total cost of the parent equipment. Comparison of the price quoted by M/s Pilatus and M/s KAI against this norm is shown below:

Table-15: Comparison of MRLS price

Name of the vendor	Cost per aircraft (₹ in crore)	MRLS cost quoted by the vendor (₹ in crore)	MRLS cost as a per cent of cost of aircraft
Pilatus	31.60	162.89	6.87 per cent
KAI	30.86	479.53	20.71 per cent

Audit observed that price of MRLS quoted by M/s Pilatus (L1) was only 6.87 per cent of the cost of the aircraft as against the norm of 20 per cent. The price of MRLS quoted by KAI was nearer to the norm. Audit noted that M/s Pilatus had quoted for lesser quantity of spares than required for 5 years. This is borne out by the fact that the MRLS supplied by Pilatus against the contract were consumed within 3 years as against the contracted quantity for 5 years as reported by the stock holding Depot of IAF to Air HQ in June 2017. In January 2018, Air HQ took up with the vendor to supply the deficient MRLS.

Audit worked out the cost of deficient MRLS on pro rata price quoted by M/s Pilatus for two year and found that M/s Pilatus had under quoted the price of MRLS to the tune

of ₹108.60 crore²⁷. This contributed to reducing the price of the firm during price evaluation.

Ministry stated that the initial lots of aircraft were utilised at a greater than average rate of 300 hours per year. Certain deficient MRLS was also identified during the operation of the aircraft since induction and M/s Pilatus had supplied these items Free of Cost. Further, Ministry during the exit conference stated that it was difficult for CNC to detect and correct such underquoting by the vendor. Audit is of the view that Ministry should make provision for imposition of penalty in cases where vendor is found to have deliberately under quoted cost to become lowest bidder.

6. Conclusion of Contract

With the approval of Cabinet Committee on Security (CCS), Ministry entered into a contract for procurement of 75 Pilatus PC-7 Mk-II aircraft and associated equipment at a total value of CHF 557,388,681.19 (₹2895.63 crore) in May 2012, after two years and ten months of grounding of the HPT-32 fleet. The delivery of the products/services was to be completed within 60 months of the effective date of contract i.e. May 2017. However, the delivery was completed between February 2013 and November 2015.

7. After sales support

Pilatus had 159 components, of which 65 were to be repaired through MToT and 87 to be repaired/replaced by vendor through Follow On Support (FOS). However, neither MToT nor FOS contracts have been concluded till date as discussed below:

7.1 Delay in conclusion of Maintenance Transfer of Technology

RFP (December 2009) required the vendors to provide ToT for the maintenance of the aircraft as a separate line item. Further, as per the supplementary CCS note (May 2012), MoD stated that the cost of MToT was included in the “Cost of D level overhaul M4” and accordingly it was not included for L1 evaluation. The commercial bids were opened on 19 May 2011. M/s KAI had quoted USD 120.60 million as the total cost of MToT. The commercial offer of M/s Pilatus did not contain complete cost for MToT and instead, M/s Pilatus had stated that the cost of MToT was ‘subject to further discussion between the IAF and HAL’.

In the CCS note (November 2011), it was indicated that the agreed MToT cost would be indicated in the main procurement contract. Further within 36 months of the signing of the main procurement contract, a MToT contract would be signed between M/s HAL and M/s Pilatus. However, HAL could not sign a MToT contract with Pilatus, as the

²⁷ ₹162.89 crore/3 years = ₹54.30 crore x 2 years

draft MToT Offer from Pilatus did not include the OEM licenses, documents update, maintenance support for special tools/testes, software upgrade etc. Further, HAL was also required to invest additionally in Tools/Testers/facilities as per MToT statement of Work. Consequently, in July 2015, 5 Base Repair Depot of IAF was designated as the agency to carry out maintenance of the aircraft and therefore was to receive MToT instead of HAL. Proposal to change the MToT recipient agency was approved by the DAC in January 2016. The DAC (January 2016) also approved procurement of 38 PC Mk-II trainers under the option clause, the contract for which is yet to be signed.

Letter of Intent was issued to M/s Pilatus Aircraft Ltd in April 2016 and the vendor submitted a proposal for MToT in June 2016. Presently, the procurement of MTOT is under process and the contract is yet to be concluded.

Ministry stated (June 2018) that the contract for MToT with 5 BRD as the recipient agency was still at the TOC stage and non-availability of establishment of MToT facilities had led to a substantial number of AOGs (Aircraft on Ground). This would, in Audit's view, adversely affect training of pilots.

Maintenance and supply of spare parts is an integral part of the acquisition of a product and therefore, technical and price evaluation of after sales support should form an integral part of the acquisition contract. Having awarded the main contract to the vendor, there is no bargaining power left with Ministry to extract better quantity, price or timely supply. In this case, having bagged the main supply contract, it appeared that the vendor was not very keen on parting with the ToT for maintenance. By separating the procurement of after sales support from the main contract, IAF has created a situation where it will have to send the aircraft components to the vendor for maintenance, thus benefitting the vendor.

Ministry stated that none of the capital procurement contracts include after sales support that included maintenance and lifetime supply of spares as an integral part of the acquisition contract other than MRLS.

Audit noted that having received the main supply contract, the vendor was not very keen on ToT for maintenance, creating a situation where IAF will have to send the aircraft components to the vendor for maintenance, thus benefitting the vendor. Also, till the MToT facility is created at IAF Depot, the fleet serviceability will be affected.

7.2 Follow on Support Contract procured separately

Main contract with M/s Pilatus stipulated that the vendor was to provide maintenance support i.e. supply of spare parts and servicing through a separate contract at the prices quoted by the vendor under M2 and M3 components of LCC.

In September 2014, IAF initiated a Statement of Case for procurement of such maintenance support [Follow on Support Contract (FoSC)]. However, maintenance support contract from vendor under agreed parameters of M2 and M3 rates of LCC was not sought for. Instead, IAF proposed to procure performance-based follow on support for five years (as per which, grounded aircraft at any given time would not be more than ten *per cent*), at an estimated price of ₹506.98 crore.

This issue was debated between Ministry and Ministry of Defence (Finance) and after protracted deliberations, the case was approved by RM in October 2015. RFP was issued to M/s Pilatus in December 2015 and bid received from M/s Pilatus was technically accepted by TEC. Based on CNC's objection on the same, the RFP was withdrawn by Air HQ in August 2017. Presently, the case is at financial concurrence stage for re-issue of RFP.

M/s Pilatus provided maintenance support up to two-year warranty period (31 January 2018), after which, no support is being provided by the OEM.

Audit observed that the maintenance contract should have been based on the reference parameters and cost of Main contract. There was no need to issue a separate RFP. Instead, maintenance contract could have been concluded by Ministry with the vendor after obtaining price bid in line with reference parameters and cost of Main contract.

Thus, due to incorrect approach in procurement of FoSC, there was delay in its procurement. Non-availability of FoSC has impacted the fleet serviceability as a substantial portion of the fleet of 75 aircraft has grounded as of May 2018.

Ministry agreed that FoSC should have been finalised well in time based on reference parameters and costs captured in the Main Contract, which would have ensured a seamless maintenance support thereby ensuring high availability of the aircraft. However, Ministry contended that the proposed performance-based follow on support contract was significantly stringent and evolved to enable measurement and quantification of performance of the vendor.

However, the fact remains that due to incorrect approach in procurement of FoSC, there was delay in its procurement, which impacted the fleet serviceability as significant number of aircraft were grounded.

8. Delay in creation of infrastructure for induction of aircraft

In CCS approval for procurement of 75 PC-7 Mk-II aircraft, an amount of ₹130.50 crore was sanctioned towards establishment of infrastructure at two²⁸ bases for

²⁸ Air Force Academy, Hyderabad, Air Force Station, Tambaram

induction of these aircraft. These were to be created within two years from the date of signing of contract (May 2012) i.e. by May 2014.

Audit noted that even after receipt of all the 75 aircraft which have been in operation for about five years, necessary infrastructure is yet to be fully established. Ten works were taken up towards induction of PC-7 Mk-II fleet. However, six works have been completed and remaining four are yet to be completed.

The infrastructure works included building for housing the simulators. Due to delay in completion of work services, two simulators received in February-June 2014 were commissioned in an existing building after carrying out additions/alterations at a cost of ₹1.40 crore.

Ministry stated that it needs to be appreciated that the issue at hand was quickly identified and an interim location was designated to house the simulator.

Audit however noted that, as explained above the situation arose due to delay in creation of the simulator building, and this entailed an avoidable expenditure of ₹1.40 crore.

IV. Procurement of 'PP' Pods

1. Introduction

The 'PP' pods is the state of the art technology in airborne weapons systems that enables the strike aircraft to engage their targets with pin point accuracy from a high altitude and high standoff ranges. 'PP' pods is capable of performing dual function of precise navigation and 'PP' of the target and is the main stay of IAF's 'WW' Munitions inventory.

IAF had procured (1996) 'PP' pods, which were inducted into IAF in 1999. These pods became outdated by 2009 and the existing capability of precision strike was severely limited by the number of available navigation and targeting pods.

To meet this deficiency, AON for procurement of 'PP' pods was accorded by DAC in August 2010 at a cost of ₹3115.42 crore as BUY (Global) for four strike aircraft.

2. Planning

Since the 'PP' pods inducted (1999) into IAF became technologically outdated (November 2009), a proposal was submitted by Air HQ (June 2011) for up gradation of existing 'PP' pods. However, Air HQ decided (June 2012) to upgrade the existing 'PP' pods. The contract for up-gradation could not be concluded because the unit cost quoted (August 2017) by the vendor M/s Rafael, ADS for up-gradation of existing 'PP' pods was exorbitantly high as compared to per unit cost of new 'PP' pods. Therefore, IAF decided to maintain the existing pods. With the result the operating units are still using the outdated pods.

Further, IAF had planned to procure these 'PP' pods and integrate them in the strike aircraft. Two of these strike aircraft viz. 'AC4' and 'AC1' aircraft are undergoing upgradation at HAL. However, contract was concluded for integration of 'PP' pods on the older version of these aircraft. This was because the upgradation of these aircraft was much behind schedule.

Audit also noted that 'PP' pods supplied against the contract, when tested were found incompatible with the upgraded 'AC4' aircraft. Therefore, 'PP' pods costing ₹287.37 crore contracted for 'AC4' aircraft will remain either unutilised or underutilised.

'PP' pods procured were to be integrated in the older version of 'AAC1'. 'PP' pods which were supplied were tested on 'AAC1' and it was found the full functionality of

the 'PP' pods could not be exploited on this aircraft. Therefore, 'PP' pods costing ₹447 crore would remain underutilised.

Audit noted that out of two squadrons of 'AC5' upgraded aircraft one Sqn was planned to be phased out in March 2019 and another in March 2020. Despite knowing this fact (January 2011), the integration of 'PP' pods costing ₹127.72 crore was included in the contract. Therefore, procurement of 'PP' pods for 'AC5' aircraft was not justified.

Thus, due to poor planning and lack of coordination between different Directorates in Air HQrs. the 'PP' pods may remain unexploited/underutilised.

Ministry stated that considering the inter-compatibility of 'PP' pods on 'AC6', 'AAC1', 'AC4' and 'AC5' upgrade aircraft that are integrated with the it was decided that the 'PP' pods could still be effectively utilised and the IAF decided not to upgrade the 'PP' pods due to the cost benefit considerations. However, Audit noted that these 'PP' pods had become technologically outdated (November 2009). Hence, its effective utilisation would not be possible.

However, Audit noted that Ministry's reply is silent on the issue of incompatibility of 'PP' pods on 'AC4' upgrade aircraft.

Ministry stated that as regards integration of 'PP' pods on 'AC1' aircraft, that in 2014 the 'AAC2' upgrade program was already delayed by two years and was expected to be further delayed. Therefore, the specific platform for integrating the 'PP' pods was finalised as the existing 'AAC1' at the stage of draft contract in 2014. Integration on 'AAC1' aircraft was completed in February 2018 and being operated without any limitations. However, during Preliminary Design Review at ASTE Bangalore during June 2016, it was found that full functionalities of 'PP' pods may not be exploited if integrated on 'AAC1' platform. Therefore, it was proposed by IAF that 'PP' pods be integrated on 'AAC2' upgraded aircraft.

As regards integration of 'PP' pods on 'AC5', Ministry further stated that these 'PP' pods can be operated from 'AC5' upgrade aircraft till such time they are phased out from service. However, Audit noted that there would be limited utilisation of these pods as the one squadron of 'AC5' upgrade aircraft is planned to be phased out in March 2019 and another in March 2020.

3. Acceptance of Necessity (AON) cost

IAF had proposed the procurement of 'PP' pods. In the meeting of DAC (Aug 2016), for approval of AON, it was pointed out by Secretary Defence Finance that Litening was a brand name and should not be used. Litening is the name of the 'PP' pods

developed by a collaboration between M/s Northrop and M/s Rafael. The existing Litening 'PP' pods with IAF was procured from M/s Rafael in 1996/99.

AON was accorded (August 2010) by DAC for procurement of 'ne' number of 'PP' pods along with Maintenance Transfer of Technology (MTOT). Total cost of the acquisition was estimated to be ₹3115.42 crore. Before making the proposal for AON, IAF had sought Budgetary quotes (Rough Order of Magnitude price) from M/s Rafael. The firm had quoted ₹1565.38 crore. However, IAF did not consider this quote for preparing the proposal for AON. The AON cost was estimated using the price of the 'PP' pods purchased in 1999. The AON cost was approx. twice the Budgetary quote. Further, the contract was concluded (March 2016) by Ministry with M/s Rafael at a cost of ₹1742.52 crore which was about half the AON cost. Thus, the AON cost was not estimated realistically.

Ministry accepted the fact that the total indicative cost in the SoC was ₹3115.42 crore. However, the reasons for large difference in the AON cost and contracted cost have not been clarified.

4. Formulation of ASQR

4.1 Repeated modification of ASQRs

Formulation of ASQR was initiated by IAF in March 2008 and a case for procurement of 'PP' pods was initiated by IAF in November 2009. However, IAF changed the ASQR in November 2009 and also decided (November 2009) to reformulate the ASQR after obtaining information from vendors through RFI. Subsequently the ASQR were again changed in June 2010 and in the same month RFI was issued to nine vendors³⁰ and 11 Defence Attache. Ministry put the whole RFI on the website which detailed the Tech requirement of the 'PP' pods and all its parameters. Only 2 out of 9 vendor Lockheed Martin & Thales responded. Rest 3 vendor responded in response to RFI sent to Defence Attache as under:

1. Northrop Grumman
2. Rafael
3. Raytheon

³⁰ M/s Israel Aerospace Industries, M/s General Atomics Aeronautical Systems Inc, Blue Bird Aero Systems, Israel, BAI Aero Systems, USA, ALCORE Technologies, EMT Germany, AV Inc USA, Lockheed Martin(USA), Thales Headquarters

Two Indian firms also responded:

1. ICOMM Hyderabad
2. Larsen & Toubro

Most important component was laser but no information was given by any vendor including Rafael on the laser characteristics. None of the vendor gave complete information. Based on the response to RFI, IAF concluded that only M/s Northrop was meeting all the ASQR parameters. Apprehending that it would lead to single vendor situation, IAF modified the ASQR in September 2010 before issuing the RFP. When the RFP was issued to Northrop (May 2011), it did not respond to the RFP. It allowed its collaborator M/s Rafael to respond to RFP. Therefore, the modification of ASQR did not help in widening the vendor base because it was only Rafael, the partner of Northrop which responded to RFP.

Thereafter, ASQR was again modified in December 2010. Much of the alteration in ASQR involved tweaking of design parameters instead of focussing on the functionality. Thus, the ASQRs were revised four times and about 3 years were taken by Air HQs in finalisation of ASQRs.

Ministry while accepting the fact stated that the ASQRs were drafted iteratively to ensure that it would result in a multi-vendor situation to ensure greater competition. Audit noted that the objective of revising the ASQR to increase competition could not be achieved. As against the RFP issued to eight firms only two firms submitted their bids.

5. Request for Proposal (RFP)

5.1 Delay in issue of RFP

RFP for procurement of 'PP' pods was issued by Ministry in May 2011 to eight vendors³¹. Ministry took 34 weeks in issue of RFP as against the eight weeks prescribed in DPP. The delay was mainly due to revision of ASQRs after AON and vetting of RFP.

Ministry accepted the facts.

5.2 Poor response to RFP

In response to RFP, only two vendors M/s Rafael, ADS and M/s BEL responded in October 2011. M/s BEL was included in March 2011, just 2 months before issue of

³¹ M/s Rafael Israel, M/s Lockheed Martin (USA), M/s Northrop Grumman, USA, M/s Thales (France), M/s Raytheon (USA), M/s ROE Russia, M/s Elta Israel and M/s BEL

RFP. In its request of March 2011 M/s BEL did not disclose that it was in collaboration with Thales.

Though BEL was developing 'PP' pods with DRDO, it did not respond to RFI. Another Indian firm ICOMM participated in RFI.

Audit noticed that RFP was not issued to Indian Vendors i.e. ICOMM and L&T (which was in collaboration with Raytheon, USA), but RFP was issued to M/s BEL which was included on their request. Had M/s BEL not been issued RFP it would have been a single vendor with Rafael.

Thus, there was poor response from the vendors. IAF justified that the poor response was because the 'PP' pods incorporates several important advance technologies, available only with a few vendors in the world and usually come under the export control regimes requiring explicit clearances from their Governments.

Ministry while confirming the facts stated that the limited vendor response was due to inherent complexities of procuring and integrating the equipment on four different types of aircraft. Ministry accepted the recommendation of Audit to explore acquisition through IGA in such cases.

5.3 Deficiencies in RFP

As per Part-I para 5 of RFP issued in May 2011 it was indicated that Pods should be operable on four strike aircraft. There are different versions of 'AC1', 'AC4' and 'AC6' aircraft available with IAF. However, it was not clearly indicated in RFP as to which version of aircraft would be integrated with the 'PP' pods.

Ministry has not addressed the issue regarding non-mentioning in the RFP as to which version of aircraft would be integrated with the 'PP' pods.

6. Inadequate Technical Evaluation

Audit observed that during technical evaluation (December 2011) none of the vendors gave technical details on grounds of secrecy as it needed the host Government clearance. But still they were technically cleared. Technical evaluation in the absence of key ASQR parameters remained an incomplete exercise.

7. Inadequate Field Evaluation Trials (FET)

FET for equipment offered by both vendors was conducted between March 2012 and October 2012. It is seen that FET were conducted on F-16 Aircraft in Israel for Rafael

and 'AAC4' aircraft in France for Thales/BEL and none of the aircraft planned³² for integration with 'PP' pods were trial evaluated, even; though as pointed out earlier, there were integration issues with two of the four aircraft types.

Ministry stated that the trial evaluation was undertaken for the performance of the 'PP' pods as the sensor, and the same was independent of the platform used for FET. However, Audit noted that the specific findings raised above were not addressed by the Ministry.

8. Delay in price Evaluation by Contract Negotiation Committee (CNC)

8.1 Unrealistic Benchmarking

As per para 51 of DPP-2011, CNC should establish a benchmark and reasonableness of price in an internal meeting before opening the commercial offer. Once the commercial offers are opened and the price of the vendor is found to be within the benchmark fixed in the internal meeting, there should be no need to carry out any further price negotiations.

CNC assessed the benchmarking cost of 'ne' number of 'PP' pods and associated equipment at MUSD 830.065 (₹4995.33 crore). For assessing the benchmarking cost, last purchase price of 'PP' pods procured in 1999 was escalated by 3.5 *per cent* per annum upto 2008 and 5 *per cent* from 2009 onwards as per Price Policy Review Committee report for 2012.

Audit noted that the benchmarking committee instead of taking the budgetary quote given by the vendor in 2010, estimated the benchmarked price using the last purchase price of 1999.

Ministry stated that due diligence was exercised by the benchmarking committee and the best possible financial iterations were applied in order to arrive at the final benchmark price. However, Audit noted that the specific findings raised above were not addressed by the Ministry.

8.2 Price Evaluation

CNC was constituted by the Ministry in May 2013. The commercial proposal of both the vendors were opened by CNC and found that the price quoted by M/s Rafael, ADS and M/s BEL was MUSD 290.05 (₹1745.52 crore) and ₹4261.50 crore (excluding taxes) respectively.

³² 'AC6', 'AAC5', 'AAC1' and 'AC5' Upgrade aircraft

The price quoted by M/s Rafael, ADS (L1) vendor were below the benchmarked price and no price negotiations was carried out by CNC. Bid of L1 was accepted. CNC submitted its report in July 2014. While there was no price negotiations, however CNC took a considerable period of 14 months in finalising of terms and conditions of the main contract and offset issues against the prescribed period of 6 weeks in DPP.

Ministry stated that due to complexity of the project detailed deliberations were required to be carried out in arriving at the benchmarking price for facilitating the negotiations for finalisation of the contract. Audit noted that Ministry has not addressed the specific finding mentioned above.

9. Delay in obtaining CFA Approval

The case was submitted to Ministry in July 2014 for obtaining approval of CFA i.e. CCS. File shuttled 75 times between Air HQrs, Acquisition Wing Ministry, Ministry (Fin) and MoF between July 2014 and February 2016. The CCS Note was finally submitted by Ministry in February 2016 and approved (February 2016) by CCS. Thus Ministry took 19 months in the process for obtaining approval of CFA against the prescribed period of 4 months in the DPP. After approval of CFA, contract was concluded by Ministry with M/s Rafael ADS in March 2016 at a cost of MUSD 290.051 (₹1745.52 crore).

Ministry stated that during the course of this process several issues were deliberated upon to ensure that all aspects of the procurement case have been appropriately addressed and due procedures were complied with. However, Ministry reply does not address the specific audit findings.

10. Conclusion of Contract

Contract was concluded by Ministry in March 2016 with M/s Rafael ADS Israel at a cost of MUSD 290.05 (₹1745.52 crore). The delivery will be completed within 41 months from the date of contract i.e. by August 2019.

11. Deviation from RFP in the Contract

The RFP required the seller to give warranty for two years from the date of acceptance of stores or date of installation and commissioning, whichever is later.

However, Audit observed that the warranty clause was changed in the contract, which stated that warranty would start from the date of acceptance of stores by JRI. The line “or date of installation and commissioning whichever is later” was deleted. Thus in case of delay in installation and commissioning of the equipment, the warranty benefit would not be available for the full period of actual operation of the item. Audit found

this to be imprudent because warranty period should start after product is to put to use i.e. after commissioning.

Ministry replied that the warranty clause of the contract was vetted and finalised by the CNC. However, approval of the competent authority was not obtained for the deviation from RFP.

12. Incomplete Maintenance TOT

Transfer of Technology for comprehensive D level maintenance facility (MToT) was sought in RFP. While obtaining the approval of CCS, Ministry had mentioned that to avoid dependence on OEM, complete MToT would be acquired. Acquisition of MToT at a cost of USD 20,300,000 (₹122.16 crore) was included in the contract for the main equipment. Accordingly, the maintenance facility was to be completed by August 2019. However, Audit observed that provision for complete MToT to IAF had not been made in the contract. Repair of nine components of the equipment would have to be done at the OEM's location through a separate Follow On Support contract. Hence dependence on the vendor for repair of above components would continue despite incurring an expenditure of ₹122.16 crore

Ministry stated that complete MToT could not be obtained from the vendor due to proprietary limitations of their sub-vendors. However, the fact remains that the objective of acquiring complete MToT was not achieved.

V. Procurement of 'Ma' Missile for 'AC1' aircraft

1. Introduction

'AC1' fighter fleet of IAF was using 'Mb' Missile till 2001, when stipulated technical life of the missile expired. Thereafter, 'Mc' missiles procured for 'AC4' were used till they completed their technical life in 2009. Considering the survivability of 'AC1' aircraft in a hostile Air Defence environment, it was essential that these aircraft be equipped with air-to-air 'Ma' Missiles and Helmet Mounted Display (HMD), a device that projects the target information onto the pilot's helmet. The strength of 'AC1' fleet was 'nn' and estimated life of the fleet was till 2035. Thus, the total requirement of 'Ma' missiles was 'np' number of missiles, as of May 2008.

IAF in May 2008 projected the need for procurement of 'Ma' missiles along with HMDS and launchers, Acceptance of Necessity (AON) was accorded (September 2008) by Defence Acquisition Council for a cost of ₹1110.35 crore.

2. Planning

IAF floated a Statement of Case for the 'Ma' missiles only in May 2008, barely a year before the 'Mc' missiles completed their technical life in 2009. Taking into account the timelines for procurement given in the DPP 2008 of 34 months and time needed by HAL for integration of the missile on the aircraft, IAF should have commenced the procurement process as early as in 2005.

3. Issue of Request for Information

Request for Information (RFI) was issued in August/September 2006 to ten³³ firms. Air Attaches at Washington, London, Paris, Germany, Sweden and South Africa were also directed to identify vendors. The RFI called for detailed technical specifications of the missiles and budgetary quote.

Audit noted that only one vendor viz. M/s DIEHL, Germany, had responded to the RFI. Responses received, if any, from other vendors were not found in the files produced to Audit. Contrary to its objective, the process of RFI was not useful for costing estimation because the AON cost was estimated based on Budgetary Quote invited from M/s Rafael and Benchmark price was estimated using the Last Purchase

³³ M/s MBDA, UK, M/s Rafael, Israel, M/s DIEHL, Germany, M/s General Dynamics, USA, M/s Lockheed Martin Corporation, USA, M/s Northrop Grumman Corporation, USA, M/s The Boeing Company, USA, M/s Raytheon Company, USA, M/s Textron Systems, USA and M/s Aerospace Industries Association, USA.

Price of a similar missile (not the same missile) purchased from M/s MBDA (refer para 9). DIEHL had also given the cost of its missile but it was not considered for estimation.

According to DPP-2008, which governed this contract, the process of RFI involves the issue of RFIs on Ministry website or by corresponding with the manufacturers. However, audit observed that after issue of RFI, M/s DIEHL visited IAF bases and interacted with IAF authorities. M/s MBDA in response to RFI invited IAF authorities to UK for demonstration of the missile. DPP-2008 envisages RFI as a process of gathering information from the market and does not envisage such engagements with the vendors before the formal issue of RFP.

Ministry stated that M/s DIEHL had not provided any financial information in its response. As regards vendor interaction before issue of formal RFP, Ministry stated that DPP-2016 provides for 'extensive interactions with the vendors during RFI stage. In view of this, interaction with the vendor and permitting them to visit IAF bases for understanding the scope of integration of the missile on the aircraft and storage of missiles was done to enable the vendor to provide a comprehensive response.

Ministry reply that DIEHL did not furnish financial information in response to RFI is factually incorrect. The firm in its letter dated January 2007 had provided the cost of missile in its response to RFI. Further, DPP-2008 governed this transaction.

4. Inadequate response to RFP

Request for Proposal (RFP) was issued in June 2009 to five³⁴ firms. Two vendors viz M/s MBDA, UK and M/s Rafael, Israel responded to the RFP. M/s Rosoboronexport expressed their inability to integrate their missile on 'AC1' and M/s Raytheon, USA did not submit a proposal.

The fifth firm, M/s DIEHL declined from responding to the RFP, stating that its IRIS-T missile had better features that included anti-missile capability against incoming air-to-air and surface-to-air missile, all hemisphere engagement capability, immunity against blinding laser than what was called for in the ASQR. Therefore, its missile was costlier and since the Indian evaluation system was based on the lowest price it would lose out. This carried a reputational risk for the firm as it would be known globally that its missile was rejected by India.

³⁴ M/s MBDA, UK, M/s Rafael, Israel, M/s DIEHL Germany, M/s Rosoboronexport and M/s Raytheon, USA

Ministry stated that poor response was because the market for state-of-the-art defence equipment is circumscribed by denial regimes.

5. Technical Evaluation

Technical Evaluation of technical proposals submitted by both the vendors was carried out by Technical Evaluation Committee (TEC) and concluded that both 'Md' missile of MBDA, UK and 'Me' missile of M/s Rafael were compliant with IAF's technical and operational requirements and recommended further processing of the case.

6. Evaluation of commercial terms by Technical Evaluation Committee

A scrutiny of the RFP revealed that there were a number of commercial parameters such as Performance Bond, Warranty Bond, Advance Bank Guarantee Bond, Integrity Pact and Earnest Money Deposit whose commitment was to be confirmed by the vendor. These form part of the commercial bid which are to be evaluated by the CNC. Audit noted that these general and commercial terms and conditions of the RFP were also evaluated by the TEC which is mandated to evaluate only the Technical Bid (technical parameters). This is procedurally incorrect as it violates the sanctity of the two-bid process.

Audit noted that the reason for this anomaly was that the format of RFP failed to clearly segregate the technical and commercial requirements. The RFP format therefore needs to be re-visited.

Ministry stated that as per DPP, procedure for technical bid evaluation included general parameters namely performance bond, warranty bond, advance bank guarantee, integrity pact, etc and checking the availability of these documents at TEC stage saves time and effort, thus correct.

However, Audit noted that the reply was not acceptable because the technical and commercial terms have to be clearly segregated in a two-bid process. The DPP would require review of this aspect.

7. Field Evaluation

Field Evaluation Trials (FET) was planned in two phases i.e. Carriage and Handling (C&H) phase and missile firing phase. The C&H phase of FET was carried out in Aircraft Systems and Testing Establishment (ASTE), Bangalore, during which, 'Me' missile of M/s Rafael was found unsuitable for integration on over-wing pylon of 'AC1' aircraft and was non-compliant to the RFP. Therefore, the proposal of M/s Rafael was not evaluated further.

The 'Md' missile of MBDA, UK was found suitable in both C&H phase and missile firing phase of FET.

8. Unrealistic Benchmarking

For obtaining AON from DAC in September 2008, IAF had estimated the cost of missiles and HMDs as ₹1110.35 crore, which was based on the Budgetary Quote obtained from M/s Rafael. The Contract Negotiation Committee (CNC) could have used this as a benchmark for price evaluation. However, the benchmarking committee estimated the benchmark price as ₹4354 crore, based on 'Mf' missile (an air to air missile with operational characteristics similar to the 'Ma' missiles) purchased from MBDA, UK in January 2012 for 'AC4'.

The price bid of M/s MBDA, UK was opened in September 2012. The firm had quoted a price of ₹2197.93 crore which was less than the benchmark price, so no further negotiations were held with the vendor.

The Budgetary Quote provided by M/s Rafael in 2007 was 276.206 MUSD. In order to compare this price with the price bid submitted by the vendors in 2009, this price was escalated to the median year of delivery i.e. 2015, applying an escalation rate of 3.5 *per cent* up to 2009 and 5 *per cent* thereafter. The price worked out to 396.53 MUSD. At the then existing exchange rate of ₹54.06 per USD, this worked out to ₹2143.54 crore. This was comparable to the quoted price of M/s MBDA i.e. ₹2197.93 crore.

When the Budgetary Quote for the identical missile system was available, using the Last Purchase Price of a different missile rendered the Benchmark Price unreasonably high. Moreover, the Budgetary Quote was for an identical product by M/s Rafael whereas the Benchmark price estimated by the Committee was based on different product from the same vendor.

Thus, the price benchmarking and price evaluation adopted by the CNC did not assure the reasonability of the price.

Ministry accepted Audit's contention that Last Purchase Price (LPP) was used for estimating the benchmark price. However, it did not explain reason for not taking the budgetary quote of the similar item provided by vendor in response to the RFI. This also defeated the purpose of seeking price details in RFI.

Further, Ministry's contention that the benchmarking was prudent and assured reasonableness is not tenable in view of the fact that bid price was less than half of the benchmarked price.

9. Conclusion of contract

After obtaining approval (December 2013) of CCS, contract was signed (July 2014) with M/s MBDA, UK for procurement of 'np' number of 'Ma' missiles, 130 HMDs and 'nq' number of launchers and associated equipment at a cost of ₹2197.93 crore with a delivery schedule of 54 months i.e. January 2019.

The entire procurement process from obtaining AoN in September 2008 to conclusion of contract in July 2014 took 69 months, which was 35 months over and above the prescribed procurement timeline of 34 months as per DPP 2008.

This delay was further compounded as integration of the missile by Hindustan Aeronautics Limited (HAL) was not co-ordinated by IAF, as discussed below:

10. Non-synchronisation of procurement with integration

As per the contract, delivery of the missiles was to commence within 18 months (January 2016) from the date of contract. Ideally, by this time, Hindustan Aeronautics Limited (HAL) should have been ready for integrating the missile on the 'AC1' aircraft. IAF approached HAL only in November 2014 to provide the cost for integration of the missile on 'AC1' aircraft which were undergoing up-gradation at HAL. In September 2015 due to integration of a number of systems on the 'AC1' aircraft during up-gradation, there was a shortage of memory space in the Mission Computer (MC) and Smart Multifunctional Display (SMD) of the aircraft. If the 'Ma' missiles was to be integrated into the upgraded 'AC1' aircraft some of the upgrades had to be modified. IAF gave the go ahead for the same. HAL then submitted its price quote for integrating the 'Ma' missiles (February 2016), based on which order was placed on HAL in May 2017 for integration of the missiles on two upgraded 'AC1' aircraft at a cost of ₹270 crore and delivery schedule of 18 months (November 2018).

Meanwhile, in February 2016, M/s MBDA informed that the missiles were ready for delivery. IAF decided that supply of the missiles without completion of aircraft integration work by HAL would lead to wasting of their storage life and warranty as they would be lying in storage without usage until commencement of integration. Thus, the contract was amended in April 2016, revising the delivery schedule to commence from January 2017. The first lot of missiles for integration purpose were received in January-April 2017.

Thus, improper planning on the part of IAF delayed the delivery of the missiles and its integration on the 'AC1' fleet. Resultantly, the entire 'AC1' fleet is devoid of a self-protection missile since 2009. IAF stated in February 2018 that 'Ma' missiles was

needed to provide self-defence to the 'AC1' aircraft in a hostile air defence environment, which is essential to ensure its survivability during operational missions.

Ministry stated that IAF did not have a role in the complex integration work being executed by HAL in coordination with M/s MBDA and delaying in deliveries of the missiles saved precious storage life of missiles and warranty.

IAF being the end user, is fully involved in the integration of the missiles on the aircraft. Moreover, delivery of missiles was delayed due to delay on the part of IAF in coordinating integration of the missiles with HAL. However, Audit noted that IAF had not involved HAL, at the time of preparing the procurement proposal and this may have contributed to lack of timely integration.

VI. Acquisition of C-130 J30 Aircraft

1. Introduction

Air transport operations are an important component of the combat support operations carried out by the IAF. The primary requirement of special operations aircraft is for insertion of troops, military hardware including Infantry combat vehicles and special operations teams into enemy territory or Anti National Elements location. These tasks are inherently risky especially in mountainous terrain when carried out covertly in night.

Six C-130 J30 aircraft were procured (January 2008) from M/s Lockheed Martin, USA. The procurement was made through Foreign Military Sales (FMS) through an Inter Government Agreement with the Government of USA. Total value of the contract was MUS\$ 962.45

IAF initiated (December 2010) the proposal for procurement of additional six C-130 J30 aircraft as repeat purchase under Para 64 of DPP through FMS route at a cost of ₹4042 crore.

2. Incorrect estimation of AON cost

AON for procurement of additional six C-130 J30 aircraft was accorded (February 2011) by DAC at a cost of ₹4042.27 crore, which included ₹228.21 crore for technical infrastructure. Contract was signed (December 2013) at a cost of ₹6119.83 crore excluding infrastructure. The AON cost was estimated based on the last purchase price of aircraft procured in January 2008. It was a repeat purchase of the same item yet the estimated AON cost was 34 *per cent* below the quoted and contracted price. There was large difference in the estimated AON cost and LOA cost. Audit observed that the difference in cost was mainly because an incorrect inflation rate of 4 *per cent* per annum was adopted for price escalation. Secondly, administrative charges and certain elements such as packing, crating & handling, transportation charges were not considered.

Ministry accepted the findings and stated that the AoN cost did not include packing, crating & handling, transportation charges and also administrative charges of 3.8 *per cent* of the estimated cost.

3. Formulation of ASQR

Audit observed that seven ASQR parameters had not been met by C-130 J30 aircraft procured under contracts of January 2008. Waiver from RM had been obtained for accepting the aircraft. These ASQR parameters were also included in the Letter of Request (LOR) made to the USG for the procurement of six additional aircraft in 2013. These requirements had also not been met in the additional aircraft procured under contract of December 2013. These include Large Aircraft Infrared Countermeasures (LAIRCM), Instrument Landing System (ILS), Self Protection measures, Maximum Take off Weight (MTOW), Terrain Following/ Terrain Avoidance (TF/TA) Radar, Communication Suits, Operational Data Link (ODL).

LAIRCM was not supplied by the USG due to export restrictions. Ministry accepted this deficiency on the grounds that an alternate non US system could be integrated later. Audit noticed that no such system was provided in C-130 J30 aircraft till date (April 2018). The ASQRs had prescribed Cat III ILS. C-130 J30 aircraft did not have Cat III ILS. Audit observed that there are no airfields with Cat III ILS in India but only Cat II ILS. Therefore, inclusion of Cat III ILS in the ASQR rendered the ASQR unrealistic.

Similarly, the requirement of Self Protection prescribed in the ASQR was not available with the US Air Force. The Self Protection used by USAF was below the requirement of the Indian ASQR.

Another ASQR requirement was the ability of the aircraft to cruise at 30000 feet after take-off at its Maximum Take Off Weight (MTOW). However, the C-130 J30 aircraft was partially compliant as the aircraft can cruise at 27000 feet only after take-off at its MTOW. Assessment Committee accepted this deviation.

Audit noticed although these were mandatory ASQRs for the special operation aircraft but the aircraft had been procured without these essential requirements. Ministry could have considered customisation of these items by making additional payments as has been done in other procurements.

Ministry stated that since the six additional C-130 J30 aircraft were procured through repeat order, the ASQRs could not be changed because DPP did not permit such change. Audit while accepting the contention of the Ministry noted that the substantial point of Audit was that ASQRs were made unrealistically. If ASQRs could not be changed, purpose of asking for them is not clear. Despite gathering market information ASQRs contained parameters which were not available with USAF. Ministry did not address this issue in its reply.

4. Contract Negotiation Committee (CNC)

As per DPP, before opening of commercial bids, CNC should establish a benchmark price for ascertaining the reasonableness of price. Audit observed that no CNC was conducted for procurement of these aircraft on the ground that price quoted in the offer were on no profit and no loss basis. The price quoted in the commercial offer were therefore accepted as it is.

Ministry stated that there is no CNC in the FMS process and the reasonability of price is ensured by the US contract management agency. Audit noted that in a FMS process relying solely on the other party for the reasonability of price was not prudent. Some due diligence in this regard needs to be done by the Ministry.

5. Conclusion of Contract

Letter of Request (LOR) was issued (September 2011) to USG and Technical Description Documents (TDD) was submitted by USG in April 2012. An assessment committee evaluated the TDD and submitted the report in October 2012.

After CCS approval (December 2013), a LOA was signed (December 2013) by Ministry with USG for procurement of additional six C-130 J30 aircraft at a cost of ₹6119.83crore (MUSD 1011.54) as a repeat order. The delivery of aircraft was to be completed by June 2017. This was actually completed in August 2017, only slightly later than the schedule.

An amendment to LOA was signed (September 2016) by Ministry with USG for procurement of one additional C-130 J30 aircraft at a cost of MUSD 96.79 (₹644.44 crore) as a replacement of one C-130 J30 aircraft lost in accident in March 2014. The scheduled delivery of aircraft is from December 2019.

6. Aircraft accident

One C-130 J30 aircraft procured under initial contract met with a Cat-I fatal flying accident. (March 2014). Investigation concluded inadequate experience and training of the crew as one of reasons for the aircraft and recommended operationalization of Simulator for C-130 J30 at the earliest as one of the remedial measure.

Audit observed that Simulator of C-130 J30 aircraft was provided by the vendor against contract of January 2009, on a user rate payment basis. The simulator was installed (December 2012) but could not be put to use due to non-finalisation of usage rate contract by IAF. Usage rate contract was signed (August 2016) and training on simulator actually commenced in November 2016.

Audit noted despite installation (December 2012) of simulator, the training to pilots could not be imparted for more than three and half years (December 2012 to November 2016) due to non-finalisation of usage contract.

Ministry accepting the delay in commissioning of training simulator and stated that inadequate training was not the primary reason for the accident. However, Audit noted that IAF investigation report had pointed out inadequate training as one of the reasons for the accident.

VII. Procurement of 'WW' Munitions

1. Introduction

The 'WW' Munitions help in neutralizing strategic and tactical enemy targets during conflict. IAF was holding 'BB' bombs of 'nr' Kg class which were procured during 1980s and integrated on 'AC4' aircraft. The life of these 'BB' bombs had expired in October 2003. A case was initiated (June 2004) to procure 'WW' munitions 'nr' Kg class, to be used in a strike aircraft.

2. Planning

The life of existing 'BB' bombs expired in October 2003. But the case for procurement and replenishment of such important munitions was initiated in June 2004, eight months after the life expiring of existing munition. It then took four years to issue the RFP and eight years to conclude the contract and finally the munition could be replenished only in May 2015, 11 years after the life expiry of the existing stock. Therefore, for 11 years, the IAF was deprived of such important munitions with resultant gap in operational preparedness. Considering the large lead time required for procurement, IAF should have initiated the procurement much earlier to ensure timely replacement of life expiring munitions.

Ministry contented that process of procurement was initiated in 2002 by way of issuing RFI (before the expiry of life of 'BB' bombs in October 2003), while themselves agreeing that process of procurement is elaborate and timelines are prescribed in the DPP which are to be followed. This validates audit contention that IAF delayed in initiating the instant procurement.

3. Incorrect assessment of AON cost

Acceptance of Necessity (AON) was accorded (September 2004) by Defence Acquisition Council (DAC) for procurement of 'nd' number of 'WW' munitions at a cost of ₹200 crore. However, the proposal was again got approved (September 2005) from DAC at a cost of ₹382 crore, as there was typographical error in indicating the cost in the earlier proposal. Thus, there was a delay of one year in procurement process owing to typographical error.

Further while estimating the AON cost, IAF had taken the cost of different bomb which had a different penetration capability. This rendered the AON cost unrealistic.

Ministry contented that typographical error did not impact the procurement since AoN was obtained in September 2004 and AoN for escalated cost was obtained in September 2005. However, Ministry's contention is not tenable as AoN had to be obtained for a second time due to the typographical error.

4. Request for Proposal

RFI was issued (October 2003) by Air HQ to three³⁵ firms and Defence Attaches of eight³⁶ Indian Embassies abroad. But no response was received except from the Defence Attache, Indian Embassy Sweden, who stated that there were no manufacturers in that country.

RFP was issued to eight firms in December 2005. Response was received from M/s Raytheon, M/s Sagem and M/s Rafael. The RFP was cancelled in March 2007 as the procurement was leading to a single vendor situation even before commencement of trials.

5. Anomalies in Technical Evaluation

In response to RFP bids offered by three vendors were evaluated by Technical Evaluation Committee (TEC) and found (September 2006) that the weapon offered by M/s Rafael and M/s Sagem was compliant to ASQRs and recommended for field evaluation. M/s Raytheon did not meet the ASQRs hence was rejected. The proposal was not processed further as M/s Sagem did not submit Integrity Pact and this was leading to single vendor situation even before commencement of trials. Hence, the RFP was cancelled in March 2007.

No efforts were made by MoD to obtain the Integrity Pact when the procurement was re-tendered M/s Sagem again responded with Integrity Pact. Thus during the first tender itself the ministry could have approached M/s Sagem for Integrity Pact instead of retendering as there were no change in the ASQRs and terms of RFP.

Ministry stated that RFP was withdrawn as non-compliance of integrity pact would disqualify the vendor to participate in further procurement process. This would have resulted in a single vendor situation which was against the tenets of DPP.

However, the reply does not address Audit view that ministry could have approached M/s Sagem for Integrity pact or obtained waiver from RM instead of retendering.

³⁵ M/s Lockheed Martin, New Delhi, M/s Boeing Liaison Office, New Delhi and M/s Rafael, Israel

³⁶ Washington, London, Paris, Moscow, Tel Aviv, Sweden, South Africa and Italy

6. Retendering

Again in August 2007, Air HQrs issued RFI to seven³⁷ firms and Defence Attaches of seven³⁸ Indian Embassies. This time two firms namely M/s Raytheon of USA and M/s Rafael of Israel responded. M/s Raytheon shared some information about the product but clearly stated that the bombs could be procured only under Foreign Military Sales (FMS). M/s Rafael had shared the technical brochure and confirmed that its product would meet the ASQRs.

Thus, despite establishment of number of Defence Attache/Air Attaches in various countries, none of them could make available the required information. Despite the information of 'WW' munition being available with IAF, reasons for issue of RFI again in August 2007 are not clear.

RFP was again issued in February 2008 to nine³⁹ firms and only two firms M/s Sagem and M/s Rafael responded.

7. Technical Evaluation

The weapon offered by M/s Sagem and M/s Rafael met all the ASQRs, however, the trial methodology proposed by M/s Sagem was at variance with the RFP requirements. Further, M/s Sagem had offered a 'ns' Kg weapon instead of 'nr' Kg. Approval for deviation from trial methodology was obtained from Raksha Mantri as per DPP and weapon offered by M/s Sagem was cleared for field evaluation. The weapons offered by both the firms were technically qualified under different trial methodologies and cleared for procurement.

Thus Ministry accepted a weapon which was much short of the ASQR. DPP allows only minor deviations through the approval of RM. But this was a material deviation and M/s Sagem should have been rejected.

Audit is of the opinion that since the procurement case was again becoming single vendor and to avoid single vendor situation, MoD accepted deviations. Ministry accepted the audit contention that deviation in trial methodology was accepted with the sole objective of ensuring a multi-vendor scenario. Technically qualifying a bid which

³⁷ M/s Rosoboronexport, Russia, M/s International Business Development, Textron Systems, Wilmington, M/s MBDA, France, M/s Rafael Armament Development Authority Ltd, Israel, M/s Boeing International Corporation India Pvt Ltd, New Delhi, M/s Sagem Defense Security, France and M/s Raytheon Missile Systems, USA

³⁸ Israel, Washington, France, Stockholm, Moscow, London and Defence Cooperation, US Embassy

³⁹ M/s Rafael, Israel, M/s Sagem Defence Security, France, M/s Boeing Company, M/s Lockheed Martin, USA, M/s Raytheon, USA, M/s MBDA, France, M/s Bazalt, Russia, M/s EDO MBM Technology Ltd, UK and M/s IMI, Israel

did not meet the ASQRs would have created problems in case the bid had emerged as the lowest priced. IAF would have ended up acquiring deficient quality weapon.

8. Field Evaluation

The Field Evaluation Trials (FET) were carried out as shown below:

Table-16: Details of Field Evaluation Trials

Firm	Weapon	Dates		Place
		From	To	
M/s Rafael	'WW' munition	12 July 2010	16 July 2010	Israel
M/s Sagem	'WX' munition	27 September 2010	01 October 2010	France

FET and Staff Evaluation (SE) found that both the proposals were in compliance with ASQRs and recommended for processing.

9. Price Evaluation by Contract Negotiation Committee (CNC)

CNC was constituted in February 2011 and a sub-committee was constituted (February 2011) to establish the reasonability of the cost of the proposal.

9.1 Unrealistic Benchmarking

As per DPP, CNC should establish benchmark and reasonableness of price in an internal meeting before opening the commercial offer. Once the commercial offers are opened and the price of the vendor is found to be within the benchmark fixed in the internal meeting, there should be no need to carry out any further price negotiations.

The Benchmarking committee had estimated the cost of procurement as ₹805.75 crore. The benchmark price was derived from the last purchase price of similar weapons and associated equipment.

Audit observes that despite availability of budgetary quote of US\$ 353,000 per 'WW' munition provided by M/s Rafael in response to RFI in 2007, same was not considered by CNC.

The price quoted by M/s Rafael was ₹564.51 crore as against the benchmark price of ₹805.75 crore, which was 30 *per cent* less than the benchmark price. This indicates that the benchmarked price was not estimated realistically.

Ministry re-iterated audit's contention that Last Purchase Price (LPP) was used for estimating the benchmark price. However, it does not explain reason for not taking the budgetary quote of the same item provided by vendor in response to the RFI. This also defeated the purpose of seeking price details in RFI.

Ministry's contention that M/s Rafael's proposal matched reasonably well with the benchmarked cost is incorrect due to the fact that bid price was 30 *per cent* less than the benchmark price.

9.2 Price Evaluation

The price bids were opened (June 2011) by the CNC and found that the price quoted by M/s Rafael and M/s Sagem was ₹564.51 crore and ₹1718.03 crore respectively and M/s Rafael was declared as L1. Since the price quoted by M/s Rafael was less than the benchmark price, no negotiation was carried out by CNC and report was finalised in September 2011. Though there was no price negotiation, CNC totally took over seven months to submit its report. The delay was mainly due to time taken in assessing the reasonability of the cost by benchmarking committee and finalization of term and conditions of the contract.

Ministry stated that considering that the instant case involved a weapon of such technical complexities, the time taken by CNC to establish the reasonability of cost of the proposal was acceptable.

10. Conclusion of Contract

Contract for procurement of 'nd' number of 'WW' munitions was concluded (April 2012) with M/s. Rafael for a sum of MUS\$ 124.07. The supplies were completed by May 2015.

Additional quantity of 'ns' number of 'WW' munitions were procured under option clause /repeat order from the same vendor in August 2016 for MUS\$ 98.80. Supplies are in progress and the scheduled date of completion in April 2019.

VIII. Procurement of additional Reconnaissance Systems

1. Introduction

In order to provide all weather, day and night surveillance capability to the 'AC6' aircraft, In- principle approval was accorded by Raksha Mantri in July 2001 for procurement of six Reconnaissance⁴⁰ (Recce) pods with associated systems for the 'AC6' aircraft at an estimated cost of ₹660 crore. MoD procured (December 2004) 'nt' number of Recce pods from M/s ELTA, Israel (M/s ELTA) at a cost of MUS\$ 136.61. In order to improve the operational capability of the 'AC6' fleet, IAF projected need for additional 'nu' number of Recce Pods.

Acceptance of Necessity (AON) was accorded (September 2012) by Defence Acquisition Council (DAC) for procurement of additional 'nu' number of Recce pods and associated equipment at a cost of ₹942.55 crore from M/s ELTA.

2. Delay in issue of commercial Request for Proposal

After AON (September 2012), draft RFP was submitted (December 2012) by IAF to MoD i.e. after over two months. Collegiate meeting for vetting the RFP were held in December 2012 and February 2013 but finalised in April 2013. Despite adopting collegiate vetting, against the laid down timelines of one month MoD took four months for vetting of RFP. The delay was mainly due to discussion on inclusion of AMC with or without spares for five years in the RFP. While preparing the RFP MoD did not consider the AMC for the existing Recce systems. There was also delay in according approvals to record of discussion of collegiate meeting. RFP was issued by MoD to M/s ELTA in May 2013.

Ministry reiterated the facts and stated that there was requirement to amend the draft RFP to resolve the issues relating to spares. Ministry further stated that discussions/observation of various agencies in the instant case were relevant and time taken has resulted in rationalisation of spares which has accrued cost benefits.

⁴⁰ A reconnaissance (Recce) system is used to collect intelligence data for operational needs. An aerial Recce system comprises 'SS' pods and Ground Exploitation Stations (GES). The 'SS2' pod possess dual band capability in both visible and infra-red bands with a data link for real time processing of information whereas the 'SS1' pods offers real time, all weather day and night stand off strategic Recce capability with sub-meter resolution. The 'SS1' pods use radar for imaging while the 'SS2' pods offers better picture quality but they are fair weather systems that are adversely affected by adverse climatological conditions. The GESs are the control centres for the pods on the ground and are critical for information processing.

However, RFP was re-submitted on 25 February 2013 to collegiate meeting for vetting and vetting process was completed same date but Record of Discussion was approved on 5 April 2013. Further the purpose of collegiate meeting in the present case defeated because Ministry took 32 weeks to vet and issue commercial RFP against the timelines of eight weeks after AON.

3. Technical Evaluation

To evaluate the Technical compliance of offer submitted (July 2013) by M/s ELTA, Technical Compliance Evaluation Committee (TCEC) was constituted (August 2013) by IAF. The proposal of M/s ELTA was found technically compliant but non-compliant with certain conditions of RFP viz. effective date of warranty, period of intimation about force majeure by affected party, clarification on AMC etc. Based on clarification sought (August 2013) and discussion held, M/s ELTA revised (October 2013, November 2013) the proposal twice. The Technical Evaluation Committee submitted (December 2013) its report, which was approved (January 2014) by IAF and accepted (January 2014) by DG (Acq).

Audit observed that IAF took over three weeks to constitute TEC after opening of proposal. Further, as the proposal was under repeat order and there was no FET even then technical evaluation took 22 weeks against the laid down timelines of 12 weeks.

Ministry while accepting the delays further stated that the delay was primarily due to revision of the proposal twice by the vendor.

4. Technical Offset Evaluation Committee

Technical Offset Evaluation Committee (TOEC) was constituted (November 2013) by MoD to evaluate the Technical commercial offset proposal submitted (October 2013) by M/s ELTA.

TOEC found that the proposal was not aligned with the DPP, therefore TOEC sought clarifications from vendor on various issues viz. IOPs were not fulfilling the laid down criteria of the offset guidelines, vendor has not indicated the eligible offset products in the offer, vendor had not indicated the exact relation to each product with the main equipment etc. and discussions were held with vendors. During November 2013 to August 2014, IAF raised queries eight times and meetings were held twice to bring the proposal to align with DPP. M/s ELTA updated the Technical Offset Proposal eight times. The final revised updated Technical proposal was submitted by M/s ELTA in August 2014, which was found compliant to provisions of offset guidelines and recommended for acceptance by TOEC. TOEC report was approved (September 2014) by IAF and accepted (October 2014) by MoD.

Non-alignment of technical proposal with provisions of DPP and revisions thereof led to delay in finalization of TOEC report. Delay in finalization of TOEC also had cascading effects on constitution of CNC and its finalization. Thus, TOEC took 41 weeks to finalise the TOEC report against the laid down time lines of 4 to 8 weeks.

Ministry accepted the delays and stated that vendor proposal was not aligned the proposal to the requirement of the Offset Guidelines, which vendor aligned after multiple rounds of deliberations.

5. Delay in price Evaluation by Contract Negotiation Committee (CNC)

5.1 Incorrect Benchmarking of Prices

As per Para 51 of DPP-2011, Bench Marking Committee (BMC) was constituted (October 2014) by CNC to establish reasonable price before opening of commercial offer.

CNC assessed the benchmarking price of 'nu' number of Recce pods and associated equipment at MUS\$ 144.78. For assessing the benchmarking price, last purchase price of Recce pods procured in 2004 was escalated by 2.7 *per cent*, calculated as per Purchase Parity Index (PPI) of Israel from 2007-2013 i.e. mid delivery of previous contract (2009) to expected mid delivery of extant proposal (June 2017). Escalation rate in the acquisition scenario is more suitable if based on the cost of inputs such as capital, labour, energy and material instead of PPI which is just a ratio of the exchange rates of the vendor and buyer countries. This was done by the CNC later by adopting an escalation rate based on material and labour price indices of Israel. The cost of training and documents were calculated on pro-rata basis whereas cost of setting up of 'I' level test equipment was worked out at 2004 base year. BMC also recommended 6.45 *per cent* of the material price as benchmarking price for AMC which was MUS\$ 46.55. The benchmarking price was accepted (December 2014) by CNC.

Audit observed that there was incorrect assessment of benchmark price by BMC due to following reasons:

- BMC had not considered the optional equipment costing MUS\$ 7.302 procured to enhance performance of Recce pods under the contract of 2004 and was also part of the present order.
- Though representative of Principal Adviser Cost was member of BMC, the escalation rate adopted by BMC and period of escalation was not correct.
- Reusable LRUs costing MUS\$ 19.035 were also missed out while assessing the benchmark price.

Ministry reiterated the facts in its reply and stated that all the available tools as deemed necessary by the BMC were explored, adopted and employed in the instant case. The fact remains that the benchmarking of price was deficient.

5.2 Price Evaluation

CNC opened (December 2013) the commercial proposal of M/s ELTA and found the quoted price for Recce pods and AMC were MUS\$ 368 and MUS\$ 238.543 respectively. The quoted price Recce system was 154.18 *per cent* higher than the benchmark price. Similarly, the quoted price of AMC was 17.43 *per cent* higher than the benchmarking price. Price quoted by M/s ELTA include MUS\$ 92.68 towards warranty and engineering and Quality Assurance in variance with requirement of RFP. This was removed (March 2015) by M/S ELTA after discussion and vendor reduced the price to MUS\$ 275.32.

Due to incorrect benchmarking CNC faced problem in price negotiation. Audit observed that CNC had to revise the benchmarking price five times during commercial negotiation as discussed below:

- BMC had not considered the optional equipment costing 14.33 MUS\$ procured to enhance performance of Recce pods under the contract of 2004 and was also part of the present order. After escalating at a rate of 2.7 *per cent* for 7.5 years, CNC reassessed (March 2015) the reasonable cost as 159.80 MUS\$.
- On the advice (March 2015) of Advisor (Cost), rate of escalation was changed to 2.11⁴¹*per cent* (considering escalation of deliverables as per US aero data for other equipment) for 9 years (considering the mid delivery period of previous contract as 2007 and for extant proposal as 2016), the reasonable cost was reassessed as MUS\$ 158.18.
- CNC observed (April 2015) that the cost of optional equipment not considered by BMC was MUS\$ 7.302 instead of MUS\$ 14.33 and reusable LRUs costing MUS\$ 19.035 were also missed out during bench marking process. After escalation as 2.11 *per cent* for 9 years, CNC reassessed (April 2015) the benchmark price as MUS\$ 172.20.
- The cost of MUS\$ 172.20 was not acceptable to M/s ELTA. They brought out that there were changes in delivery terms⁴², payment and warranty⁴³ terms and also offset obligations was included in the RFP therefore these factor needs to be considered. M/s ELTA also requested to consider 11 year escalation period as it

⁴¹ Available from open sources for US Aerospace Industries

⁴² DAP in the extant proposal vis-à-vis FCA in the previous contract.

⁴³ Reduced downtime to be maintained by M/s ELTA i.e. 30 days instead of earlier 90/120 days

emerged that the contract was not likely be signed before March 2016. After discussion 10 year escalation period was agreed by both the sides. CNC considered the fact that warranty requirements were three to four time better than previous contract and there was no direct cargo flight between Israel and India due to security reasons, the equipment was to be transported through Bangkok. Committee after considering an additional cost of 2 *per cent* in respect to enhanced warranty cost and inputs obtained from Balmer and Lawrie & Co regarding transportation charges, reassessed (May 2015) the benchmark price as MUS\$ 184.93. CNC gave (June 2015) a counter offer of MUS\$ 182 whereas vendor responded with an offer of MUS\$ 232.

- CNC reassessed (June 2015) the reasonable cost of deliverable as MUS\$ 186.89 after considering an escalation rate of 2.1 *per cent* and 2.34 *per cent* for material and labour respectively based upon the actual increase in consumer price index for Israel. Since the reassessed price was without the impact of offset, CNC decided to negotiate the cost between MUS\$ 190-195.

This took seven months to finalise (Oct. 14 to June 15) the cost of contract.

After various round of meetings (June 2015) CNC finally negotiated the price with M/s ELTA at MUS\$ 195.

Further, the price of AMC was negotiated for five months. Thereafter CNC took another seven months to finalise the terms and conditions of the contract, which was finalised in July 2016.

Thus, CNC took 20 months to finalise the price of main contract, AMC and terms and conditions of the contracts. The delays were mainly due to incorrect assessment of benchmarking price by BMC and finalisation of terms and conditions of the contract.

Ministry in response reiterated that facts. The fact remains that the delay in finalisation of CNC was mainly due to incorrect assessment of reasonable price by benchmarking committee and finalisation of terms and conditions of the contract despite availability of Standard contract document in the DPP.

6. Conclusion of Contract

MoD concluded contract with M/s ELTA in March 2017 for supply of 'nu' number of Recce System and associated system with delivery schedule as March 2020. In repeat order contract, the acquisition process is simpler than fresh acquisition, however, MoD took four and a half years to conclude the repeat order contract, which was one more year as compared to time taken by MoD to conclude the original contract, which was concluded within three and a half years after AON.

Ministry in response stated (28 January 2019) that the instant case is of repeat purchase with some technological advancements in electronics LRUs and catered for offsets. These were major differences from the previous contract. Owing to the peculiarities in the instant case, its comparison with the previous purchase will not be a correct reference indicator with respect to the time lines involved.

However, the fact remains that as this is a repeat order case where technical evaluation is much simpler than the fresh procurement and field evaluation was not involved, which otherwise takes considerable time during procurement process. Further, Ministry reply that delay was due to inclusion of offset in the present contract is not tenable because Technical Offset Evaluation is a concurrent activity which did not affect the timeline of procurement.

IX. Procurement of Full Mission Simulators for Su-30 MKI aircraft

1. Introduction

Simulators are required to simulate flight conditions to undertake ab-initio and continuity training of aircrew and ground crew, resulting in considerable saving in training costs. MoD procured one Full Mission Simulator (FMS) and three Part Task Trainer (PTT) from M/s Rosoboronexport, Russia under a contract concluded in March 2007 at a cost of MUSD 18.76 for Su-30 MKI aircraft. With the increase in number of Squadrons of Su-30 MKI aircraft, IAF projected (January 2012) a case for procurement of five FMS and upgrade of existing three PTT to FMS standard at an estimated cost of ₹390.25 crore as a repeat order of initial contract of March 2007 under para 65 of DPP-2011 from M/s Aerospace Equipment Corporation⁴⁴, Russia (M/s AEC), which was subsequently revised to procurement of five FMS only at a cost of ₹288 crore.

AON was accorded (June 2012) by DAC for procurement of five FMS as a repeat order from M/s Aerospace Equipment Corporation (M/s AEC) at a cost of ₹288 crore with deviation⁴⁵ for issue of RFP to M/s AEC in place of M/s ROE.

2. Issue of RFP to vendors

Audit observed that IAF had initiated (January 2012/April 2012) that case for procurement of five FMS as repeat order of contract of March 2007 from M/s AEC. At the time of AON (June 2012), Air Attache, Moscow had informed (June 2012) IAF that M/s Sukhoi had also developed FMS for Su-30 MKI aircraft. M/s Sukhoi also intimated (August 2012) IAF that it was the design agency of Su-30 MKI aircraft and the copyright for the design, documentation and source data on the basis of which special software of FMS was developed, was with them. M/s Sukhoi was ready to submit a commercial offer and was also ready to give full access to all actual source codes.

Despite their inputs, MoD did not check up with Federal Service on Military Technical Cooperation⁴⁶ (FSMTC) about the existence of another vendor i.e, M/s Sukhoi before issue of RFP. However, immediately after issue of RFP to M/s AEC (14 May 2013)

⁴⁴ M/s ROE was the contracting agency and M/s AEC was the OEM of the Simulator. In March 2007, M/s AEC was not cleared for direct dealing.

⁴⁵ Initial contract was concluded with M/s ROE Russia, however, proposal for repeat order was directly with OEM M/s AEC Russia

⁴⁶ FSMTC in Russia recognizes individual Russian companies for entering into contracts for supply of specific military equipment to foreign countries.

FSMTC on its own initiative informed IAF (17 May 2013) that M/s Sukhoi was an authorized supplier of Su-30 MKI simulator.

Ministry stated that at the time of AON (June 2012), FSMTC had nominated M/s AEC for the supply of Su-30 MKI simulators. Since it was a repeat purchase the same firm was approached. However, the Ministry reply is not acceptable as Audit noted that at the time of AON, Air Attache, Moscow had informed (June 2012) IAF that M/s Sukhoi could also supply the simulator. Therefore, both vendors could have been considered, instead of the single vendor. Lackadaisical approach of IAF in obtaining confirmation from FSMTC led to a single vendor case, which also forbade the competitive price.

3. Technical Evaluation

Technical proposal received (September 2013) from M/s AEC was evaluated by Technical Compliance Evaluation Committee and found that M/s AEC had submitted some conditional compliance to terms and conditions of the RFP. IAF raised the issue with M/s AEC in piecemeal during November 2013 to March 2014 and requested (March 2014) to furnish fresh compliance table of the whole RFP. Based on clarification sought by TCEC, M/s AEC submitted (March 2014) fresh compliance table for simulator and AMC. TCEC finally submitted (March 2014) its report and found the offer technically compliant. TCEC report was accepted (March 2014) by DG (Acq). Thus TCEC took 29 weeks against the laid down timelines of 12 weeks in completion of TCEC. The delay was owing to seeking clarification in piecemeal from the vendor.

Ministry in reply stated that all the observations were forwarded to the vendor in one go and not in piecemeal manner. Audit noted that the Ministry's reply to be factually incorrect. Clarifications were sought from the vendor five times. Ministry's reply was silent on the reasons for the delay.

4. Delay in price Evaluation by Contract Negotiation Committee (CNC)

4.1 Unrealistic Benchmarking of cost

Benchmarking Committee (BMC) constituted (May 2014) to assess the reasonable price of the FMS under procurement. BMC worked out the price of FMS based on LPP duly adjusted⁴⁷ and applying escalation rates agreed between Indian and Russian Government. BMC also assessed the cost of AMC based upon the ongoing contract

⁴⁷ Reducing the cost of MRLS, Mark up cost, Technical literature, quantity discount and Design and Development (D&D) being Non-Recurring

negotiations for the AMC of existing system. BMC assessed the cost of five FMS and five year AMC as MUSD 44.48 and MUSD 15.3 respectively.

Ministry in its reply did not address the issue regarding unrealistic variation in quoted and benchmark price. However, it was stated that variation in the quoted cost and that of the benchmark price does occur. As regards variation in AMC cost, it was stated that AMC for existing simulator was under process at the time of benchmarking. Hence the cost of on-going contract negotiation of AMC was not factored.

4.2 Delay in price evaluation

After approval (March 2014) of TCEC report, CNC was constituted (April 2014). Benchmark Committee estimated (July 2015) the Benchmark price of five FMS and five years AMC as MUSD 44.48 and MUSD 15.3 respectively. Price bid of M/s AEC was 79 per cent and 90 per cent respectively above the benchmarking price as shown below:

Table-17: Comparative price details

Deliverable	Qty	AON Cost (MUSD)		BM Cost (MUSD)		Commercial quote (MUSD)	
FMS	05	11.32	56.62	8.72	43.60	15.722	78.613
Installation and commissioning	05	0.17	0.85	0.167	0.83	0.20	1.002
Documents	05 sets	NA	NA	0.01	0.05	Inc in cost of FMS	Inc in cost of FMS
Total		11.49	57.47	8.89	44.48	15.922	79.61
AMC cost for 5 years	5 FMS	NA		15.30		72.21	

The main reasons for large variation between BM price and quoted price was the adoption of incorrect escalation rates and non-inclusion of D&D cost.

The vendor quoted 79.61 MUSD for FMS. During the period from May 2014 to January 2015, after eighteen internal and thirteen external meetings final negotiated price was agreed by both the parties as MUSD 53.33. During January 2015 to September 2015, CNC negotiated the cost of AMC and terms and condition of contract. The vendor had quoted MUSD 72.21 for AMC. Finally, AMC for five year was negotiated at MUSD 29.0. CNC took 76 weeks in finalisation of CNC as against 18 weeks prescribed in DPP.

On being pointed out in Audit, Air HQ accepted (March 2018) that difference between benchmark and final negotiated price for FMS was primarily to match the simulated

software of aircraft from earlier 7i version to the latest 11i version and to cater for the obsolescence of earlier version of window based operating systems.

Ministry in its reply attributed the difference between benchmark price and bid price to change of software version. Audit noted the reply to be untenable because this fact was already known and should have been factored by benchmarking committee. The reply is silent on the reasons for delay.

5. Conclusion of contract

Contract was concluded by MoD with M/s AEC in January 2016 at a cost of MUS\$ 53.3 (₹322.70 crore) with commencement of delivery after 29 months and completion in 46 months i.e. from June 2018 to November 2019. A protective clause was included in the contract which stated that the right to items⁴⁸ delivered under the contract shall remain with the seller and buyer will neither manufacture nor upgrade/modify the items at its own or by a third country without prior consent of the seller. Such a clause was not part of standard clauses of contract forming part of RFP.

On being pointed out (December 2017) in audit, IAF replied (March 2018) that though the clause was not included in the RFP, but during CNC meeting vendor brought out that similar clause was present in the previous contract and same was included in the contract after approval (August/September 2015) by DAC.

Ministry in its reply had not addressed the issue. It was however, stated that the case was a repeat order and similar clause was present in the previous contract.

Thus with this contractual stipulation, it would not be possible for MoD/IAF to go for future upgradation through multi-vendor competitive bidding process which would not be in the interest of MoD/IAF and also denial of benefit of competitive bidding price.

⁴⁸ Equipment, documentation and software

X. Procurement of Doppler Weather Radar

1. Introduction

Meteorological wings of IAF provide meteorological reports, forecasts and warnings to civil and military operations for the safe conduct of Air Operations. Doppler Weather Radar (DWR) is used to detect a storm in advance, its distance, severity and direction of movement.

As of 2005, IAF did not have any DWR. Raksha Mantri in September 2005, approved the Procurement of 11 DWRs at a total cost of ₹165 crore. The acquisition also included procurement of Transfer of Technology (ToT) to M/s Bharat Electronics Limited (BEL), for licenced production of DWRs in India.

2. Incorrect Assessment of AoN cost

Procurement of 11 DWRs at a total cost of ₹143 crore was approved by the Defence Acquisition Council on 14th September 2004. But IAF failed to include the recurring expenditure for manning these DWR units, cost of work services and cost of transport and communication. Therefore, in June 2005, IAF revised the estimate to ₹165 crore, and fresh sanction of Raksha Mantri was obtained on 19th September 2005. This resulted in one-year delay in the procurement process.

Ministry contended that increased cost did not impact the delay as inferred by Audit.

The Ministry's contention is factually incorrect in view of the fact that IAF had to obtain revised AoN in September 2005 delaying the procurement process by one year.

3. Incorrect formulation of ASQR

Request for Proposal (RFP) for procurement of DWRs was issued in January 2008 to ten vendors. Only two vendors – M/s Selex Sistemi Integrati, Germany and M/s Enterprise Electronics Corporation, USA had submitted bids. The TEC (December 2008) found that the radars of both the vendors met the technical requirements, except for the following two deviations:

- RFP required the minimum range to be 100 m or less. However, the vendors had explained that due to technical limitations of the equipment, the minimum range achievable was 300 m.
- The ASQR had also stipulated that the radar should be of Mil Standard (Military Standard) which means a ruggedized version of the equipment for

military use. The vendors stated that the DWR is a commercial equipment meeting European/US/ISO certification and does not require Mil Standards.

TEC found merit in the explanation given by both the vendors and therefore recommended that the minor deviations from ASQRs may be waived with the approval of the RM. Also, it was discovered later by SEPC that the parameter of range was erroneously mentioned in RFP as '100 meter or less' instead of '1000 meter or less'. However, DG (Acquisition) in January 2009 did not approve the case for waiver on the grounds that DPP did not permit change in ASQRs after the issue of RFP. Hence IAF was directed to cancel the RFP and to reformulate their ASQRs and re-tender.

ASQR was reformulated wherein the two parameters were modified as follows:

- The minimum range of the radar was changed from '100m or less' to '1000m or less'.
- The requirement of military standards was replaced with conformance to international standards or equivalent.

Audit found that none of the vendors could meet the ASQR as the ASQR was improperly formulated. A Staff Equipment Policy Committee (SEPC) which is responsible for approving the ASQR also observed that the ASQRs framed by IAF were of very exhaustive specifications which was avoidable.

Conformance of a product to Military Standards means that a commercially available product has to be made specific to military use or in other words made to withstand rugged use. Thus, the military version of the same product is much costlier than the commercial version. Therefore, military standards are to be prescribed exceptionally only on products which actually have such a need. The DWR is a static equipment to be placed in the airfields. The SEPC also stated that IAF should not insist for Mil grade equipment, as the vendors would unnecessarily quote exorbitant prices and still find it difficult to provide these items.

Because of faulty ASQR formulation, there was a delay of nearly two years in the procurement process, besides the wasted efforts in re-tendering. Retendering was avoidable as waiver could have been granted for two out of the 42 ASQR parameters prescribed for the radar, as there was due justification for doing so.

Ministry stated that case for waiver of non-compliance of ASQRs was not progressed on the grounds that the waiver may deny opportunity to prospective bidders.

Ministry's contention is not substantiated by the fact that while re-tendering, RFP was issued to ten firms, out of which nine were the same to whom RFP was issued in the first instance and the same two firms responded who had submitted their bids earlier.

4. Poor Response to RFP

Request for Proposal (RFP) for procurement of DWRs was issued in January 2008 to ten vendors. Offers from two vendors – M/s Selex Sistemi Integrati, Germany and M/s Enterprise Electronics Corporation, USA were received.

When retendering was undertaken, RFP was issued in September 2009 to ten vendors. In response, the same two vendors - M/s Selex Sistemi Integrati, Germany and M/s Enterprise Electronics Corporation, USA – responded in December 2009. Thus, even though RFP was issued to ten vendors twice, only two firms responded in both cases.

Ministry stated that during pre-bid stage, seven vendors had interacted with BEL but only two responded and even removing of Mil standard did not improve responses, which indicated a denial regime by vendors.

Ministry's contention is factually incorrect in view of the fact that DWR is used for predicting weather conditions and was already supplied to IMD by a foreign firm.

5. Evaluation of commercial terms by Technical Evaluation Committee

A scrutiny of the RFP revealed that there were a number of commercial parameters such as Performance Bond, Warranty Bond, Advance Bank Guarantee Bond, Integrity Pact and Earnest Money Deposit whose commitment was to be confirmed by the vendor. These form part of the commercial bid which are to be evaluated by the CNC. Audit found that these general and commercial terms and conditions of the RFP were also evaluated by the TEC which is mandated to evaluate only the Technical Bid (technical parameters). This is procedurally incorrect as it violates the sanctity of the two-bid process.

Audit found that the reason for this anomaly was that the format of RFP failed to clearly segregate the technical and commercial requirements. The RFP format therefore needs to be corrected.

Ministry stated that as per DPP, procedure for technical bid evaluation included general parameters namely performance bond, warranty bond, advance bank guarantee, integrity pact, etc and checking the availability of these documents at TEC stage saves time and effort, thus correct.

Reply is not tenable because the technical and commercial terms have to be clearly segregated in a two-bid process. The DPP would require review of this aspect.

6. Delay in Price Evaluation

Contract Negotiation Committee (CNC) constituted in November 2011 determined the Benchmark Price prior to opening of the price bid. This was based on the last purchase price obtained from Indian Meteorological Department (IMD) which had placed purchase order on M/s Vaisala Oyj, Finland in July 2010 at a cost of ₹8.96 crore for a DWR. After adding cost of ToT and two years comprehensive AMC, the benchmark price for 11 DWRs was estimated at ₹109.24 crore.

On opening price bids in December 2011, CNC found the bid submitted by M/s Selex Sistemi Integrati, Germany was the lowest at ₹106.79 crore, which was about 2 *per cent* lower than the benchmarked cost of ₹109.24 crore. Hence, the cost of procurement was accepted as reasonable and recommended (July 2012) for procurement action.

Audit observed that in spite of L1 price being less than the benchmark price, CNC took seven months to complete the price evaluation and negotiations. In contrast, IMD took only one month for price evaluation and negotiations, when it procured the same radars. The delay was primarily due to finalisation of cost of ToT and the ToT agreement between BEL and Selex.

Ministry reiterated the fact that delay was primarily due to non-finalisation of cost of ToT and the ToT agreement between BEL and Selex. CNC had taken seven months against DPP time frame of six months, and an additional month for complex ToT negotiations was considered justified.

7. Conclusion of contract

Contract was concluded with M/s Selex Sistemi Integrati, Germany on 26th September 2012 for procurement of 11 DWRs at a total cost of EURO 15, 130, 855.00 (₹106.79 crore). Out of the total procurement of 11 radars, three radars were direct purchase, while eight were to be licence produced at BEL through ToT. This involved two radars to be supplied in Semi Knocked Down (SKD) condition, one radar in Completely Knocked Down (CKD) condition and five radars were to be fully indigenous manufacture. Delivery of the radars and the TOT kits ranged from 16 to 42 months from the contract date, which should have been completed by March 2016.

As per the procurement timelines prescribed by DPP, the entire procurement process and conclusion of contract should have been completed within 34 months i.e. by July 2007. However, the contract was concluded only in September 2012, i.e. after a delay of over five years.

Audit compared the procurement of the identical DWRs by the Indian Meteorological Department (IMD) in July 2010. Audit found that IMD had completed the entire procurement process (from indent to placement of supply order) in eleven months, whereas IAF took 96 months to procure the same radars. IAF took 60 months to issue RFP and obtain responses from the vendors, while IMD took only 1 month to do so. While IAF took 26 months for Technical Evaluation, IMD took only 3 months to do so. IAF/MoD needs to reflect on how not to complicate simple cases of procurement of “Off- the shelf” kind of equipment.

Ministry stated that comparing the procurement by IMD with IAF was not fair comparison since the IMD case did not involve any ToT and only two radars were procured, while IAF procurement included ToT.

However, Audit noted that even after considering that ToT was involved in IAF procurement, time taken by IAF to procure the DWR (96 months) in comparison to the time taken by IMD (11 months) was unjustified. Attributing additional 85 months to the inclusion of ToT was unjustified. Even when compared to the prescribed timelines of 34 months in the DPP there was a delay of over five years. The primary case of delay was re-tendering, which in turn was due to faulty formulation of ASQRs.

8. Poor post contract management

As per the contract, all the 11 radars should have been supplied by March 2016. However, only three DWRs were received and installed by September 2017. Delivery of the remaining radars is yet to be completed, as their delivery schedule is yet to be firmed up due to poor post contract management, as discussed below:

8.1 *Inadequate knowledge of contract issues*

Preamble of the contract for procurement of 11 DWRs signed between MoD and M/s Selex Sistemi Integrati, Germany on 26th September 2012 stated that “the seller shall be deemed to include its successors and assignees”.

After conclusion of contract in 2012, the vendor in February 2014, requested for amending the contract to change the name of the firm from M/s Selex Sistemi Integrati to M/s Selex GmbH due to merger within the Selex group of companies. The name of the firm in the contract could have been easily changed because the preamble of the

contract stated clearly that the seller shall be deemed to include its successors and assignees. But Audit found that MoD spent over two years in clarifying the issue with the Legal Adviser (Def), Indian Embassy in Germany, Air HQ and the vendor. It was only after two years, when in April 2016, Attorney General of India clarified that the preamble of the contract states that seller shall be deemed to include its successors and its assignees. Thus, the vendor having merged with other companies resulting in creation of a new entity would be included under the concept of successors and assignees. The contract was finally amended in October 2016, changing the name of the firm to Selex ES GmbH.

Thus, due to indecision and lack of understanding of contractual issues, a contract amendment which was within the ambit of contractual terms, took two years to be implemented, which consequently delayed the execution of contract deliveries by two years.

Ministry reiterated the facts already brought out by Audit and further added that the delay in processing the contract amendment was due to differing legal opinions on the case. Ministry further added that since then, to reduce procedural delays, the process of contract amendment for name change had been standardised by MoD.

8.2 Delay in fructification of ToT

Because of the delay of two years in changing the name of the vendor in the contract, the delivery schedule also had to be amended. But MoD amended the delivery schedule of only the first three radars which were to be purchased in fully formed conditions, from 24 months to 62 months. The delivery schedule of the remaining eight radars was not amended.

This piece-meal amendment of delivery schedule was because BEL invoked the Clause 13.5 and 13.6 of the ToT agreement with M/s Selex which stipulated that in the event of any delay caused by M/s Selex, the parties shall mutually discuss the further implications of such delays and any additional costs which can be claimed by BEL. BEL contended that the firm was contractually obliged to make good the additional costs incurred by BEL, because of the delay in the program. However, M/s Selex, Germany contended that as per the Technical Collaboration Agreement, all prices were firm and fixed for the scheduled period and since there was no change in the scope of deliveries, there was no need to increase the prices.

Audit found that invoking of this Clause by BEL was incorrect because the delay was not attributable to M/s Selex but was caused by the delay in decision making by MoD as discussed at Para 8.1 above.

Later, in October 2017, BEL agreed to extend the delivery schedule of three radars to be delivered as SKD and CKD to 76 months i.e. to January 2019. It was also decided to review the price, terms and conditions of delivery of the remaining five radars.

Thus, only three out of the 11 radars, need for which was felt way back in September 2005, could be made available to the users after 13 years. In the absence of DWR, IAF was resorting to estimation of the approaching weather by manual visual observation.

Ministry stated that IAF had taken initiative to resolve the issues between Selex and BEL, which were only partially resolved (ToT, SKD & CKD) and further course is being deliberated between the two agencies with regard to the IM radars.

Volume II

Procurement of Medium Multi Role Combat Aircraft (MMRCA)

1. Introduction

Medium Multi Role Combat Aircraft (MMRCA) are capable of simultaneously performing several roles like Air Defence and ground attack roles. In order to arrest its depleting force level, Indian Air Force (IAF) initiated a proposal in the year 2000 to procure 126 MMRCA on single vendor basis. In 2007, it was decided to acquire these aircraft through multi-vendor tendering.

Request For Proposal (RFP) was issued in 2007 to six vendors, all of whom submitted their bids. After technical and field evaluation trials, only two aircraft viz Rafale of M/s Dassault Aviation (M/s DA), France and Eurofighter Typhoon of M/s European Air Defence System (M/s EADS) were judged to be technically qualified.

In the price evaluation based on Life Cycle Costs, the bid of M/s DA was judged to be the lowest. The commercial negotiations with M/s DA continued but reached a stalemate on following two issues (i) man hours required by M/s Hindustan Aeronautics Ltd (HAL) as the Lead Production Agency (LPA) and (ii) refusal by M/s Dassault Aviation to provide performance guarantee of 108 aircraft to be produced by M/s HAL Ltd.

A decision was made in April 2015 to procure 36 Rafale aircraft through a Government to Government contract with the French Government. An Inter Government Agreement along with Aircraft and Weapons Package supply protocols was concluded in September 2016 for procurement of 36 flyaway aircraft along with associated equipment at a cost of “U” million €.

To have a systemic view of the acquisition process, we have examined the complete process of procurement of MMRCA starting from first proposal of the IAF for single vendor procurement of 126 Aircraft in the year 2000 to the acquisition of 36 Rafale aircraft through IGA in 2016.

This volume contains redacted observations by deleting/masking certain details of the acquisition of MMRCA as sought by the Ministry of Defence’s letters dated 15 January 2019 and 06 February 2019 citing reference to Article 10 of the Inter-Governmental Agreement (IGA) for acquisition of 36 Rafale Aircraft and the provisions of an Indo French Agreement “concerning the Protection of Classified Information and Material in the field of Defence” signed on 25 January 2008.

The Audit observations are divided into two parts. Part A highlights the issues related to the process for acquisition of 126 aircraft with Transfer of Technology. Part B delineates the issues related to acquisition of 36 Rafale flyaway Aircraft through an IGA after the negotiations for 126 aircraft had come to a standstill.

Part A

126 MMRCA acquisition process

1. Delay due to IAF's insistence on procurement of Mirage 2000 II as MMRCA

As of 2000, IAF had "X" fighter aircraft squadrons (each consisting 18 aircraft) as against the required "Y" squadrons. Together with its plan to replenish the fleet, IAF was also planning to reduce the types of fighter aircraft in its inventory from 15 variants to three or four variants. These aircraft fell under the following three categories:

- i. Long range and heavy weight fighters
- ii. Medium range, medium capacity and medium weight multi-role fighter
- iii. Light weight, limited capacity, low cost fighter aircraft

IAF required more fighters in medium range, medium weight and multi-role category with the same basic performance as that of the Mirage 2000 which was currently in service. Therefore, IAF in August 2000 proposed to acquire 126 Mirage 2000 II (an upgraded version of Mirage 2000) for induction from 2004-05 onwards. It was also proposed that two squadrons be directly procured from the manufacturer M/s Dassault Aviation and the remaining to be license produced by Hindustan Aeronautics Limited (HAL) under Transfer of Technology (TOT). The cost envisaged for this proposal was ₹ "B" crore (at 2000 price level).

Ministry did not approve this proposal on the grounds that the DPP-1992 did not allow for Single Source procurement. Ministry of Defence (Ministry) directed that a competitive tendering process should be adopted.

IAF, again in March 2001, resubmitted its earlier proposal of acquiring 126 Mirage 2000-II aircraft on a single vendor basis, justifying it on the basis of a cost benefit analysis of the available options. It argued that while other available options such as Rafale, Eurofighter, F-35, etc., were technologically superior to Mirage 2000, the excess combat capability of these aircraft would remain underutilized as Air Force requirement was a comparatively modest aircraft for shorter range missions. Given the higher cost of procurement of the above aircraft, it was argued that Mirage 2000 II was more cost effective.

The Ministry in June 2001 conveyed that the established Defence Procurement Procedures *i.e.* competitive tendering be followed.

IAF again resubmitted its original proposal in December 2001, stating that instead of treating it as a single vendor procurement, it should be treated as repeat purchase of the previously purchased Mirage 2000 aircraft⁵⁹ (more of the same basis). At the insistence of IAF, technical discussions were held from April to September 2002, between M/s Dassault Aviation of France, HAL, DRDO and Ministry (Finance) to study the operational capability of the aircraft, maintenance aspects and licensed manufacture of the aircraft at HAL. Subsequently, in March 2003, IAF argued before the Defence Procurement Board (DPB) that Mirage 2000 MK II was the best option as in terms of capability and performance it was similar to its contemporaries like Rafale of M/s DA, France, Eurofighter of M/s EADS and Gripen of M/s SAAB, Sweden, but less expensive than these aircraft. IAF also argued that though F-16/F-18 of M/s Lockheed Martin/Boeing USA were in similar class as the Mirage 2000 MK II, it could face difficulties in case sanctions were imposed by USA. Rafale and Eurofighter were technologically superior to the Mirage 2000, but Mirage 2000 MK II could also have the state of art avionics, sensors and weapons suite, developed for the Rafale aircraft.

DPB deliberated the issue for almost a year, till January 2004 and finally discarded the proposal and directed IAF to start competitive tendering process in accordance with DPP-2002.

Thus, four years were spent on deciding whether to procure the aircraft on single source basis or through competitive tendering. Audit noted that DPP did not permit single source procurement and Ministry did not want to deviate from the DPP, there was perhaps no reason for spending six month discussing with M/s DA and studying the feasibility of single source procurement and its licensed production.

Ministry, while accepting the fact, stated that because of the exemplary performance of Mirage 2000 in the Kargil Conflict, IAF wanted Mirage 2000 II, as the MMRCA.

2. Gathering information by issuing ‘Request for Information’ to vendors

The DPP requires that, after obtaining the Acceptance of Necessity (AON) and before drafting the RFP, information should be obtained about the product and its vendors by issuing a Request for Information to known vendors. The stated aim of this exercise was to ensure:

- a. Better formulation of Qualitative Requirements (QRs).
- b. Better drafting of RFP, which is better aligned to the market, so as to ensure smooth procurement.

⁵⁹ ‘AC4’ were procured in 1983-1984

- c. To obtain indicative prices so that budgetary requirements and benchmarking for price evaluation could be done.

IAF formulated the Air Staff Qualitative Requirements (ASQRs) for MMRCA in January 2004 and issued Request for Information (RFI) to five vendors⁶⁰ in November 2004. The RFI had sought detailed information about warranty, maintenance and product support, patent rights, ToT and Offsets.

Though, the RFI process did not add much value, it delayed the acquisition process by three years, from the formulation of ASQRs in January 2004 to issue of RFP in August 2007. It took about 10 months for the vendors to respond to the RFI. Initially M/s DA (December 2004) insisted on supplying Mirage 2000 MK II on single source bases through IGA route. M/s Lockheed Martin also offered to supply through FMS route. But, later they agreed to participate in competitive tendering.

Against the detailed information sought, the vendors provided only the brochures of the aircraft produced by them, information which was already available in public domain. The basic information about the product, vendors and prices of available MMRCA aircraft was already available with IAF (prior to issue of RFI), based on which the three earlier proposals for procurement of Mirage 2000 MK II was put up by IAF.

Ministry stated that the details about the aircraft available in the market were obtained by holding classified discussion with the vendors during the RFI process. Based on these inputs, the ASQRs were revised leading to increased vendor response from five to six. Contention of the Ministry that RFI process led to an increase of vendor response is incorrect. The additional vendor viz. M/s EADS was included for issue of RFP based on the firm's own request.

3. Issues in framing of Qualitative Requirements

Air Staff Qualitative Requirements (ASQRs) was finalized and Defence Acquisition Council (DAC) accorded Acceptance of Necessity (AON) in June 2007 for procurement of 126 MMRCA. Eighteen aircraft were to be acquired in flyaway condition and balance 108 aircraft to be manufactured by M/s, HAL as Lead Production Agency (LPA) through Transfer of Technology (ToT) from the Original Equipment Manufacturer (OEM). Accordingly, in August 2007, RFP was issued to six vendors.

Audit noted that aircraft of none of the six vendors that participated in the tender, could meet all the ASQR parameters in technical evaluation. ASQRs parameters were narrowly defined. In some cases they were also not clearly defined. Significantly these

⁶⁰ M/s Dassault Aviation, M/s Saab International, M/s RAC MiG and Office of Defence Co-operational (ODC), US Embassy New Delhi for two firms M/s Boeing and M/s Lockheed Martin.

shortcomings occurred despite the fact that seven years were spent in framing of ASQRs. These issues are discussed below:

3.1 Inclusion of specific technological requirements in ASQRs

The DPP states that SQRs should be broad based and realistic. It further states that the SQRs must express the user's requirement in terms of functional characteristics and its formulation must not prejudice the technical choices by being narrow and tailor-made. However, instead of stating the user's requirement in terms of functional parameters, ASQRs specified the exact design or technology required to perform the desired function. This created difficulties during technical evaluation and different technologies, even if they served the same functional requirements were rendered non-compliant with the narrowly defined ASQRs. Audit identified six such parameters. There was at least one situation where the vendor offered alternate or advanced technology to achieve the same function. However, such offers rendered their technical bid noncompliant to the ASQRs which needed exemption or waiver in order to be technically accepted. Waiver of RM was accorded only for two of the six deviations. In three deviations, Acquisition wing of Ministry directed that these issues could be discussed during negotiations with L1 bidder by the CNC. No specific waiver was sought in the SER in case of one parameter as the Vendor was offering a better technological solution than the ASQR parameter.

Thus, the inclusion of narrow design and technological features in the ASQRs, at least one of them outdated and redundant, created difficulties during technical evaluation as waivers were required for not meeting the prescribed ASQRs. Ministry was also reluctant to grant waivers and advised that three of these parameters could be discussed by Contract Negotiation Committee (CNC) with the L1 bidder, which was never done. In addition to causing delay in technical evaluation, these parameters increased the costs as seen later and posed challenges in Technical Evaluation.

In response, Ministry accepted Audit findings. It also stated Ministry's lack of exposure in formulation of ASQRs needed to be recognised, accepted and rectified. Audit noted that Ministry did not explain shifting three technical parameter deviations for discussions by the CNC which seem inappropriate. Further CNC did not discuss these parameters with the vendor.

4. Issues in technical and trial evaluation

After opening of the Technical Bid, the first stage of technical evaluation involves comparison of the bid with the prescribed ASQR by the Technical Evaluation Committee (TEC). All those bids which meet the ASQRs are qualified for the next stage

of Field Evaluation Trials (FETs) where the aircraft are subjected to flight tests as per the already defined protocol. At the end of trials a Field Evaluation Trial (FET) report is submitted. Based on the FET report the final technical assessment of the Air Force is submitted in the form of Staff Evaluation Report (SER). Issues in these evaluations are highlighted in the succeeding paragraphs.

4.1 Deficiencies in Technical Evaluation (TEC)

In the Technical Evaluation conducted in May 2008, five of the six aircraft⁶¹ could not meet all the ASQR parameters. The other four aircraft had one to two deviations, Rafale aircraft could not meet 9 ASQR parameters prescribed in the RFP. Further, it did not submit the data for Manufacturers List of Spares and Engineering Support Package.

Due to this noncompliance, the TEC rejected Rafale. The Technical Manager Air [TM(Air)], Ministry while examining the TEC report raised certain queries regarding non-compliance of ASQRs of various aircraft and directed the TEC to review its evaluation accordingly. After obtaining clarification from the vendors, the TEC in March 2009 upheld its technical evaluation report which again rejected Rafale aircraft.

TM (Air) again sought clarification (12 March 2009) on the warranty and option clause of the Bids submitted by vendors. After obtaining these clarifications from vendors, TEC again reviewed its report and upheld its decision to reject the bid of M/s DA for Rafale aircraft (25 March 2009).

On subsequent clarifications obtained from the vendors, out of the 9 ASQR parameters on which Rafale was rejected, M/s DA offered to modify six of the parameters to meet the ASQR requirements. The firm offered to give additional commercial proposal for making these changes. It stated that the aircraft made to NATO specifications required customisation to meet the needs of IAF. But still it could not meet three of the ASQR parameters. The vendor agreed to supply Engineering Support Package (ESP) and Manufacturer Recommended List of Spares (MRLS) data. However, it still did not comply to the warranty and option clauses specified in the RFP. In view of the above, in March 2009, it was decided by Ministry to reject the technical bid of M/s DA and get waiver of RM on some non-compliance to the ASQRs in the bids of four vendors (EADS, Lockheed Martin, Boeing and Gripen).

As this proposal was being submitted for approval of RM, Ministry received (April 2009) a *suo moto* representation from M/s Dassault for reconsideration of its proposal, stating that it was willing to modify the aircraft to meet all the ASQR parameters and was willing to comply all RFP requirements. During discussions with

⁶¹ Mig 35 aircraft met all ASQR parameters

the Vendor, deficiencies in additional ASQR parameters were realised by the MoD making the total deficiencies in 14 parameters. Ministry forwarded the representation to IAF for examination by TEC. In the additional TEC report received by Ministry on 13 May 2009, TEC recommended that technical proposal of M/s DA met the requirements of RFP. It further stated that the feasibility and modalities of implementing the modification proposed by the vendor may be verified during field evaluation trials and additional commercial proposal from the vendor may be accepted after due process. Subsequently, waiver on deviations from ASQR and RFP conditions in respect of five vendors and the proposal to accept the additional commercial offer of M/s, DA was approved by RM on 28 May 2009.

Audit noted that, Para 35 of DPP-2006, states that the technical offer once submitted should not be materially changed subsequently; however, minor variations which do not affect the basic character/profile of the offer may be accepted. It further stipulates that no extra time should be given to any vendor to upgrade his products to make it compliant with QRs and the original commercial quote submitted earlier must also remain firm and fixed.

Hence, Audit noted that the opportunity provided to M/s Dassault Aviation to significantly modify its technical and price bid was in violation of DPP.

Ministry in its reply stated that it was not a violation of DPP and that it was approved by the highest decision making body 'the DAC'. However, Para 35 of the DPP allows for only minor deviations which do not affect the basis character or materially change the bid. But M/s DA was allowed to bring about enhancements of 14 parameters which, ultimately was to cost over 'XX' million €. Hence M/s DA was treated preferentially. The firm attributed these modifications to the unique requirements of the IAF and called them Indian Specific Enhancements (ISEs). However, Audit noted that the Indian requirements, while they might not have been available in Rafale, were not unique because most of these features were available in the other 5 aircraft that were evaluated. For instance, Helmet Mounted Display⁶² was available in all modern fighter aircraft including Eurofighter.

4.2 Deficiency in Field Evaluation Trials (FET) and Staff Evaluation Report (SER)

Audit observations on the FET and its Staff Evaluation Report are as follows:

⁶² A device to project information about the battle space on the visor of helmet of the Pilot for better control & quick response.

4.2.1 IAF conducted Field Evaluation Trials of aircraft offered by all six vendors in accordance with the trial methodology formulated by Air HQ. However:

- (i) Two aircraft viz., Eurofighter and Rafale were cleared based on their presentation in the lab as to how they proposed to meet the shortcomings in meeting certain ASQRs. Therefore the aircraft were technically accepted without evaluating the significant modification/ enhancements made on them.
- (ii) Four aircraft viz., “Z1”, “Z2”, “Z3” and “Z4” were rejected in field trials as they could not meet the ASQR parameters of “Growth Potential” and “Design Maturity”. Audit noted that there was no objective, verifiable or measurable criteria prescribed for evaluation of these parameters.

Ministry in its reply stated that Growth Potential had verifiable measures like- “Residual Capacity should be greater than 25 per cent” and “spare electrical power” should be greater than 25 per cent”. The Field evaluation was done accordingly. Ministry’s reply was silent on the evaluation of Design Maturity.

However, Audit noted that if the parameter ‘Growth Potential’ did have the verifiable measures as stated above, then it should have been clearly stated in the ASQR and included in the RFP. The trial evaluation Report should also have indicated the actual findings against these parameters. However, none of these steps were taken.

4.2.2 As per the TEC report, Rafale aircraft had failed to meet 14 ASQR parameters. SER stated that the non-compliance of the three parameters viz “W1”, “W2” and “W3” mode of radar would not have any operational impact. In addition SER also recommended for waiver of one more parameters (“W4”). Further, Audit independently noted that two of the ISEs viz. “W5” and “W6” proposed by the vendor were apparently not needed in the first place as the detailed field evaluation trial report⁶⁴ had noted them to be satisfactory.

Ministry in its response stated that both the aircraft were noted compliant to all ASQRs requirements after having obtained the necessary waivers from the Raksha Mantri. However, Audit noted that Ministry’s response was factually incorrect. In the parameters recommended by the SER, the waivers were not even sought from the RM but MoD recommended them to be discussed by the CNC.

Ministry further also stated that two of the parameters viz. “W5” and “W6” were demonstrated in the trials through temporary arrangement and M/s DA had stated that

⁶⁴ The final technical evaluation report approved in 2011.

it would properly develop and integrate these features in the delivered aircraft. Audit noted that the contention of Ministry was not supported by Field Evaluation Report.

It is seen that the vendor had offered to modify 14 ASQR parameters for an additional “XX” M€ which included four parameters (“W1”, “W3”, “W5” and “W6”). The additional commercial offer was accepted by the IAF/Ministry. The costs of these excess ISEs was to the tune of “IS4” million euros.

4.2.3 Subjecting of technical decisions to the final decision of CNC

The Staff Evaluation Report had recommended for waiving of noncompliance of Rafale aircraft to four ASQR parameters as they were not needed in the first place. Three of these parameters were not put up to the RM for waiver by the DG Acquisition stating that they should be negotiated with the L1 vendor during CNC. This was never taken up by CNC during negotiation as recommended by Ministry even though it had significant price implication. Most importantly Audit noted that carrying over technical issues to price negotiation was incorrect. Technical matters cannot be negotiated and technical compliance/noncompliance was to be determined in the technical evaluation. Clear segregation need to be maintained between the mandate of TEC/SER and CNC.

Ministry in its reply stated that it was decided to leave the issues to CNC in order to expedite the process and that clear segregation existed between the mandate of TEC/SER and CNC. However, Audit noted that Ministry’s reply was not factually correct as the technical issues were left for the CNC to decide.

5. Price Evaluation

After Technical Evaluation two aircraft namely Rafale and Eurofighter Typhoon were technically qualified for further price evaluation. Price bids were opened in November 2011 by the CNC. The RFP required the price bid to be submitted for the Life Cycle Cost of the aircraft, and stated that the total life cycle cost would be the criteria for identifying the lowest bidder (L1). The price bid was required to give the detailed cost break up of all the seven components M1 to M7 as detailed in Para 6b.

Subsequent to the constitution of Contract Negotiation Committee (CNC) in April 2011, five sub-committees were formed which included one sub-committee for determination of L1 cost. The Audit findings on the process of price evaluation are discussed in the subsequent paragraphs.

a. Prices offered by M/s DA and sub vendors of M/s EADS were not on Firm & Fixed basis

Para 42(a) of the RFP required the price to be offered on Firm and Fixed⁶⁶ cost basis with a validity of 24 months. Further Para 14(g) of Part I of RFP specified that for product support an indices based formula was to be provided valid for 40 years with an annual cap. L1 subcommittee in its report stated (Para 2.1) that M/s DA had offered costs with a base price of June 2007 subject to escalation. The L1 subcommittee used the actual values available till June/July 2011 and used provisional values till September/October 2011. Beyond this, till the mid delivery period the committee used an annualized year on year escalation rate based on the historical data. M/s EADS had offered its commercial quote on fixed price basis for main equipment comprising of aircraft. However, its sub vendors had quoted for the weapons on a non-firm cost with index based escalation formulae.

Thus, the offers submitted by M/s DA and M/s EADS were non-compliant to RFP and liable for rejection as non-responsive bids. It was specifically mentioned in the RFP that the submission of bids in incomplete format would render the offer liable for rejection.

Ministry in its reply stated that the bids were compliant to the RFP. The CNC determined the 'Firm and Fixed' costs from vendor's proposals by applying escalation as per the Vendors' provided indices and formulae. The reply of the Ministry is perplexing as there cannot be any escalation if the costs offered were 'Firm and Fixed'. If the firm and fixed prices is to be taken as quoted price plus escalation till mid point of delivery, then DPP or at least the RFP should have specifically stated so. Audit has not been shown any document that unambiguously demonstrate that 'Firm and Fixed' in Defence Acquisition means other than the ordinarily understood meaning. Ministry also did not take any waiver on this major non-compliance to the RFP conditions. It is seen that the Staff Evaluation Report (September 2010) submitted to the Raksha Mantri had stated that the bids of the two vendors were on 'Firm and Fixed' cost basis. On the other hand, CNC evaluated these "non-firm and fixed" bids by escalating the commercial offers on the basis of formulae provided by the Vendors. It did not check up if any waiver was obtained on this deviation from the competent authority.

b. Unrealistic estimation of benchmark price

Ministry in April 2011 setup a Benchmarking Committee to estimate the benchmark price against which the price Bids of the vendors were to be evaluated. Benchmark

⁶⁶ The Commercial Offer was to be firm and fixed till the median delivery period without any escalation clause for inflation in material or labor costs etc.

price was to be determined prior to opening of the price Bids. The price was to be evaluated in terms of Total Life Cycle Cost *i.e.* the total cost of purchasing, operating and maintaining till the end of life of the aircraft. The Total life cycle cost had the following seven components:

- ✓ M 1 – Direct cost of Acquisition, *i.e.* cost of flyaway aircraft, Cost of Kits for license production, cost of infrastructure for manufacturing, cost of infrastructure for Intermediate and Depot level maintenance, cost of maintenance equipment for aircraft, operational and maintenance cost of weapon, cost of training aids and cost of documentation and initial training of pilots and technicians.
- ✓ M 2- Cost of Total Technical Life (TTL) based Reserves- cost of all spares required to be held during the life of Aircraft for the prescribed scheduled maintenance, including overhaul.
- ✓ M 3- Cost of Time Between Overhaul and Mean Time Between Failures⁶⁷ based Reserves.
- ✓ M 4- Cost of Scheduled Intermediate Level maintenance
- ✓ M 5- Cost of Depot Level Overhaul and maintenance.
- ✓ M 6- Operating Cost- Cost of flying the aircraft
- ✓ M7–Cost of Transfer of Technology- Transfer of Technology fees, technical assistance, training.

The Total Life Cycle Cost was used only for determination of the lowest bid (L1 bid). But the procurement contract was to be signed for the actual deliverables which was the total of only M1 and M7.

The Benchmark Committee worked out (August 2011⁶⁸) the total life cycle cost of acquisition for 126 aircraft as ₹ “E” crore. As against this the total life cycle cost of the lowest bid, as evaluated by the L-1 sub-committee of the Ministry was ₹ “E(+)” crore which was about 25 *per cent* higher than the benchmark price. Against this the price of actual deliverables (as included against M1 and M7 components), in the L1 bid was ₹ “H(+)” crore.

⁶⁷ **Time between** overhauls (TBO) is the manufacturer's recommended number of running hours or calendar time before an aircraft engine or other component requires overhaul (scheduled maintenance). Mean time between failure (MTBF) refers to the average amount of time that an aircraft engine or other component functions before failing (unscheduled maintenance).

⁶⁸ Exchange Rate was 1 Euro= ₹65.70 in August 2011

Table-1: Estimated cost of deliverables (non NPV)*(₹ in crore)*

	Direct Acquisition Cost	Life Cycle Cost
Bench Mark Price	H	E
Bid Price DA	H+	E+ ⁶⁹
Bid Price EADS	H++	E++

Thus, the benchmark price worked out by Ministry for the actual deliverables was 47 per cent below the actual prices offered by the L1 vendor, which shows that the benchmark price, once again, in this acquisition too, was fixed unrealistically.

c. Determination of Total Life Cycle Cost

The RFP required the price bid to be submitted for the Life Cycle Cost of the aircraft, and stated that the total life cycle cost would be the criteria for identifying the lowest bidder (L1). The price bid was required to give the detailed cost break up of all the seven components M1 to M7 as detailed in Para 6b.

Subsequent to the constitution of Contract Negotiation Committee (CNC) in April 2011, five sub-committees were formed which included one sub-committee for determination of L1 cost. Commercial Bids of M/s DA and M/s EADS were opened in November 2011 and the CNC in January 2012, recommended M/s DA as the lowest bidder on the basis of Life Cycle Costing. The price comparison of the Bids of the two vendors as computed by the L1 sub-committee, based on the Present Value (November 2011) of the payments is shown in the table below:

Table-2: Comparative price of two bidders (in billion €)

Components	Price quoted by M/s EADS*	Price quoted by M/s DA*
Direct Acquisition Cost (M1)	RI	TI
TTL based Reserves (M2)	RJ	TJ
TBO/MTBF based Reserve (M3)	RK	TK
Cost of I-level servicing (M4)	RL	TL
Cost of D-level overhaul (M5)	RM	TM
Operating Cost (M6)	RN	TN

⁶⁹ + denotes that the offer was higher than the benchmark and ++ means that the offer was substantially higher than the benchmarks

Cost of ToT+ Kits+ Spares+ Warranty (M7)	RO	TO
Total Cost of Acquisition (M8)	RP	TP
Total Cost of Acquisition (M8) (PV cost)	RQ	TQ

***prices with escalation and PV as computed by L1 subcommittee (November 2011)**

Audit noted that M/s DA did not submit its price bid in the format prescribed by the RFP which contained detailed cost breakup of the seven cost elements prescribed in the RFP, which were crucial for price evaluation. The firm had instead disclosed its price in two parts – Price of Direct flyaway aircraft and price of ToT. M/s EADS on the other hand had submitted its price bid in conformity to the prescribed RFP format giving the detailed cost breakup of the seven elements. This created difficulty in comparing the prices of the two firms.

In the absence of complete cost breakup of the seven components for the price bid of M/s DA, the price evaluation L1 sub-committee derived the price of these components with whatever information was available in the bid. The independent validation of these costs with reference to the Total Technical Life (TTL), Time Between Overhaul (TBO) and Mean Time Between Failure (MTBF) data given by vendor in their technical proposal was not possible.

Audit noted the following anomalies in the LCC based price evaluation process.

i. M 1- Direct Cost of Acquisition

The committee calculated the total Direct Acquisition Cost (M1) for Rafale aircraft as “TI” billion €. The M1 cost of Eurofighter aircraft was “RI” billion €. M1 included the cost of Kits and Material for licence production. Audit noted that the L1 sub-committee had taken the cost of Kits and Material for Eurofighter as “RIK” billion € whereas the vendor had quoted “RIK(-)”⁷⁰ billion €. This error was because the Sub-committee converted the price of different component of kits and material into INR from € and reconverted it to €. This was unwarranted as both the vendors had given the price of ‘Kits and Material’ in Euros. Thus the price of M/s EADS was overstated by (+) “TIK” billion €.

Further, Price bid for M1 M/s DA did not quote for the Capital Expenditure for setting up of license production of aircraft. It had stated that the price would be provided later. The L1 sub-committee, while comparing the prices took this price as nil while calculating M1 for Rafale aircraft. But Capital Expenditure for production was included in the price bid of M/s EADS.

⁷⁰ + and – denote if the prices were comparatively higher or lower

Ministry in its response stated that the price quoted by M/s DA for M1 included capital expenditure in the component of “Non-Recurring costs”. However, Audit noted that the Non-Recurring Cost and Capital expenditure for production of an aircraft are distinct. In the aircraft industry Non-Recurring Cost includes cost of R&D, testing and evaluation associated with aircraft modification, system engineering and program management cost which is incurred one-time before starting the production of a particular configuration of an aircraft. Capital expenditure on the other hand includes the cost of plant and machinery used for production of aircraft. M/s DA in its bid had clearly segregated Non-Recurring Cost and Capital expenditure and stated that the cost of capital expenditure would be provided at the time of signing of Technical Collaboration Agreement. But the L1 Sub-committee had assumed the Non-Recurring Cost as cost of plant and machinery.

Therefore, Audit noted that parity was not maintained in evaluation of M/s DA and M/s EADS bids on the element of Direct cost of acquisition.

In addition, while submitting additional commercial offer, M/s DA had quoted only the “Non-Recurring Costs (NRC)” for 14 India Specific Enhancements. It had further stated that the additional commercial offer did not include the costs related to implementation on serial aircraft⁷¹ and Logistic support adaptation which were to be quoted later on. However, Audit noted that L1 subcommittee had incorrectly adopted the additional commercial offer as inclusive of equipment and integration costs of ISEs on all the aircraft for evaluation of bids.

ii. M 7 – ToT elements other than those included in M1

According to the RFP the M7 cost element was to include the cost of knowhow, training, kits spares and tools. The RFP required the vendor to provide warranty on aircraft, engine, accessories, system, weapons and associated equipment. However, during price evaluation the sub-committee noted that M/s DA had also included the cost of warranty on the SKD, CKD and IM Kits to be supplied by the vendor under ToT. But M/s EADS quoted the warranty cost for SKD kits only. The Sub-committee therefore extrapolated the warranty cost of SKD to the CKD and IM kits. However Audit noted that this extrapolation was not correct because the warranty cost of CKD, SKD and IM would be different depending upon their level of indigenization. Thus, instead of comparing the prices after excluding the warranty costs on these items by M/s DA, the subcommittee added “TOSA” million € to the commercial offer of Eurofighter on account of warranty for the ToT kits.

⁷¹ Serial aircraft have the similar configuration as that of the prototype with ISEs

The Ministry in its reply stated that the same was done to comply with the warranty requirements as EADS had not provided the warranty costs for all the components. As pointed out above, this extrapolation was not correct as the warranty costs would have been different for SKD and IM kits.

6. Contract Negotiation

i. Calculation of manpower

For the calculation of the cost of production of the aircraft in India (by HAL) under ToT, the RFP required the vendors to quote the man hours required for production in India. M/s EADS quoted man hour requirement of 25.5 million man hours, while M/s DA quoted 31.2 million man hours. But M/s DA in its bid had stated that these man hours were according to the French industry. This was not in accordance with the RFP which required the vendor to quote the man hours as required in India. At the time of Bench Marking in June 2011, HAL had stated that the French man hours had to be converted to Indian man hours by multiplying M/s DAs quoted man hours by factor of 2.7. But CNC ignored this factor while determining the benchmark price as well as the L-1 vendor. This created difficulties later during negotiations with M/s DA when the CNC realized that after applying the factor of 2.7 to the manpower cost of M/s DA it was no longer the L-1 vendor. Audit noted that by including this factor, manpower costs would have been about $2.7 * 31.2$ million man hours * ₹ “XXY” /man hour for HAL = ₹ “XXZ” crore and the bid price of M/s DA would have increased by “ZZZ” billion €. The Ministry replied that CNC had felt that the manhour factor required by HAL was not on the basis of scientific rational and so the same was not agreed to in evaluation of bids. However, Audit noted that the reply of the Ministry is silent on the manner the bid of M/s DA was evaluated since it was submitted with manhours under ‘French industrial conditions’, and HAL wanted that figure to be multiplied by 2.7.

ii. Performance Guarantee of manufacturing at HAL

The RFP also stated that the vendor shall guaranty the performance of the product to design specification, at the production agency or customer locations. During CNC M/s DA took the position that the firm was only responsible for delivery of 18 direct flyway aircraft, CKD, SKD and IM kits and weapons and associated supply and services. HAL as the production agency was responsible for the quality of the 108 aircraft to be manufactured by it under ToT. CNC insisted that M/s DA should take full responsibility for the quality and performance of all 126 aircraft as required under the RFP.

The above two issues led to a stalemate in negotiations. Five years after the bid, and after three years of evaluation and negotiations, there was no finalisation.

iii. Steps leading to RFP withdrawal

Meanwhile, after determination of L1 Vendor during 2012, there were several complaints alleging irregularity in the price evaluation process, including complaints from Honorable MPs.

In May 2012 the price evaluation process, with the approval of RM, was referred to Independent External Monitors (IMs) who were appointed by Ministry to oversee the compliance to Integrity Pact. The Independent External Monitors (June 2012) in their report presumably on the basis of MoD's inputs, did not find any irregularity in the procurement process and stated that the process was reasonable and appropriate. However the RM in June 2012 directed that in order to derive complete assurance of the integrity of the procurement the matter be again examined by a team of Ministry officials.

The team in its report submitted on 27 March 2015 concluded as follows:

- At the stage of TEC, the proposal of M/s DA was non-compliant to the RFP with respect to the ASQR, Warranty clause and option clause. The proposal of the vendor should have been rejected at the TEC stage itself.
- The acceptance of additional commercial proposal after bid submission date for capabilities, which were already prescribed in the RFP, was unprecedented and against the canons of financial propriety.
- The price bid of M/s DA, was non-compliant as it was incomplete and not in the prescribed format.
- The L-1 sub-committee had filled up the incomplete entries by culling out figures given elsewhere under different headings of the price bid. While doing so, the members of the committee made certain assumptions. Calculation of L1 based on incomplete commercial proposal and based on assumption was incorrect and as such determination of L1 was faulty and not as per laid down procedure
- M/s DA is not the L-1 and therefore contract cannot be concluded with them.
- The proposal of vendor, M/s EADS was also not compliant with the RFP.

Therefore, the committee recommended in March 2015 that the RFP for the procurement of MMRCA may be withdrawn. As a result, the procurement which started in 2000 had made no progress even after lapse of 15 years and, in fact, failed on the twin issues of manpower costs and non-guarantee for aircraft to be manufactured by M/s HAL as brought out in Paras 7(i) and 7(ii) above.

Part B

Acquisition of 36 Rafale Aircraft through IGA

1. Introduction

On 10 April 2015 an Indo-French Joint Statement was made in Paris between the Prime Minister of India and the President of French Republic to conclude an Inter-Governmental Agreement (IGA) for supply of 36 Rafale Aircraft in fly-away condition.

- a) Following important points were agreed to in the joint statement:
- The 36 Rafale jets would be acquired as quickly as possible.
 - An IGA would be signed for the supply of the aircraft on terms that would be better than conveyed by M/s Dassault Aviation as part of a separate process underway
 - The delivery would be in time frame that would be compatible with the operational requirement of IAF
 - aircraft along with weapon and associated systems would be delivered in the same configuration as had been tested and approved by IAF and with a longer maintenance responsibility by France

The better terms were related to 'Price', 'Delivery' and 'Maintenance' as decided by the DAC in its meetings of 28.08.2015 and 01.09.2015. The IGA was to be signed after negotiating the price and other terms and conditions. To negotiate with representative of French government along with M/s Dassault Aviation, Ministry of Defence constituted an Indian Negotiation Team (INT) on 12 May 2015 with the approval of Raksha Mantri.

- b) The objectives of the negotiations were:
- (a) To expedite the delivery of Rafale aircraft and weapons.
 - (b) To bring down the cost of procurement.
 - (c) To obtain offsets to support 'Make in India' campaign.
 - (d) To obtain better terms and conditions in respect of warranty and product support.
- c) Based on the recommendations of the INT, in August 2016, the Government approved the signing of Inter Government Agreement for procurement of 36 Rafale aircraft with weapons and associated systems at

a cost of “U” million €. Ministry in September 2016 concluded following contracts with French vendors:

- a. Aircraft Supply Protocol at total cost of “AV” million € with PDC⁷² as 2022
 - b. Weapon Supply Protocol at total cost of “BV” million € with same PDC
 - c. Offset contract with 50 per cent value of (a) and (b) above excluding the PBL and STAAM costs
- d) Audit examined the acquisition of 36 Rafale aircraft through IGA to assess if the objectives of Indo-French joint statement and the objectives set out for INT by DAC were achieved.

Usually, in the IGAs for defence acquisition of Capital Assets, there are no comparable costs. However, keeping in view the Indo-French joint statement of April 2015, which stated that IGA would be signed for supply of the aircraft on terms that would be better (‘Price’, ‘Delivery’ and ‘Maintenance’) than the ones offered by M/s DA in 2007, a comparison has been made with the 2007 offer. This comparison of prices under 2007 and 2015 offers has posed its own difficulties because the package offered in 2007 included the price of License Production of 108 aircraft in India while the 2015 offer included only direct flyaway aircraft, which was compared costs of 18 flyaway aircraft. Costs are fungible: Which part of the overall costs were applied to direct acquisition and which to ToT costs is often difficult to say, as happened, for example in the case of warranty of CKD and IM kits discussed earlier at Para 6(c)(ii) or in the case of Mermoz Test Benches (discussed later in Para 2(c). Difference in volumes may itself affect costs. Therefore, for comparing the prices for the current IGA there were multiple cost reference points in 2007 offer of M/s Dassault Aviation, as mentioned below:

- i) Costs of 18 aircraft as flyaway aircraft
- ii) Costs of 108 aircraft which were to be licensed produced in India by HAL and which itself had following issues.
 - M/s DA had refused to provide guarantee for aircraft to be produced by HAL
 - HAL had advised Ministry to multiply the man-hours quoted by M/s DA by 2.7 for Indian conditions
- iii) Costs of 126 aircraft as a whole with their warranty conditions, License Production with ToT costs, maintenance etc
- iv) Cost of basic aircraft and of the ‘fully loaded’ aircraft

⁷² PDC- Probable Date of Completion of delivery

In view of these complexities related to reduction in quantities, deletion of license production & ToT costs, option clause and bank guarantees in the 36 Rafale procurement, a review was undertaken to examine the Indian Negotiation Team's process for alignment of costs in these two offers. The findings are discussed in subsequent paragraphs.

2. Audit Findings

2.1 Selection of Rafale for procurement through IGA

Negotiations with M/s DA had reached a deadlock when the CNC realized that if the Indian man hours were applied to the cost of production quoted by M/s DA, the price of the aircraft would be substantially higher. Also the issue of warranty for the aircraft produced by M/s HAL was also not settled. In July 2014, M/s EADS gave an unsolicited offer of 20 per cent discount on the previous firm fixed 2007 offer on behalf of the Eurofighter typhoon Consortium. As per the letter, this offer was in view of further maturity in the Eurofighter typhoon program which had generated synergies. In this offer, EADS also offered to enhance the ToT process through a comprehensive training and support programme to be combined with creation of an Eurofighter Typhoon Industrial Park in India. Ministry did not accept this offer stating that it was an unsolicited offer. Further, with the procurement of only 36 aircraft through an IGA, Audit also could not find any proposal with Ministry for filling of this wide gap in the operational preparedness of the IAF.

Ministry in response stated that M/s EADS unsolicited offer of 20 per cent discount had factual inaccuracies. The Ministry further stated that the 36 Rafale IGA procurement had been undertaken with the L1 bidder of the MMRCA case in consonance with the procurement process iterated in the DPP. It is seen that while there are no provisions of concluding an IGA with L-1 bidder in the DPP, however for INT and for Audit that reference point was necessary to determine better price, better delivery etc. as stipulated in the Joint Statement.

Ministry further informed that to fill up the gap Ministry had issued RFI for Single engine fighter aircraft through Strategic Partnership route. In addition Ministry stated that RFP for 83 Light Combat Aircraft has also been issued.

2.2 Assessment of achievement of the objective of reducing the cost of procurement

a. Unrealistic Price Benchmarking by INT

Before commencing negotiations, the Indian Negotiating Team estimated the benchmark price on a Firm & Fixed cost basis keeping in view of the expected discounts, market study, Rafale sale price from annual reports of M/s DA etc., as "R" million €.

This was about 57 *per cent* lower than the initial offer of the French Team and 46 *per cent* lower than the non -firm & fixed offer of “T” million €. Audit noted that as the INT was already aware of both the previous unrealistic benchmark pricing as well the commercial offer, they could have estimated the benchmark price more realistically. Audit also noted that in the process of procuring the MMRCA, this was the second time (first time in November 2011) that an unrealistically low benchmark prices were fixed.

b. Methodology for price comparison

The objective of the Indian Negotiation Team (INT) as derived from the term of the IGA and decision of DAC of “better prices” was to bring down the cost of acquisition of the 36 Rafale aircraft as compared to the cost of the previous procurement of 2007.

The price offered by M/s DA in April 2008 against the RFP of 2007 (hereinafter referred to as 2007 price), was a market discovered price, and based on competitive bidding. The price offer of 2007 had two distinct packages – pricing for 18 Flyaway Aircraft Package and pricing for ToT package of 108 aircraft which were to be license produced in India. The offer of 2015, on the other hand was only for 36 flyaway fighter aircraft. The acquisition and price bids of 2007 and 2015 were very different as the later included the price of ToT for license production of 108 aircraft in India which was 77.8 *per cent* of the total price bid of 2007. But since the pricing of ToT was a distinct package in 2007, comparison of the remaining package which pertained to 18 flyaway aircraft (one squadron) was somewhat possible if constrained by factors mentioned in Para 1, and therefore the INT compared these packages with their corresponding prices in the 2015 price bid for 36 flyaway aircraft (two squadron). For comparing the prices of June 2007 bid with the bid of May 2015⁷³ first the scope of both the offers had to be brought at par. The INT had also to ensure that the 36 aircraft along with weapons and associated systems would be delivered in the same configuration as tested and approved by the IAF in 2007.

The INT therefore aligned the quantities in the 2015 bid with that in the 2007 bid and then the price of 2007 was brought to 2015 price level by applying the price escalation formula which used the industrial cost indices published by the French National Institute of Statistics and Economic Studies (INSEE). This was the Aligned Price i.e. the price of 36 flyaway aircraft in 2015 if the prices were the same as the bid of 2007. Audit also used the same methodology and verified the price comparison made by the INT.

c. Comparative analysis of 2007 and 2015 price Bids

The Aligned Price worked out by INT was “U1” million € while the Aligned Price as assessed by Audit was “CV” million € which was about 1.23 *per cent* lower than the

⁷³ Though the price offer was submitted in Jan 2016, the prices quoted by M/s DA as in May 2015.

INT aligned costs. This was the price at which 2015 contract should have been signed if the prices of 2007 and 2015 were considered at par. But as against this the contract was signed in 2016 for “U” million € which was 2.86 *per cent* lower than Audit’s aligned price. The difference between the Aligned Price estimated by INT and Audit could be attributed to inconsistent price variation factors adopted by INT, alignment of the quantities/scope of the two offers and the difficulties of alignment itself as stated earlier.

The contract consisted of six different packages - Flyaway Aircraft Package, Maintenance package, Indian Specific Enhancements, Weapon Package, Associated Services and Simulator Package. There were a total of 14 items under these six packages. Item wise analysis of prices showed that, the contracted price of seven items were higher than the aligned price, three were same and four were lower Also the price of elements could not be compared because the structure/format of the M/s DA bid of 2007 and the offer of 2015 were different. This is discussed below:

(i) Indian Specific Enhancements

In the previous procurement of 2007 the M/s DA had quoted “XX” M€ as the Non Recurring Cost (NRC) for Design and Development of ISE. However, the vendor did not quote the price for the equipment and integration of the ISEs. The CNC had adopted “XX” M€ as the total price for ISE inclusive of these elements.

In the price bid of 2016 M/s DA had quoted “IS” M€ for ISE. In addition it had quoted “IS1” M€ for ISE equipment and “IS2” M€ for integration. This was finally negotiated (2016) to “AX3” M€ as the total price for ISE which included “AX4” M€ for NRC and “IS2” M€ for integration. The price of equipment was also inclusive.

Audit aligned the scope of the offer of 2007 and contract of 2016. The 2007 offer included Missiles ‘A1’ which was excluded by IAF in 2015 because it was being developed indigenously by Defence Research & Development Organisation (DRDO). In place of Missiles ‘A1’, IAF included Missile ‘A2’ for integration on the aircraft. The difference between integration of Missile ‘A1’ and Missile ‘A2’ which was “IS3” M€ had to be deducted from the ISE price of “XX” M€. This works out to “AX1” M€. Therefore the aligned price by Audit was estimated to be “AX2” M€. **As against this the contract was signed for “AX3” M€, a saving of 17.08 per cent.**

During negotiation of 36 aircraft in 2015, in view of the huge cost and the reduced number of aircraft to be purchased, INT headed by the Deputy Chief of Air Staff (DCAS) proposed to reduce the number of Indian Specific Enhancements. But M/s DA stated that since its price was a total package Ministry would have to take up the matter with Govt. of France. In August 2016 before submission of the note to the approval of the CCS, DCAS (with the approval of CAS) intimated Ministry that ISE scope could

be reduced by postponing six enhancements, which could be included if more Rafale aircraft were procured in future. However, this proposal was not accepted by MoD because that was tantamount to dilution of ASQRs which was not in consonance with the basic framework provided by the Joint statement of 10 April 2015 by the DAC that aircraft must have the same configuration.

Ministry in its response stated that reduction of ISEs scope was not considered after due deliberations as it was a temporary deferment only for cost reduction measure. Audit noted that four of these enhancements were stated not to be required in the technical and staff evaluations. The cost of these four enhancements items was “IS4” M€ constituting about 14 *per cent* of the ISE contracted cost. The Ministry has stated that “scaling down the requirement to limit cash outgo cannot be considered as saving”.

(ii) Engineering Support Package

In the RFP of 2007, IAF had projected the requirement of long term maintenance support for 18 flyaway aircraft to ensure the operational availability (more than 75 *per cent*) of the fleet. The RFP required the vendor to quote for both methods of maintenance viz., Engineering Support Package (ESP) and Performance Based Logistic (PBL)⁷⁴ in 2007. One of the two options was to be chosen by Ministry during price negotiations. But M/s DA had quoted for a combination of ESP and PBL. The ESP or the spares support included three component of spares Aircraft, Engines and Avionics. The price comparison of the ESP of 2007 with that of 2015 is shown in the table below:-

Table 3: Analysis of ESP cost

(in million €)

ESP Items	Price bid 2007 18 aircraft	Price for 36 aircraft	Aligned Price 2015 Audit	Contracted price	Variation
Aircraft Spares	AY1	AY2	AY3	AY4	(+)
Engines + Engines Spares	AY5 (8 engines + spares)	AY6 (16 engines+ spares)	AY7 (12 engines + spares)	AY8 (12 engines + spares)	(++)
Avionics Spares	AY9	AY10	AY11	AY12	(--)
Other Spares	-	-	AY13	AY13	0
Total	AY16	AY17	AY18	AY19	(+++)

⁷⁴ PBL – A maintenance contract which guarantees a certain level of performance.

M/s DA in its price bid of 2007 under the spares package, had quoted “AY5” million € for eight spare engines for 18 flyaway aircraft. In 2015 the vendor quoted “AY8” million € for 12 spare engines for 36 flyaway aircraft. Going by the rate offered in 2007 the 12 spares engines should have costed “AY7” million € in 2015. Thus the vendor charged about 6.54 *per cent* excess in this component of ESP.

The Ministry has stated that while comparing the price of ESP Audit had considered only the price of cost of engines and not engine spares. However, the Aligned price worked out by Audit (“AY7” M€) includes the cost of 12 engines (“AYY” M€) as well as engine spares (“AXY” M€). Further, the OEM of engine i.e. M/s Snecma had offered “ASN” M€ in 2007 for 8 engines and engine spares. For aligning the prices Audit had calculated the price of 12 engines in the same proportion as quoted by the OEM.

Ministry further stated that in the 2015 offer, there has been addition in certain lines in the Spares list together with an increase in the quantities. However, this is not substantiated by the INT report. The INT report had stated that there was MRLS scope optimization due to which an amount of “AY20” million euros were reduced by the vendor without any change in the commitment of serviceability.

In the package, therefore, there is an excess of 6.54 *per cent* over the Audit aligned price.

(iii) Performance Based Logistics

Audit observed that in 2007 offer the vendor had quoted “AZ1” million € towards PBL which was for initial 5 years period covering maximum of “FH1” Flying Hours. This worked out to “AZ2” € per hour of flying. After applying the PV factor this works out to “AZ3” € per flying hours in 2015. In the 2015 contract the vendor had charged “AZ4” million € towards PBL for “FH2” flying hours, for five years. This works out to “AZ5” € per flying hour. Therefore the vendor had charged an excess of “AZ6” € per flying hours in 2015 as compared to his offer of 2007. The total excess price on account of PBL was about 6 *per cent*.

Ministry in response stated that the initial quote for MMRCA PBL was “AZ1” M (EC 2007) for 18 aircraft for five year for a total flying hours of “FH1”, which included PBL service for aircraft under warranty (“FH3” hours) and aircraft out of warranty (“FH4” hours). For a realistic comparison, this cost is required to be converted to “FH5” flying hours under warranty and “FH6” hours without warranty.

However, the price bid of 2007 did not envisage different pricing for PBL under warranty and PBL after the warranty period. Therefore, comparison of PBL prices in terms of warranty/non-warranty is not possible.

Ministry further stated that the price of PBL included an additional “AZ7” M€ towards Depot level maintenance (DLM) activities for equipment and thus the total price of PBL should be taken as “AZ8” M€. However, even in the 2007 offer, Depot level maintenance activities were included in the PBL costs. Even the documents annexed with reply state that DLM repairs were part of the PBL activities in the 2007 offer.

In the package too, therefore, there is an excess of 6.54 per cent over the Audit aligned price.

(iv) *Operational Support, Equipment, HUMS, Program Management and Services, Documentation and Technical Assistance.*

In the bid of 2007, M/s DA had quoted the price of “ST1” M€ for the items Services, Technical Publications and Product including Technical Assistance, for 18 flyaway aircraft. However, in the offer of 2015, the price of the three items was quoted under different nomenclature/price heads. The correspondence between these elements of 2007 offer and 2016 contract was stated in the reply of the Ministry which is tabulated below:

Table-4: Mapping of components

(Price in M€)

Sl. No.	Component in 2007 offer		Aligned Price in 2015	Matching component in 2015 offer	Contracted cost
1	Services	“ST2”	“ST3”	Program Management	“ST4”
2	Technical Publication	Not quoted	0.00	Documentation	“ST5”
3.	Product including Technical Assistance	“ST6”	“ST7”	Operational Support Equipment and HUMS+ Technical Assistance	“ST8”
	Sub-total		“ST9”	Sub-total	“ST10”

The total Aligned price of these items works out to “ST9” M€, against which the contract the concluded for “ST10” M€, a savings of 4.77 per cent.

Audit further noted that the price bid of 2007 did not define the item ‘Services’. Further, the price for Technical Publications was not contained in the bid. Ministry in its reply had stated that the item Services in the 2007 bid was the same as Program Management and Documentation as quoted in the 2015 offer, taken together. In the 2015 offer M/s DA had quoted “ST5” M€ towards ‘Documentation’ or Technical Publications as a separate/distinct item. Further under the price component ‘Associated Services’ the

firm had quoted “ST4” M€ towards Program Management. The aligned price of services works out to “ST3” M€. Against this, Program Management and Documentation put together were contracted for “ST11” M€ in 2016, an excess of “ST12” M€.

The items ‘Product’ and ‘Technical Assistance’ were together priced at “ST6” M€ in the 2007 offer. In the 2015 offer, these items were subsumed in Operation Support Equipment, HUMS and Technical Assistance, which were quoted as “ST8” M€. **Against the aligned price of “ST7” M€, the Contract was signed at “ST8” M€, with a savings of “ST13” M€.**

(v) Tool Tester and Ground Equipment (TT&GE)

In 2007 M/s DA had quoted “B1” million € for Tool Tester and Ground Equipment. This was for one Squadron. For two squadrons this works out to “2B1” million €. In the 2016 contract two additional item viz. Mermoz Test Benches (MPATE) were included which was not in the 18 flyaway aircraft package of 2007. In the offer of 2007 these Test Benches formed part of ToT package and which was to be installed at the Air Bases by HAL. But in the offer of 2015, since there was no ToT package these two Test Benches were included in the 36 fly away aircraft package. On the other hand, in lieu of the two Test Benches the vendor reduced the other items of TT&GE valuing “B2” million €. These items were to be positioned at two airbases for operational and Intermediate maintenance by IAF. The alignment price works out to “B3” million €. The contracted price was “B4” million €.

If the Aligned Price by Audit is taken, the contracted price is more than the aligned price of 2007 by 0.15 per cent.

(vi) Simulator Package

In response and as asked for in RFP, M/s DA’s offer stated they would consider providing the required Simulators on a Build, Operate and Maintain (BOM) basis, termed and conditions of which could be negotiated later. The vendor was to build the infrastructure, install the Simulators and associated equipment; maintain them and provide training to IAF personnel. The user charge/operating cost was to be paid to the vendor periodically according to the usage rate agreement between the IAF and the vendor on actual basis. However, in the bid M/s DA only gave the cost of Simulators.

In 2015, the vendor did not offer the Simulator package on BOM basis, instead the vendor offered to sell the same set of Simulators and associated equipment at “SP1” million € at outright purchase. This included “SP2” million € for installation and commissioning which would have been borne by the vendor in the bid of 2007 since it

was on BOM basis. Further the vendor charged an additional “SP2” million € for maintenance of the Simulators which would be effective after two years initial warranty period and would last for next ten years. Operating cost was to be borne by IAF. Since the operate (O) and Management (M) cost of BOM were not known, the price of the Simulator Package in the offer of 2007 and the offer of 2015 were not comparable. The INT has treated the maintenance charge of “SP2” million Euro, as being in lieu of the Operations and Maintenance cost had BOM alternative. Since there was no BOM price offer in 2007 either alignment with the 2007 price was not possible. **On the cost of the Simulators themselves Audit aligned price is “SP3” M€, which is the same as the INT aligned price.**

(vii) Training

In the 2007 offer of 126 MMRCA, the vendor was to provide basic training to 26 pilots and 76 technicians of IAF at a cost of “TR1” million €. However, in 2015 offer, IAF increased the scope of training to 27 pilots, 146 technicians and 2 Engineers. In addition to this, the 2015 offer included an advanced training for 3 pilots, 1 engineer and 6 technicians at a cost of “TR2” million €. This was not available even during 126 MMRCA procurement. INT had aligned the price of basic training as “TR3” million € which added with price of advanced training came to “TR4” million €. The contract was signed for “TR5” million €. Audit alignment for training also came to the INT alignment of “TR4” million €. **Thus there was an excess of “TR6” million € which is about 2.68 per cent in case of Training package.**

Ministry stated that although scope of training had increased, the INT did not reckon this enhancement. However, Ministry did not clarify the need for enhanced training including the advanced training for “TR7” million € when the number of aircraft had come down to 36 against the earlier 126.

(viii) Weapon Package

In RFP of 2007, IAF had projected the requirement of weapons for two squadrons. In 2015 also IAF had projected the requirement of weapons for two squadrons, but with aligned quantities; and addition and deletion of certain weapons. **After alignment of scope the aligned price worked out to “WP1” M€ and the contract price was “WP2” M€ a saving of 1.05 per cent.**

Overall savings in the Weapons package can be attributed to alignment in scope of various items of the weapons package.

(ix) Basic Aircraft package

The Ministry in its response (January 2019) has accepted that the Aligned price worked out by INT and Audit in case of basic aircraft were the same but argued that the negotiated/contracted price of 36 flyaway aircraft was 9 *per cent* lesser than the price offered for the aircraft in 2007. This was because the L1 subcommittee of 126 MMRCA had estimated the average cost of each flyaway aircraft till its median delivery as “DL1”€. Ministry has stated that “had the bid been finalized and the contract signed in the MMRCA case in 2011, this would have been the fixed price of the aircraft”. Against this, each aircraft was contracted in 2016 (under 36 Rafale contract) for “DL2” M€ which was a saving of 9 *per cent*.

The bid price offered by M/s DA in 2007 for the flyaway aircraft was “DL3” M€. Para 42(a) of the RFP required the Vendors to provide firm and fixed prices. Further Para 14(g) of Part I of RFP specified that for product support an indices based formula was to be provided valid for 40 years with an annual cap. L1 subcommittee in its report stated (Para 2.1) that M/s DA had offered costs with a base price of June 2007 subject to escalation. The L1 subcommittee used the actual values available till June/July 2011 and used provisional values till September/October 2011. Beyond this, till the mid delivery period the committee used an annualized year on year escalation rate based on the historical data. This was done as the actual escalation factors were not available with the L1 subcommittee for the period 2012 to the mid delivery period. In 2015, the INT and Audit had the actual escalation factors and the 2007 offer of “DL3” M€ was escalated to “DL2” M€. Therefore, there is no difference between the bid of 2007 as escalated by INT with actual escalation factors, and the negotiated cost of the 2015 offer, for the same aircraft.

Conclusion

Overall, it may be seen that as against the Aligned Price as estimated by Audit of “CV” million € the contract was concluded for “U” million € i.e. 2.86 *per cent* lower than the Audit Aligned Price. The same is summed up in the table in the below.

Table 5: Item-wise Cost Analysis (Price in million €)

Item of Supply	Price bid Jun 2007	Aligned Price by INT (May 2015)	Aligned Price by Audit (May 2015)	Contracted Price	Variation (per cent)
1	2	3	4	5	(5-4)
Flyaway Aircraft Package					0
Services, Products - Operational Support Equipment (OSE) & Technical Assistance, documentation, Programme management					(-) 4.77
Indian Specific Enhancement					(-) 17.08
Standards of Preparation					0
Engineering Support Package					(+) 6.54
Performance Based logistics					(+) 6.54
Tools, Testers & Ground Equipment (TTGE)					0.15
Weapons Package					(-) 1.05
Role Equipment					0
Training of pilots and technicians					2.68
Simulator & Stimulator Training Aids Annual Maintenance (STAAM)					0
Total	CB	U1	CV	U	(-) 2.86

(+) denotes excess, (-) denotes saving, compared to the 2007 price, as aligned to 2015 prices by Audit.

2.3 Other issues In the offer of 2007 M/s DA had provided the financial and Performance Guarantees, the cost of which was embedded in the offer because the RFP had required the Vendor to factor these costs in the Price Bid. But in the offer of 2015

there were no such guarantees as it was an IGA. Therefore, these savings to the vendor would have to be factored in as explained below:

- The vendor was to provide Bank Guarantee against the 15 per cent advance payment made by Ministry to the vendor which would be outstanding for three years till the deliveries of equivalent amount are made by the vendor. The Bank charges which the vendor would have to pay to hold this guarantee works out to “AAB1” million € (@ the Bank rate of 1.25 *per cent* per annum as claimed by the vendor)⁷⁵ and 0.34 *per cent* as checked independently by the INT.
- The offer of 2007 included Performance Guarantee and Warranty valuing 10 *per cent* of the total value of the contract which was to be held till the completion of deliveries i.e. 5.5 year. The Bank charges for this works out to “AAB2” million €.

Therefore, the total saving of “AAB3” million € accruing to the vendor by not having to pay these Bank Charges should have been passed on to Ministry. Ministry has agreed to the Audit calculations on Bank Guarantees but contended that this was a saving to the Ministry because the Bank guarantee charges were not to be paid. However, Audit noted that this was actually a saving for M/s DA when compared to its previous offer of 2007.

2.4 Assessment of terms and condition in acquisition achieved though IGA

Fundamentally, in an acquisition through Inter Government Agreement (IGA) the government identifies a need for a military equipment or service and then chooses to acquire it from the government of another country, instead of procuring directly from the vendor. The foreign government may offer the equipment from its own inventory or procure it from the vendor through its own procedure and then transfer it to the buying government

One of the major benefit of IGA is that the selling government procures the items from their vendors on behalf of the buying government, using the same procedure, terms and conditions which it uses for its own procurements. As a result, the buying government receives the same benefits and protections as the vendor gives to its own government. The cost of such procurements are considered to be lower because the equipment is already in use by the selling government and much of the cost of R&D and other fixed costs would have been recovered by the vendor. It is pertinent to mention that

⁷⁵ During negotiations with the vendor to reduce the price, Ministry had found out from a French bank (through the Indian Embassy) that the rate was 0.34 *per cent*. If this is taken the impact of bank charges works out to be about a million €.

acquisition through IGA had been made from UK, USA and Russia, it was the first time that IGA was signed with the French government. In case of IGA for 36 Rafale, the offer of M/s DA in 2007 had included 15 *per cent* Bank Guarantee against advance payments, 5 *per cent* each for Performance Guarantee and Warranty. A Bank Guarantee gets directly and automatically invoked in case of breach of contract by the seller. In the 2015 offer the French vendor did not furnish any Financial and Performance Bank Guarantees. Since about 60 *per cent* of advance payments were to be made to the French vendors, Ministry of Law and Justice advised that Government/Sovereign guarantee should be requested in view of the value of the proposed procurement. However, the Government of France and Vendor neither agreed to furnish the Bank guarantees nor Government/Sovereign guarantee. Instead it provided a 'Letter of Comfort' signed by the French Prime Minister in lieu of the Bank Guarantee.

The issue on sovereign guarantee and letter of comfort was finally submitted to the CCS in September 2016 for consideration which approved the acceptance of Letter of Comfort from French Prime Minister “ along with other associated guarantees/assurances provided in the IGA in lieu of Bank Guarantee subject to payments through an escrow account or any other safeguards which the Ministry was to work out in consultation with the French Government with the assurance by the French Government that they shall provide effective oversight on the utilization of payments released to the French Industrial suppliers”. The French government did not agree to an escrow account as it felt that “the guarantees already provided by the Government of France were far reaching and unprecedented”. The finally approved Article 5 of IGA by the DAC, provided that the advance payments were to be made directly to the Bank accounts of French vendor that were opened in French Government controlled Bank, over which the French Party was to exercise control and monitoring for effective implementation of the IGA and the supply protocols.

In case of any breach of agreement Indian party (Ministry) would have to first settle it through Arbitration directly with the French vendors. If the Arbitration award were in favor of Indian party and the French vendor fails to honor the award (make the payment's claim), Indian party should exhaust all available legal remedies. Only then the French Government would make these payments on behalf of the vendors.

Ministry in its reply stated that the IGA has been signed between two Strategic Partners who are Sovereign nations with long standing Strategic relationship. Further based on the advice of the Ministry of Law and Justice, responsibility of the French Government and M/s DA was made “Joint and Several” in the IGA. This would make the French Government equally responsible to fulfil its obligations.

2.5 Assessment of achievement of faster deliveries

One of objectives of the INT, which was derived from the Indo-French Joint Statement, was to expedite the delivery of the aircraft and weapons as compared to the delivery period offered by M/s DA in 2007.

According to the original delivery schedule offered by M/s DA in 2007, first 18 flyaway aircraft were to be delivered between 37 months to 50 months of signing of the contract. Next 18 aircraft which were to be licence produced in HAL, were to be delivered from 49th to 72nd months of signing of the contract. During negotiations the Indian Negotiation Team (INT) conveyed to the French side that it expected the delivery of first batch of 18 Rafale aircraft in 24 months after the signing of the IGA; and next batch of 18 aircraft in 36 months after the signing of IGA. However, the delivery schedule finally offered by the French side was 18 aircraft by 36 to 53 months after the signing of IGA, and the remaining 18 aircraft to be delivered by 67 months of signing of IGA. This was better than the delivery schedule of 2007 by 05 months.

However, Audit noted that as against the delivery period of 72 months in the earlier offer the contracted delivery schedule for 36 Rafale aircraft was actually 71 months. The ISE on the first aircraft would be completed by $T_0 + 63$ months and integration on the next 35 aircraft would be completed in 8 months. Thus, there was an improvement of one month in the delivery schedule of the 2016 contract.

Further, Audit noted that INT had apprehensions about the achievement of even this delivery schedule, because at the time of signing of the contract M/s DA had an order backlog of 83 aircraft. Considering its production rate of 11 aircraft a year, clearing this backlog itself would take more than seven years. Ministry in its response stated that the Project was currently on schedule and the progress was being closely monitored by the resident Project Management Team and also through the Inter-Governmental Bilateral High Level Group.

2.6 Commercial advantage of Non-Firm and Fixed Price bids

Ministry in its response (January 2019) had repeatedly stated that initially in the RFP of 2007, M/s DA was required to submit the price offer on Firm and Fixed (F&F) basis. As seen earlier, this was interpreted by the CNC/L-1 subcommittee as quoted price escalated as per the formula to the mid delivery period. In 2015 also, M/s DA was asked firm and fixed price. This time it offered a cost of “AX13” million €. The INT was informed by the French side that it had arrived at the price of “AX13” million euros by applying indices based escalation formula from base of June 2007 till May 2015, and thereafter escalating till the mean delivery period at the annual rate of 3.9 *per cent*. Since the F&F cost of “AX13” million euros was too high, Ministry invited the bid at non-firm and fixed prices. This time M/s DA offered a price of “T” million

euros which was finally negotiated to “U” million euros. The escalation on the price was to be based on French rates of inflation, subject to a cap of 3.5 *per cent per annum*. Ministry has stated that it has obtained a commercial advantage of between “AX14” million euros (at the escalation cap of 3.5 *per cent*) to “AX15” million Euros as the recent inflation rate in France has been 1.22 *per cent*.

Any savings which accrues would be due to the difference between the escalation cap and actual escalation rates, between the years 2016 and 2021. These would have also been available in the 2007 commercial offer depending upon escalation rates, but after the mid delivery period, as calculated by the CNC/L-1 subcommittee in 2011-12.

The fact that Non F&F bids may be more advantageous than F&F price bids has been discussed by Audit in its report in Chapter 6 of Volume I.

New Delhi
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(K Subramaniam)
Principal Director of Audit (Air Force)

Countersigned

New Delhi
Dated: 11 February 2019



(Rajiv Mehrishi)
Comptroller and Auditor General of India

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