

CHAPTER III: AIR FORCE

Contract Management

3.1 Avoidable expenditure on repair of turbine blades

Due to non stipulation of time frame for validation of repair process in the contract, IAF was forced to offload blades for repair abroad to sustain the serviceability of aircraft even after an investment of ₹5 crore on procurement of Numerical Control Grinding Machine. As a result, IAF incurred an avoidable expenditure of ₹5.14 crore on repair by the Original Equipment Manufacturer.

As per General Principles of Contract (Para 6.10.2) of Defence Procurement Manual, a contract must be governed by terms and conditions to protect the interest of both the parties to the contract. It is also desirable that conditions of the contract should be precise and definite.

In order to fill the gap in the Indian Air Force, Ministry of Defence (Ministry) concluded (October 1982) a contract with aircraft manufacturers¹ for procurement of Mirage-2000 aircraft. These aircraft were inducted into IAF squadron service from 1984 onwards. Ministry signed (August 1993) a contract for Transfer of Technology (ToT) of depot level maintenance of M-53-P2 aero-engines with M/s SNECMA (OEM²). Further, Ministry also signed (August 2006) a contract with OEM for ToT for repair of High Pressure Turbine (HPTR) Blades of aero-engines on free of cost basis.

For repair of excessively worn (Cat 'D'³) HPTR Blades of aero-engine of Mirage-2000 aircraft, Numerical Control Grinding Machine MT-41 (Machine) is required. After the signing of the contract (August 2006), a case was

¹ Aircraft manufacturers= M/s. Dassault Aviation, M/s. SNECMA and M/s. Thomson CSF

² Original Equipment Manufacturer

³ Cat 'D' = Repairable

initiated by Air HQ for procurement of the machine. Ministry concluded a contract (March 2008) with M/s DANOBAT S. COOP, Spain for supply and installation of one Machine (MT-41) at a cost of 807,395 Euro⁴ (₹5 crore). M/s SNECMA (OEM of aero-engines) with whom Ministry had signed the contract (August 2006) for ToT for repair of blade had to provide training to IAF team and validate the repair process of blades of aero-engines at 4 Base Repair Depot (BRD) after commissioning of the Machine MT-41. The Machine (MT-41) was received at BRD in April 2009 and installed and commissioned by the supplier in August 2009. During scrutiny, Audit observed (April and September 2013) that non- stipulation of time frame for validation of repair process of blades after repair in the contract of March 2008 caused an avoidable delay in validation of repair process resulting in offloading of blades for repair to OEM⁵ as discussed below:

After installation of the Machine, BRD carried out repair of blades of aero-engines in two Phases. First phase was initiated in May 2010 wherein the repair was carried out on 15 blades and records of repair in respect of these blades were forwarded to OEM premises abroad in January 2011 for validation of repair process. Under second phase, repair was carried out on 30 blades from April 2012 onwards and records thereto were forwarded to OEM in October 2012 for validation of repair process.

In response to an Audit query (September 2013) about delay in validation of repair process ranging between 12 to 33 months, Air HQ stated (October 2013) that OEM had asked for submission of documents in a specified format along with certain additional data for validation of repair process. These documents/data were submitted in July/August 2013 to OEM.

Due to non-validation of repair process, 1820 repairable blades accumulated in the Depot during the period 2010-13. As non availability of these blades was considered critical for sustaining serviceability/availability of engine, BRD sent 788 blades for repair to OEM between 2010 and 2012 under door to door repair contract⁶ of January 2009. Out of 788 blades, 683 blades were received

⁴ 1 Euro = ₹62

⁵ M/s SNECMA

⁶ A long term contract specifying the terms and conditions for repair/overhaul of an specific equipment as and when arise.

back after repair upto October 2013 and an expenditure of ₹5.14 crore was incurred on their repair. 1032 blades were yet to be repaired and were still with the BRD (October 2013) for want of repair.

On the matter being pointed out by Audit about the delay in validation of repair process by OEM (April/September 2013), Air HQ also stated (October 2013) that the repair process of blades was of very critical nature and was required to be validated by the OEM based on the sample repairs undertaken by IAF. After the certification of validation process by the OEM, IAF would be able to repair the accumulated blades. Air HQ further added that as the OEM had provided ToT for repair process of blades free of cost, there was no time limit specified for validation of repair in the contract of 2008 and the case was constantly being pursued at the highest level for early validation of repair process.

Air HQ's reply is not acceptable as under Article 1.2 of the procurement contract (March 2008), OEM was to validate the repair process at 4 BRD itself and the same was not to be sent to OEM. Non stipulation of time frame for validation of repair process in the contract (March 2008) caused an avoidable delay in validation of repair process resulting in offloading of blades for repair abroad at OEM's site.

In response to the paragraph issued in April 2014, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) stated (August 2014) that the machine is being utilized by 4 BRD for gaining expertise and validating the process for repair of turbine blades. Air HQ further added that Mirage fleet is going to be in operation for next 20-30 years and hence such investment would reap substantial benefits during the life cycle of the fleet.

Reply of Air HQ is not acceptable as the machine is not being utilized for intended purpose and blades are being offloaded to OEM for repair to sustain the serviceability/availability of engine. The validation process had still not been completed (July 2014) even after more than three years of forwarding the records of repair to OEM. Moreover, even in case of provision of ToT free of cost, time stipulation for validation process is necessary in the interest of Indian Air Force.

Thus, IAF could not derive any benefit of an investment of ₹5 crore made on procurement of Machine even after more than four years of its installation due to flaw in the contract. This resulted in offloading of the blades of aero-engines for repair at a cost of ₹5.14 crore besides affecting serviceability/availability of the aircraft.

The matter was referred to the Ministry in April 2014; their reply was awaited (September 2014).

3.2 Loss due to delay in raising of discrepancy report

Failure on the part of Base Repair Depot to raise discrepancy report in prescribed time not only resulted in loss of ₹1.45 crore but also non availability of critical spares thereby affecting the maintenance of helicopters .

IAF concluded (July 2007) a contract with a foreign firm⁷ (firm) for procurement of 11 lines⁸ of spare parts for maintenance of Mi-17 Helicopters at a cost of USD 389647 (₹1.84 crore⁹). As per Clause 6 of this contract on receipt of a consignment, if a discrepancy was found to exist between the quantities/conditions of the stores received and the details shown on the relevant voucher, a discrepancy report (DR) was to be raised by the buyer within time stipulated in the contracts concluded with the supplier to make good the deficiencies. During Audit, it was noticed that delay in raising of DR in respect of three lines of spares within the prescribed time limit of 90 days resulted in a loss of ₹1.45 crore as discussed below:

As per clause 2.1 of the contract, the stores were to be delivered within 90 days from the date of opening of Letter of Credit (LoC). LoC was opened on 28 November 2007. Hence, stores were required to be delivered by 26 February 2008 (90 days). However, against this stipulated delivery date the firm dispatched the three lines valuing USD 322300 (₹1.52 crore) out of contracted

⁷ M/s AVIABALTIKA Aviation Ltd., Lithuania

⁸ Number of lines indicate the identification number of individual spare parts, description and quantity.

⁹ 1USD = ₹47.30

11 lines to 31 MCU¹⁰, AF by air on 28 May 2009. Accordingly, payment amounting to USD 306185 (₹1.45 crore) was released (June 2009) to the firm after deducting the liquidated damages for the delay in delivery.

As per clause 7.3 of contract, the supplier was to deliver the stores to 31 MCU AF, Palam, New Delhi which in turn was to deliver the stores to 3 Base Repair Depot (BRD) (the ultimate consignee as per the contract). 3 BRD received the items from 31 MCU on 16 June 2009 and these items were put up to Quality Assurance Section (QAS) at BRD for inspection on the same day. During inspection, it was found that supplied three lines of spares were not identical in all respects to the contracted items. The QAS submitted (29 June 2009) photographs and other details to Air Officer Commander (AOC), 3 BRD as proof of their findings and submitted the preliminary report on 31 July 2009 and final report on 3 September 2009 to AOC, 3BRD for raising a discrepancy report. However, the DRs were received by Air HQ from AOC, 3BRD only on 7 September 2009 *i.e.*, after a lapse of 99 days from the receipt of consignment for onward transmission to the firm. Air HQ forwarded these DRs to the firm in September 2009. The firm rejected (December 2009) the claim on the ground that DRs were received only on 10 December 2009 *i.e.* after 180 calendar days from the date of delivery of items (*i.e.* 28 May 2009).

In response to the paragraph issued in April 2014 regarding the loss due to delay in raising of discrepancy report, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) stated (August 2014) that DR documents were dispatched by registered post on 24 September 2009 which should have been received by the firm within three days. Air HQ further added that the rejection of DR by the firm was not accepted. Air HQ also stated that the case was still being actively pursued with the firm for settlement and that payment against the other three contracts concluded with the firm between July 2012 and November 2013 had been withheld till settlement of DR.

The fact remains that the user unit (3 BRD) itself forwarded the DR to Air HQ after 99 days as against the stipulated period of 90 days as per the contract. The delay in raising DR by 3 BRD was also against the provision of IAF Manual

¹⁰ Movement Control Unit

(IAP-1501) which prescribes a timeline of 28 days only for the IAF units for reporting the discrepancy to Air HQ.

Thus, failure of Air HQ to raise DR in time resulted in unfruitful expenditure of ₹1.45 crore since 2009 on procurement of spares which have neither been made good nor replaced, though considered critical for the maintenance of Mi-17 helicopter.

The matter was referred to the Ministry in April 2014; their reply was awaited (September 2014).

3.3 Avoidable expenditure on repair/overhaul of Auxiliary Power Unit

Avoidable expenditure of ₹1.69 crore incurred by IAF on repair and overhaul of six Auxiliary Power Units due to lack of due diligence during assessment of estimates.

As per Para 13.2.1 of Defence Procurement Manual (DPM-2006), estimation of rates/cost is vital for establishing the reasonableness of the prices and therefore, should be worked out in realistic and objective manner on the basis of prevailing market rates, last purchased price, economic indices for raw material/labour, other inputs costs, and assessment based on intrinsic value etc. During scrutiny of a contract concluded in February 2011, Audit noticed (October 2012) that non-compliance of provisions of the DPM-2006 relating to the assessment of estimates resulted in an avoidable expenditure of ₹1.69 crore on repair and overhaul of Auxiliary Power Units (APUs) of IL-76 transport aircraft as discussed below:

Indian Air Force (IAF) has an inventory of 17 number of IL-76 transport aircraft and for smooth functioning of the fleet, IAF has an inventory of 22 APUs. The primary function of APU is starting-up of the aircraft engines and its secondary role is in maintaining emergency services during flight of aircraft in the event of failure of main power supply from the engines.

Report No. 34 of 2014 (Air Force and Navy)

Air HQ issued (July 2007) Request For Proposal (RFP) to five firms on Limited Tender Enquiry (LTE) basis for Repair and Overhaul (ROH) of six APUs declared Cat 'D'¹¹ by Board of Officers (October 2006). The estimates for ROH of each APU was USD 82193 (₹36.99 lakh¹²) and this was based on last contract concluded in December 2002 with M/s Aviazapchast, Russia. Only three firms responded to the RFP (July 2007) and M/s Aviaexport, Russia was declared (August 2007) the lowest bidder (L-1). The firm quoted USD 164750 (₹74.14 lakh¹²) for ROH per APU *i.e.* more than double the indented cost. A Price Negotiation Committee (PNC) meeting was held (March 2008) with M/s Aviaexport, wherein Air HQ gave a counter offer of USD 90000 (₹40.50 lakh¹²) for Repair and Overhaul (ROH) per APU to the firm. However, the basis for arriving at USD 90000 for giving counter offer had not been recorded in the minutes of PNC meeting. The matter was closed as M/s Aviaexport did not accept the counter offer.

Subsequently, Air HQ revised (August 2008) the estimates for ROH of each APU to USD 172987.50 (₹69.20 lakh¹³) on the basis of August 2007 L-1 quote after allowing escalation of 5 *per cent per annum* for the year 2008. JD Eng D1(T), Air HQ while justifying the reasonability of the revised rates to JD Eng D(Q), Air HQ opined (August 2008) that almost all the elements of cost in the instant case including the metal prices at LME¹⁴ had increased manifold and indicated that the estimated cost worked out earlier based on 2002 prices was unrealistic/inaccurate and issued the revised RFP (October 2008) for ROH of six APUs. In response to the Request for Proposal (RFP) of 2008 issued to seven firms, only one vendor M/s Aviazapchast submitted (November 2008) its quote at USD 453384 (₹1.81crore) per APU which was 262 *percent* of the revised estimates (August 2008) of USD 172987.50 (₹69.20 lakh¹³). As it was a case of single vendor situation, Air HQ decided (January 2009) for re-tendering.

Air HQ further revised (January 2009) the estimates for ROH of each APU to USD 181636.88 (₹87.19 lakh¹⁵) on the basis of August 2007 L-1 quote after

¹¹ Cat 'D'= Repairable

¹² 1 USD= ₹45

¹³ 1 USD = ₹ 40

¹⁴ LME= London Metal Exchange

¹⁵ 1 USD = ₹48

allowing escalation of 5 *per cent per annum* for the year 2008 and 2009 and issued revised RFP (February/March 2009) to eight firms for ROH of 10 APUs¹⁶ as the number of Cat 'D' APUs had increased during the intervening period. Only three firms responded this time and the quote (USD 205000 per APU) of M/s STE was found L-1. However, M/s STE offer was not considered as the firm could not produce Original Equipment Manufacturer (OEM) certificate. The Price Negotiating Committee, therefore, decided (June 2009) to invite M/s Aviaexport being the next lowest [USD 228960 (₹1.10 crore¹⁵) per APU] for further negotiations and the contract for ROH was concluded (February 2011) with M/s Aviaexport at the negotiated rate of USD 224380(₹1.08crore¹⁷) per APU.

On the matter regarding unrealistic assessment of estimates being pointed out (January 2014) by Audit, Air HQ stated (February 2014) that the contract (RFP of July 2007) could not be concluded in the year 2008 due to the offer being 100 *percent* higher. Further, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) stated (August 2014) that the estimated cost was worked out on the basis of available inputs as per DPM norms with no reliable market intelligence available through open sources (internet)/Air Attache office.

The reply confirms the Audit observation that the estimates were not based on the reasonability of prices and did not take into account all the factors prevailing in 2007 as per provisions contained in the DPM, resulting in price escalation and delay in conclusion of contract. Further, according to the provision of DPM (Para 13.8), last purchase price of more than three years vintage is not a real scale for comparison. Air HQ also did not seek information through non-budgetary quotes from the registered firms as per provision {(Para 11.2) read with (Para 13.2.1)} of DPM-2006 for working out the estimates in a realistic manner. Moreover, Air HQ itself accepted (August 2008) that the estimates worked out in 2007 on the basis of 2002 prices were unrealistic/inaccurate.

¹⁶ In the meantime, Number of Cat 'D' APUs has increased.

¹⁷ 1 USD = ₹47.35

Had IAF worked out the proper indent cost of ROH of APU on the basis of rates prevailing in 2007 as per provisions contained in the DPM before issuing RFP in July 2007, it could have secured the contract for ROH of six APUs in 2007 only @ USD 164750 per APU against the rate of USD 224380 per APU contracted in February 2011 with the same firm.

Fact remains that due to failure on the part of IAF in working out the estimates with due diligence resulted in an extra expenditure of ₹1.69 crore¹⁸ on repair and overhaul of six APUs.

The matter was referred to Ministry in April 2014; their reply was awaited (September 2014).

Procurement

3.4 Unjustified procurement of a system

Map Digitization Preparation Stations (DMPS) procured at a cost of ₹3.49 crore were not being utilised for the last four years as there was no requirement of DMPS at the unit level.

Paragraph 3 of Appendix 'A' of Defence Procurement Procedure 2006 stipulates that while giving justification for the procurement of an equipment, the operational role and necessity of the item and details of working out of total quantity required should be indicated in the proposal.

Ministry of Defence (Ministry) concluded (March 2006) a contract with M/s Hindustan Aeronautics Limited (HAL), Bangalore Division for procurement of 17 aircraft 'M' along with spares and TTGE¹⁹ which included

¹⁸ Calculation of avoidable expenditure = ₹1.69 crore
1 USD = ₹ 47.35 (as on February 2011)
Difference in cost of ROH per APU = USD 224380 – USD 164750 = USD 59630
Difference in cost of ROH of six APU = USD 59630 x 6 = USD 357780 x ₹47.35
= ₹1.69 crore

¹⁹ TTGE = Tools, Testers and Ground Equipment

three Map Digitization Preparation Stations (DMPS) and three Map Loading Stations (MLS) valuing ₹3.95 crore²⁰.

DMPS is required for conversion of Manual Map to Digital Map, wherein hard copy of a map (manual) is scanned through this equipment and thereafter digitized by using various computer software whereas MLS is required at field units for loading digitized maps on aircraft.

Air Force Station (AFS) 'A' received (April 2010) two DMPS and two MLS while one DMPS and one MLS were received at AFS 'B' (September 2010). During the Audit of AFSs 'A' and 'B', it was observed (July 2013/March 2014) that these three DMPS valuing ₹3.49 crore were not being utilised for the intended purpose as discussed below:

AFS 'A' informed (August 2010) HQ Western Air Command IAF as well as Directorate of Engineering, Jaguar, Air HQ (DoE) that since the DMPS was not used at field level, these two DMPS were not required there and only the MLS equipment was accepted at the base. Accordingly, DoE took up the issue (August 2010) with Directorate of Operation (Offensive), Air HQ which in turn requested (September 2010) DoE to allot one DMPS each to AFS 'C' and Central Photo Reproduction Unit (CPRU), AFS 'D' which could utilise such equipment. However, keeping in mind the operational scenario, Dte. of Eng Jaguar, Air HQ decided (September 2010) that the items would be retained at Jaguar bases. Accordingly, AFS 'A' issued (April 2011) the DMPS allotted to it to two operating squadrons (*i.e.* Sqn 'X' and Sqn 'Y') of aircraft 'M'.

We observed (July 2013) that since receipt, the DMPS had not been put to use at Sqn 'X' and Sqn 'Y' as digitization of map was not done at field units (operating squadrons). Further, Sqn 'X' also confirmed (July 2013) to Audit that in the present conditions the requirement of DMPS did not exist at Sqn level as the maps were being supplied from central agency. It further stated that the system was issued to Sqn 'X' without projection of any requirement.

AFS 'B' also informed Audit (March 2014) that digitization of maps is not done at field level and currently the DMPS was being utilised for

²⁰ Cost of 3 DMPS (₹3.49 crore) + 3 MLS (₹45.93 lakh) = ₹3.95 crore

scanning²¹ ferry maps which were being saved as soft copy. Thus, the DMPS was not being utilized for the intended purpose at AFS 'B' also.

In response to the paragraph issued in April 2014, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) stated (August 2014) that for defence forces, several combat systems and weapons are essentially required during war time contingencies and their utilisation during peace time may be limited to maintain continuity and expertise. It further added that procurement of equipment is a time critical activity and delay in procuring maps from a central agency would hamper operations.

The reply is not tenable as Air HQ had earlier stated (October 2013) that digitization of the map was not being done at the field level *i.e.* AFSs 'A' and 'B' for which these equipment were initially procured. The fact that efforts made by the Air HQ to allot DMPS to CPRU AFS 'D' and AFS 'C' confirms that the DMPS units were purchased without diligent assessment of requirement at AFSs 'A' and 'B'.

Thus, the procurement of three DMPS for the field units valuing ₹3.49 crore without any requirement was not justified as digitization of map is not being done at the unit level as admitted by field units of AFSs 'A' and 'B'.

The matter was referred to the Ministry in April 2014; their reply was awaited (September 2014).

3.5 Extra expenditure on procurement of Brake Parachutes

Due to improper assessment of urgency, IAF incurred an extra expenditure of ₹12.66 crore on import of 100 Brake Parachutes.

Indian Air Force (IAF) operates different types of combat aircraft which utilize Brake Parachutes to reduce the speed of the aircraft during each landing.

²¹ Scanning implies that the manual maps used for ferrying an aircraft are scanned so as to change printed words or pictures into electronic text in order to put them in the memory of the computer. This is different from digitization which allows the user to make amendments to the digitized maps by use of MLS.

Based on the Provisioning Review of 'Safety Equipment' for the year 2010-11, Air HQ placed (December 2010) an indent on Ordnance Parachute Factory (OPF), Kanpur for seven lines of safety equipment at a total cost of ₹16.23 crore inclusive of 422 Brake Parachutes (Parachutes) valuing ₹4.59 crore (*i.e.* @ ₹1,08,800 per parachute) for SU-30 MKI aircraft with a schedule of requirement for supply of 300 parachutes in 2010-11, 100 in 2012-13 and 22 in 2013-14 as agreed (December 2010) by OPF, Kanpur.

Scrutiny of the records (March 2014) regarding procurement of Safety Equipment during audit revealed that OPF, Kanpur expressed (February 2011) its inability to meet the scheduled target in 2010-11 for supply of Parachutes due to non-availability of metal components and good quality of fabrics. Hence, in order to meet the urgent requirement (*i.e.* to sustain the allotted flying tasks) of IAF, Air HQ obtained (April 2011) 'No Objection Certificate' from OPF, Kanpur for import of 100 parachutes and placed (November 2011) a supply order on M/s. STE Ukraine for supply of 100 parachutes at a total cost of USD 2,650,000 (₹14.07 crore *i.e.* ₹14.07 lakh per parachute) with delivery schedule by May 2012 subsequently extended (August 2012) by Air HQ upto November 2012 with levy of liquidated damages (LD). However, the parachutes were actually supplied between September 2012 and March 2013. As such payment of USD 2385000 (₹12.66 crore²²) after deducting LD was made to the firm.

Meanwhile, OPF Kanpur supplied full quantity of 422 parachutes between June 2012 and March 2013 against the indent placed in December 2010. Out of 422 parachutes, 138 parachutes were supplied between June 2012 and September 2012 and the remaining 284 parachutes by March 2013.

Thus, the import of 100 parachutes at a cost of ₹12.66 crore (*i.e.* ten times higher rates as compared to the rates at which parachute supplied by OPF Kanpur against indent of December 2010) had not served the objective of urgent requirement.

²² 1USD= ₹ 53.10

In response to the paragraph issued in May 2014, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) while admitting the facts of the case stated (August 2014) that due to poor response from OPF, Kanpur to supply the parachutes in time and to avoid Aircraft on Ground (AOG) of SU-30 MKI fleet, IAF initiated (June 2011) the proposal for import of parachutes. The Request for Proposal (RPF) was issued (August 2011) and the contract was concluded with foreign vendor for procurement of 100 parachutes. Air HQ further added that procurement was carried out in a planned manner.

The reply of Air HQ is not acceptable due to following reasons:

- At the time of placement of order (November 2011) for import of 100 parachutes on grounds of urgent requirement, the scheduled date for delivery was kept as May 2012 which subsequently extended to November 2012. The extension of six months granted to foreign vendor indicates that urgency was not assessed properly.
- Had IAF reviewed the status of expected supply position from OPF Kanpur (as it expressed its inability to meet the target only in 2010-11) before issuance of RFP(August 2011) /placement of import order (November 2011), the import of 100 parachutes at ten times higher cost compared to indigenous cost with delivery date of May 2012 could have been avoided.
- At the time of granting extension (August 2012) in delivery period upto November 2012, IAF could have foreclosed the contract as per the terms (Clause 9.01) of the contract on the ground of delayed supply for more than three months as by that time OPF Kanpur had already supplied (August 2012) Qty. 88 parachutes whereas the foreign vendor could supply 31 out of 100 parachutes only in September 2012.

Thus, due to improper assessment of the stated urgency, avoidable import of 100 parachutes at much higher rates led to an extra expenditure of ₹12.66 crore.

The matter was referred to Ministry in May 2014; their reply was awaited (September 2014).

3.6 Avoidable loss due to injudicious decision on procurement of colour dyes

Unrealistic projection of requirement of colour dyes by Indian Air Force coupled with decision to import entire quantity at one time for meeting three years requirement, despite their limited shelf life, not only resulted in over provisioning but also led to avoidable loss of ₹4.51crore.

Surya Kiran Aerobatic Team (SKAT) of Indian Air Force (IAF) was raised (1984) in order to perform Aerobatic displays in Air shows on the occasion of Air Force day, Independence day and Republic day etc., by emitting coloured smoke trails depicting India's tri colours - Saffron, White and Green. Aerobatic displays of SKAT were performed on Kiran Mk-II, a trainer aircraft which along with HPT-32 aircraft was also being used by IAF for imparting training to Air Force pilots.

Headquarter Training Command (HQ TC), IAF proposed (August 2008) to Headquarter Maintenance Command (HQ MC), for import of colour dyes of 52650 litre each of green and saffron to meet the requirement of five years from 2009 to 2013 (*i.e.* 405 litre @ 26 colour display per year). White colour is generated through Aviation Turbine Fuel (ATF). As the shelf life of these dyes is three years, HQ MC, IAF restricted the quantity to 31590 litre (equivalent to 30800 Kg) for three years requirement at the time of according approval (November 2008) for import from M/s ROHM AND HAAS Chemicals LLC, USA, a Proprietary Article Certificate (PAC) firm. Accordingly, Air HQ concluded (March 2009) a contract with the firm for Saffron and Green dye of 30800 Kg each at a total cost of PDS 816200 (₹5.93 crore) with a delivery schedule of six to 39 weeks after opening of Letter of Credit. IAF received full quantity of dyes in batches (August 2009 and January 2010²³).

²³ The invoice pertains to June 2009 and November 2009 respectively and BOC is August 2009 and January 2010.

Air HQ decided (February 2011) to disband SKAT (June 2011) so as to relieve the Kiran Mk-II aircraft for imparting training to pilots, which had been affected following grounding of HPT-32 aircraft.

Audit observed (September 2011) from the procurement plan that IAF would carry out 26 colour displays per year. Accordingly, upto the disbandment of SKAT (June 2011), it had to perform 47 colour displays²⁴. However, SKAT could perform only 18 colour displays against the projected plan in which it consumed 7370 kgs. of each dye from the date of its receipt (August 2009) to disbandment of SKAT (June 2011) and the balance quantity of 23430 kgs of each dye was lying unutilised. Audit further observed (April 2013) that IAF had made efforts (since March 2011) to find alternate users (*i.e.* Army and Navy) and buy back by the Original Equipment Manufacturer (OEM) which did not fructify. In the meantime, the life of dyes expired between August 2012 and January 2013.

On being pointed out (April 2013) by Audit about the non-utilisation of dyes within its shelf life, Air HQ confirmed (June 2013) the non-utilisation of dyes and stated (October 2013) that samples of dyes had been sent (September 2013) to a private firm for testing and further extension of life. Air HQ further added (April 2014) that the procurement was done for three years due to criticality of the item expressed by the indenter (HQMC).

However, the fact remains that even if the life of dyes is extended by the private firm, no identified alternate users for the dye were available (August 2013). Besides, had IAF utilised the dyes on 47 colour displays as planned, even then only 65 *per cent* would have been utilised till disbandment of SKAT.

In response to the paragraph issued in June 2014, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) admitted the facts and stated (August 2014) that keeping in view the shelf life of the colour dyes and the importance of the SKAT display as per pre-decided routine display, a conscious decision to procure three years requirement was taken by HQ MC.

²⁴ August 2009 to June 2011 = 22 months and IAF had to perform 26 colour displays in 12 months. In 22 months number of colour displays required to be performed by SKAT = say 47

Air HQ further added that the grounding of HPT-32 fleet resulted in increased burden on Kiran Mk-II aircraft to undertake stage-III training of pilots. Hence, Air HQ had decided (February 2011) to disband SKAT and accordingly number plated 52 Sqn²⁵ (June 2011). However, the reply of Air HQ was silent on non utilisation of dyes as per procurement plan from the date of receipt (August 2009) to disbandment of SKAT unit (June 2011).

Hence, non-utilisation of dyes as per procurement plan indicates the fact that dyes were not critically required as stated by HQMC at the time of processing of the case. Even the reduced requirement (November 2008) of dyes for three years as against the earlier five years was not correctly assessed which led to over provisioning. Further, import of the entire quantity for meeting three years requirement at one time despite the limited shelf life of the dye and also the fact that the time required to replenish stock was a maximum of four months, resulted in avoidable loss of ₹4.51 crore.

The matter was referred to the Ministry (June 2014); their reply was awaited (September 2014).

3.7 Directorate of Stores, Air Headquarters

3.7.1 Role and Mandate of the Directorate

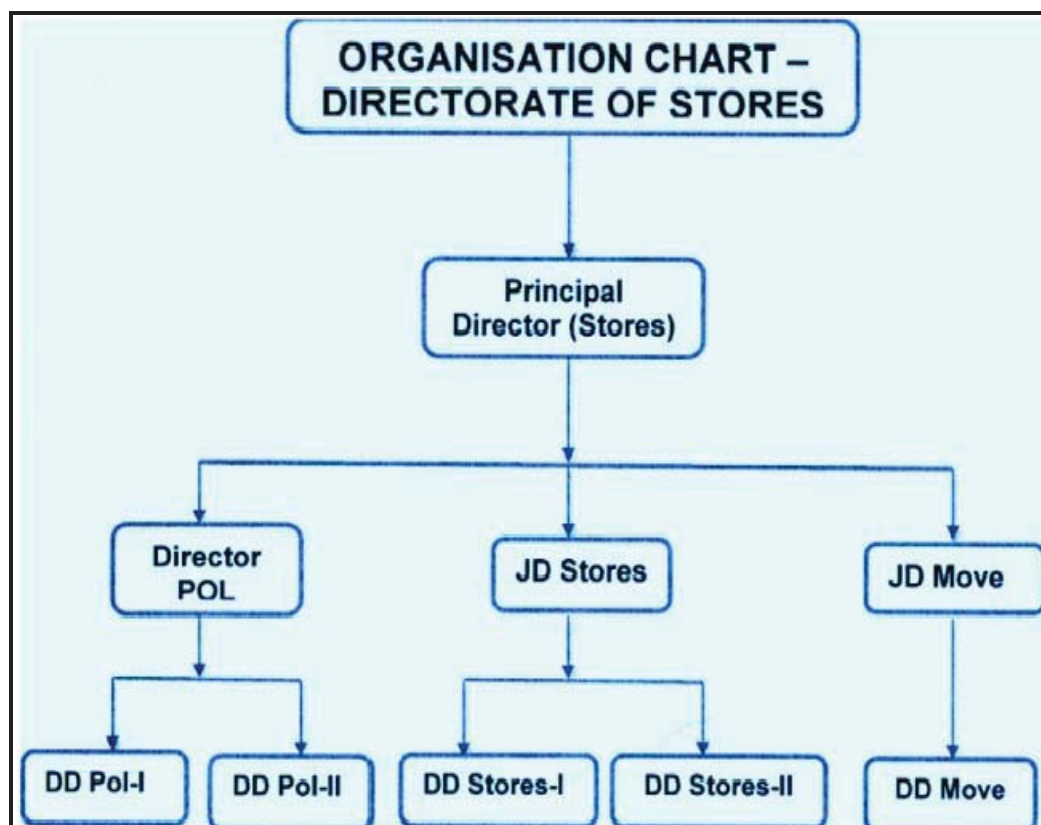
The Directorate of Stores at Air Headquarters (Air HQ) headed by Principal Director (PD) is responsible for provisioning and supply of non-technical stores²⁶ to Indian Air Force (IAF) units on the basis of the requirement assessed as per provisioning norms; for movement of stores and personnel through rail, air and sea for effective supply chain management for the IAF; and maintains liaison at appropriate levels with various authorities²⁷. The

²⁵ Stop functioning as a unit.

²⁶ Flying clothing, Extreme Cold Climate Clothing (Aircrew and Airmen), Aircraft tyres/tubes/batteries, Petroleum, Oils and Lubricants, Compressed Gases, Fire Fighting Equipments, Chemicals, PAD Equipments, Locking Wires, Camouflaging Nets for the peace and operational time requirement of the IAF.

²⁷ Ministries of Defence, Petroleum & Natural Gas, Railways, Army HQ, Naval HQ, Director General of Supply and Disposal (DGS&D), Director General of Ordnance & Equipment Factory (DGOEF), Director General of Aeronautical Quality Assurance (DGAQA), Director General of Quality Assurance (DGQA), Indian Oil Corporation Ltd (IOCL), Bharat Petroleum Corporation Ltd (BPCL), Hindustan Petroleum Corporation Ltd (HPCL), Air India and other concerned Public/Private Sector undertakings.

Directorate of Stores also plans and monitors budgetary estimates and expenditure for non-technical stores.



3.7.2 Audit Objectives

The audit was conducted with a view to ascertain:

- Whether there exists a system for providing reliable data pertaining to past usage, present trends in consumption and future planned utilisation and whether those records are being maintained methodically;
- Whether all the relevant rules, regulations, government orders and policies on provisioning of stores are being followed and adhered to strictly;

- Whether the right kind of stores are being procured in right quantity in the right place at the right time in an economic, efficient and effective manner;
- Whether the Budget was used judiciously, expenditure classified correctly and booked to the correct Code Heads, and financial interests of the Government watched;

3.7.3 Audit Scope

Out of a total of 81 indents/supply order placed during the period 2010-11 to 2012-13, a test check of all the 26 indents/supply orders each costing more than ₹1 crore was carried out at the Directorate of Stores and units concerned from August 2013 to December 2013 with the objective of examining the observance of and conformity with the prescribed procedures relating to provisioning of stores.

3.7.4 Source of Audit Criteria

The audit criteria used for benchmarking the audit findings were:

- General Financial Rules (2005)
- Financial Regulations (FR)/Delegation of Financial Powers (2006)
- Defence Procurement Manual (2009)
- IAP-1501(Equipment Regulations-Administration and Accounting)
- IAP-1541 (Manual of Provisioning)
- Manual of Operations for Integrated Financial Advisers (IFAs) in Air Force
- Government orders and policies on provisioning of stores
- Annual Procurement Plans
- Budget documents
- Reports and Returns on authorization and holding of stores
- Contracts and Case files at the Directorate of Stores

3.7.5 Audit Methodology

The Audit objectives, scope of audit and sources of audit criteria were discussed with the Directorate of Stores in an entry conference held in September 2013. Audit findings as discussed in the succeeding paragraphs are based on the analysis of records, data, information and replies furnished by the audited entities to the questionnaire/audit memoranda. Major Audit findings were discussed with the Directorate of Stores in the exit conference held in February 2014. Thereafter a Statement of Case (SOC) was issued (March 2014) to the Directorate of Stores and an audit paragraph to the Ministry of Defence (Ministry) in June 2014. Replies/comments as furnished by Air HQ in May 2014 on the SOC and in August 2014 on the draft audit paragraph have been suitably incorporated in the paragraph.

3.7.6 Audit Findings

3.7.6.1 Inventory management

Audit noticed that there exists a computerised inventory management system providing data pertaining to past usage and present trends in consumption, for future planned utilisation, records of which are also being maintained methodically.

3.7.6.2 Planning and Provisioning

a) Introduction and provisioning of newly introduced equipment

User Directorates obtain the sanction of the competent financial authority (CFA) for the introduction of new equipment in the Service and also obtain approval to the proposed scale of issue, where applicable, when seeking sanction for the introduction of new items; and thereafter refer the matter to the Directorate of Stores for taking necessary provisioning and supply action. The Directorate of Stores prepares draft indents for the items and quantities for which requirements exist, obtains financial concurrence of Integrated Financial Adviser (IFA) and approval of the Competent Financial Authority (CFA) from 'Acceptance of Necessity' (AoN) angle, and forwards the same to the Directorate of Procurement for taking necessary procurement action.

The Directorate of Stores is to ensure that sanction of the competent authority has been given for the introduction and provisioning of the new equipment and, where applicable, the scale proposed by the user Directorate has been duly approved. No action is to be initiated by the Directorate of Stores in regard to introduction and revision of equipment scales, unless prior approval has been obtained from the CFA.

The competent financial authorities to consider and give approval to the introduction/revision of equipment scales in the Air Force are as follows:

i) Air Staff Equipment Policy Committee (ASEPC)

The Committee functions under the Chairmanship of Deputy Chief of Air Staff (DCAS) and is empowered to accord approval to a case in which the gross initial financial effect is more than ₹5.00 crore but does not exceed ₹10.00 crore. The Committee makes specific recommendations regarding cases pertaining to equipment in which the total expenditure exceeds ₹10.00 crore to be referred to Ministry of Defence and Ministry of Finance (Def/Air) for further consideration.

ii) Air Staff Equipment Policy Sub-Committee (ASEPSC)

The Sub-Committee functions under the chairmanship of Air Officer in-charge Maintenance (AOM) and is empowered to consider and approve a case in which the gross initial financial effect is ₹5.00 crore or below.

b) Provisioning of scaled items

Provisioning of scaled items is a process of making up deficiencies in the authorised level on the trends of consumption and the force planned for the future. Briefly, it is a topping up process of those stores which are consumed over a period and are replenished at fixed intervals.

The centralized system of provisioning at Air Headquarters is designed to ensure that stock at the depots plus the quantity in the process of supply do not

fall below the Maximum Potential Establishment²⁸ (MPE) at any stage. MPE represents the level to which the various types of stores are provisioned to achieve the stockage objective which represents the maximum stocks that are authorized to be held in the Equipment Depots. IAF follows the cyclic review method of provisioning under which provisioning reviews are carried out periodically with a pre-determined review programme to monitor/control/regulate the procurement at various levels such as review action figure (RAF)²⁹, short stock figure (SSF)³⁰.

c) Financial powers

The Government of India, Ministry of Defence sanctioned (July 2006) the delegation of Capital procurement power and further enhancement/ addition in the existing delegated financial powers under Revenue to various Air Force authorities to the extent specified in Financial Regulations³¹.

Cases not covered by the delegated financial powers need to be referred to the Ministry of Defence for sanction.

3.7.6.3 Irregular provisioning of stores without scaling

As per extant orders, whenever a new item is introduced with different specifications, the item has to be scaled or the existing scale has to be amended.

²⁸ MPE is laid down by the Government and varies in respect of different ranges of equipment with due regard to their source of supply and susceptibility to deterioration while in storage; and MPE is expressed in terms of so many months' anticipated requirements.

²⁹ This is the re-order level. When the stocks held at stockholding depot (including ASPs) of an item reach this level, a special review is to be undertaken and supplementary indent placed if necessary.

³⁰ This is the minimum stock level. When the stocks at the stockholding depot (including ASPs) reach this figure, action is to be taken to expedite supplies against outstanding indents and, where applicable, from yield off repair. If there are no outstanding indents, a special review is to be undertaken. When the SSF level for an item is reached, further issues by Equipment Depots are to be made only with the prior approval of Air HQ.

³¹ Financial Regulations for Defence Services (Part-I), Volume-II, Revised Edition 1983

Scrutiny of the records at the Directorate of Stores, however, revealed (August-December 2013) the following instances of irregular provisioning of stores without scaling/revision of scale.

- **NATO Suit³² complete - ₹1.07 crore**

The Directorate of Stores initiated and sought (February 2010) 'Acceptance of Necessity' (AoN) from the Competent Financial Authority (CFA) in consultation with Integrated Financial Adviser (IFA) for procurement of Qty 247 NATO Suit complete of different sizes at an estimated cost of ₹1.09 crore under Schedule-XII (B) (scaled deficiencies)³³. IFA concurred with the proposal in March 2010 and the CFA approved the proposal in March 2010. Accordingly, two supply orders were placed (June 2010) on M/s Aeronav Industrial Safety Appliances, New Delhi and M/s Next Millenium, New Delhi for supply of Qty 247 NATO Suit complete at a total cost of ₹1.07 crore.

Audit observed (September 2013) that procurement (June 2010) of NATO Suit Complete (Sec/Ref No. 322C/2715, 2719 & 2720) which were different from the scaled (January 2001) NATO Suit (Sec/Ref No. 322C/4003-11) in use, without revision of scale was irregular.

In response to the paragraph issued to Ministry of Defence (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) stated (August 2014) that NATO suits were procured to cater for scaled deficiencies in limited sizes with the approval of CFA in consultation with IFA and thereafter no further procurement had been effected as the scale was under amendment.

The reply of the Air HQ is not acceptable for the following reason:

- Procurement of these items cannot be treated against scaled deficiencies, since these were upgraded ones and quite different from the scaled ones in use as is apparent from the Section/Reference numbers. Further, the reply was silent as to how concurrence and

³² NATO suit is issued to Aircrew operating at extreme cold climate areas to resist the temperatures up to minus 55 degree Celsius.

³³ Financial Regulations (Powers to accord necessity angle approval on indigenous sources other than PSUs and Government Department against scaled deficiencies), under Code Head-748/02 (Flying Clothing).

approval were given to the procurement of unscaled items under Schedule-XII (B) (scaled deficiencies) by IFA and CFA respectively.

- **Arctic Gloves - ₹4.38 crore**

The Directorate of Stores initiated (July 2009) a case for first time procurement of Arctic Gloves (small, medium and large) having an active heating element with lithium battery which can be used by Aircrew in fighter, transport and helicopter fleet operating above 5000 feet Above Mean Sea Level (AMSL) and sought (July 2009) AoN from the CFA in consultation with the IFA under Schedule-XII (B)³⁴. The IFA concurred with the proposal in July 2009 and the CFA approved the same in August 2009. A Supply order was placed (February 2010) on M/s Aeronav Industrial Safety Appliances, New Delhi for supply of 2630 pairs of subject item of three sizes at a total cost of ₹4.38 crore. The same were received at 56 Air Stores Park, Faridabad in July/August 2010.

Audit observed (September 2013) that since the requisite prior approval of the ASEPSC was not obtained for their introduction/scaling, the introduction of Arctic Gloves without scaling was irregular.

While the Directorate of Stores had informed (October 2013) in response to Audit observation (September 2013) that the item Arctic Gloves was a scaled item and the procurement was effected against deficiencies, Air HQ in response to the paragraph issued to Ministry (June 2014), on the directions (August 2014) of Ministry of Defence (Fin/Budget) stated (August 2014) that since the helicopters had been called upon to operate in the naxal infested areas for internal security, the urgency and operational justification could not wait for scaling action.

The reply of the Directorate of Stores/Air HQ is not acceptable for the following reasons:

³⁴ Financial Regulations (Powers to accord necessity angle approval on indigenous sources other than PSUs and Government Department against scaled deficiencies), under Code Head-748/02 (Flying Clothing).

- Audit did not find mention of urgency and operational necessity in the proposal of the Directorate of Stores initiated in July 2009 for procurement of these items. Moreover, there appears to be no apparent link between provisioning of Arctic Gloves which were to be used above 5000 feet Above Mean Sea Level and deployment of aircrew in naxal-infested areas which are not located in high altitude areas.
- Procurement of these items cannot be treated against scaled deficiencies, since these were upgraded ones and quite different from the scaled ones in use, requiring scaling before procurement in terms of Schedule XII (J1B)³⁵ of Financial Regulations.

- **Flame Retardant Aircrew Survival Jacket - ₹3.88 crore**

Since the existing scaled Survival Jacket was not meeting the prime requirement for rescue and safety in aviation as it could neither house the Personal Rescue Beacon (PRB)³⁶ nor was Fire Retardant, the Directorate of Stores initiated (February 2012) a case for AoN for procurement of 2700 survival jackets as one time procurement prior to scaling. IFA concurred with the proposal and the CFA approved the proposal in April 2012. Two supply orders were placed (March 2013) - one on M/s Aeronav Industrial Safety Appliances, New Delhi for supply of 1700 survival jackets (for Russian Origin aircraft) for ₹2.30 crore and the other on M/s Arnaf Futuristic Technologies (P) Ltd, New Delhi for supply of 1000 survival jackets (for non-Russian aircraft) for ₹1.58 crore - as per staggered delivery plan up to September 2014. Audit observed (September 2013) that since the requisite prior approval of the ASEPSC was not obtained for their introduction/scaling, provisioning of Survival Jackets without scaling was irregular.

In response to the paragraph issued to Ministry of Defence (June 2014), Air HQ on the directions (August 2014) of MoD (Fin/Budget) stated (August 2014) that because of operational necessity, survival jackets that needed to house the Personal Rescue Beacon were procured for use by highly qualified aircrew operating Jaguar fighter aircraft, whose life cannot be quantified in monetary terms.

³⁵ Schedule (J1B)- Approval of expenditure for introduction of new items and its scale.

³⁶ The PRB is automatically switched 'ON' during emergency and includes V/UHF whip antenna and GPS to enable communication between the ejected pilot and rescue team.

While Air HQ's concern for aircrew safety is understandable, provisioning of Survival Jackets without scaling remains irregular in the absence of the requisite approval of the Ministry in terms of extant orders.

- **Helmets for MI-17 V5 Helicopter Aircrew**

The Directorate of Ops Induction (T&H³⁷) initiated (February 2011) a case and obtained (March 2011) AoN from the CFA in consultation with IFA for one time procurement of 320 helmets (sizes 1 & 2) at a cost of ₹1.98 crore before scaling. Accordingly, the Directorate of Stores generated (March 2011) a Schedule of Requirement (SoR) and forwarded (March 2011) the same to the Directorate of Procurement for further procurement action. The Directorate of Procurement processed (April 2011) the case on single tender enquiry (STE) basis as recommended in the AoN. However, due to representation (April 2011) of another vendor, the CFA (AOM) approved (June 2011) the case for procurement of 80 *per cent* (quantity 256) from M/s Shakti Enterprises, Faridabad and rest 20 *per cent* (quantity 64) on open tender. But the purchase was put on hold subsequent to the directions (September 2011) of Vice Chief of Air Staff (VCAS) not to procure any CEMILAC³⁸-uncertified helmet, which was, however, later cleared by a waiver (November 2011) from Chief of Air Staff (CAS) due to the urgent requirement of helmets for induction of MI-17 V5 helicopter. Accordingly, the Directorate of Procurement placed (December 2011) the supply order on M/s Shakti Enterprises, Faridabad for 256 helmets (quantity 128 each in both sizes) at a total cost of ₹1.50 crore. The delivery was to be completed in seven lots by March 2013.

Audit observed (September 2013) that since the requisite prior approval of the ASEPC was not obtained for their introduction/scaling, provisioning of helmets for MI-17 V5 Helicopter aircrew without scaling was irregular.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) stated (August 2014) that since the helicopters had been called upon to operate in the naxal infested areas for internal security, the urgency and operational justification meant that the proposal could not wait for scaling action.

³⁷ Transport and Helicopter

³⁸ Centre for Military Airworthiness & Certification authority

Air HQ's reply is not acceptable as Audit did not find mention of such urgency and operational necessity in the Air HQ's proposal of February 2011.

- **Fire Retardant overalls and gloves – ₹1.55 crore**

The Directorate of Stores initiated (November 2011) a case for obtaining approval from the CFA in consultation with IFA for one time procurement of Qty 4800 each of Fire Retardant(FR) overalls and gloves before scaling - as scaling of these items were in progress - for fire rescue personnel employed as part of Rescue and Crash Fire Fighting team. The proposal was concurred by IFA and approved by the CFA in May 2012. Two supply orders were placed (August 2012) on M/s Arnaf Futuristic Technologies (P) Ltd, New Delhi only for supply of 4800 Fire Retardant overalls and 4800 gloves at a total cost of ₹1.55 crore.

Scrutiny of the records at the Directorate of Stores revealed (October 2013) the following:

- The Ministry had accorded (September 1999) sanction for procurement of, *inter alia*, the Fire Retardant overalls (Qty - 1760), Helmet with visor (Qty-880) and Safety boots with steel toes (Qty - 880). These stores could, however, not be procured initially for want of the specifications and authorized inspecting agency because these items were not in use in the IAF and subsequently because of lapse of sanction.
- In view of lapse of sanction, the Directorate of Ops (ATS) had initiated (September 2008) a case for Ministry's sanction for modified requirement of stores in increased number in view of new induction (2005) of 110 Crash Fire Tenders. After obtaining (January 2009) the approval of VCAS, the case was referred (April 2009) by Air HQ to the Ministry for sanction for the procurement of FR overalls with gloves (Qty 4800), helmets with visor and neck protection (Qty 2400) and overboots (Qty 2400).
- On a query (April 2009) of the Ministry as to whether the subject procurement was covered under delegated financial powers of Air HQ,

the Directorate of Ops (ATS) took (May 2009) a view that the proposal was covered under their delegated financial powers but did not apprise the Ministry of their viewpoint. Instead, they forwarded (May 2009) the proposal to the Directorate of Stores for further action.

- While procurement for Qty 4800 each of Fire Retardant overalls and gloves was done, the helmet with visor & neck protection and overboots were still pending for finalization.

Audit observed (October 2013) delay in procurement of Fire Retardant clothing stores and irregular procurement thereof in view of the fact that the requisite prior approval of the ASEPC was not obtained for their introduction/scaling.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) stated (August 2014) that one time procurement of Fire Retardant overalls and gloves was as per delegated financial powers under Schedule-XII J1A³⁹ and subsequently the case had been processed for scaling.

Air HQ's reply is not acceptable, as any item required to be introduced in the IAF needs to be first scaled with the approval of ASEPC/ASEPC, there is no provision in the delegated financial powers of Air HQ for one time procurement before scaling. Hence one time procurement before scaling under Schedule-XII (J1A) was unauthorised. Further, items demanded as far back as in 1999 are yet to be scaled and procured as per provisions of Financial Regulations.

Air HQ's own admission (April 2013) that whenever a new item is introduced with different specifications, the item has to be scaled or the existing scale has to be amended, validates Audit observation that introduction of all the above new items without scaling was irregular. Further, delay in scaling has resulted in criticalities for such items in the units as these had been provisioned without scaling. Therefore, further provisioning of these items till the time their scaling is completed, was not possible.

³⁹ Financial Regulations (Schedule-XII J1A), dealing with approval for expenditure for equipment not authorised/scaled.

3.7.7 Provisioning of unsuitable and substandard stores and delay in provisioning.

Importance and criticality of Flying Clothing towards aircrew safety and mission accomplishment calls for introduction of products of a very high quality duly cleared after a structured testing, certification and inspection process and timely provisioning thereof.

Audit, however, noticed the following instances of provisioning of substandard, unsuitable, untested and uncertified flying clothing and delays in provisioning thereof.

- **Substandard Flame Retardant Overall - ₹8.06 crore**

Air HQ placed (July 2008) a supply order on M/s Aeronav Industrial Safety Appliances, New Delhi for supply of 9200 units of Flame Retardant (FR) Overall (sizes-6, 7, 8 and 9) at a total cost of ₹8.06 crore, to be supplied within six months of bulk production clearance.

Audit noticed (September 2013) that consequent upon receipt of several complaints from the users, Director General (Inspection & Safety) (DG (I&S)) had requested (September 2011) DEBEL⁴⁰ to carry out detailed technical analysis of used and brand new FR Overalls. This revealed (March 2012) that the firm had supplied substandard FR Overalls, endangering the lives of the Aircrew. Accordingly, DG (I&S), asked (April 2012) CEMILAC to withdraw the 'Type Approval'⁴¹ awarded to M/s Aeronav Industrial Safety Appliances, New Delhi, which CEMILAC did (April 2012).

Since the 'Type Approval' was soon reinstated (July 2012), Audit took up (September 2013) the case of procurement of substandard FR Overalls with the Directorate of Stores and sought, inter alia, the exact justification for the reinstatement of the 'Type Approval'.

⁴⁰ Defence Bioengineering & Electromedical Laboratory

⁴¹ Means approval of the vendor by CEMILAC for supply of the particular store

From part reply/documents received (July 2014) from Air HQ, Audit noticed (July 2014) that DG (I&S) had recommended (June 2012) to CEMILAC to reinstate the 'Type approval' of M/s Aeronav Industrial Safety Appliances, Noida, on the plea of the past supply record and passing of random FR materials sample during subsequent testing (June 2012) by DEBEL, stating at the same time that the batch of FR Overalls found to be substandard had been recalled from the field.

The reinstatement of 'Type Approval' on the plea of the past supply record and passing of random FR materials sample despite the recall of substandard overalls from field units is not justified. The case reveals that Air Headquarters had not only procured substandard quality of FR overalls which had an effect of endangering the lives of ground staff but also failed to take any concrete action against the defaulting vendor, for such substandard supply. Audit further called for (August 2014) the details of substandard Flame Retardant overalls recalled from field units together with their final disposal; the information was awaited (September 2014).

- **Untested and uncertified helmets**

During the period from October 2007 to September 2010, Air HQ procured Qty 1225 helmets from M/s Tan Enterprises, New Delhi (Qty 396) and M/s Shakti Enterprises, Faridabad (Qty 829). These were received at various stock holding Depots/Parks between December 2008 and January 2011.

Audit noticed (September 2013) that eight helmets had flown off during ejection on MiG-21 and MiG-27 aircraft during the years 2010 and 2011, which was a matter of grave concern to the IAF. These were indigenous helmets which were inducted into the service without requisite testing and certification. As an immediate measure, an interactive session among various air force authorities⁴² had been held in September 2011 in which users brought out various problems such as availability of helmets only in two sizes, ill fit of

⁴² SASI & Os, Aviation Medicine Specialists and Aircrew of all MiG-21/27 operating bases of WAC, IAF

indigenous helmets to many aircrew resulting in flying off during ejection, and necessary improvement on helmets for comfort and safety etc.

Accordingly, Director General (Inspection & Safety) suggested (November, 2011) both 'short term measures'⁴³ and 'long term measures'⁴⁴ to effectively eliminate the problem of helmets flying off during ejection to ensure utmost safety of the aircrew, stating that subsequently these helmets would be replaced by 'Common Helmets & Masks' which would be tested and certified product.

Audit observed (September 2013) the issue of procurement and induction of these helmets without requisite testing and certification and sought clarifications on their modification as a short-term measure and expenditure incurred on modification.

In reply the Directorate of Stores stated (October 2013) that 157 helmets were modified at ₹21.81 lakh and another lot of 94 helmets at ₹13.06 lakh was then under modification.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) stated (August 2014) that once the issues concerning helmets were noticed, 'short term measures' as well as 'long term measures' were taken at the highest level and the helmets were made usable. However, they did not respond to the Audit observation regarding authorisation given for induction of indigenous helmets without the requisite testing and certification.

Therefore, procurement of untested and uncertified flying clothing items reveals flaws in the provisioning and procurement of critical items, as procurement of untested and uncertified flying clothing items has adverse flight safety implications.

⁴³ Provisioning of additional padding to achieve a snug fit to aircrew, reduction of life of the padding for mandatory change and improvement of material used for chinstrap etc.

⁴⁴ Development and induction of Common Helmets & Masks

- **Delay in provisioning of Fleet Specific Flying Clothing for a special operations squadron**

IAF raised one Squadron (January 2011) of C-130J aircraft as a special Operations Squadron. To support their operations, flying helmets and other specialist equipment need to be worn by the aircrew.

Accordingly, the Squadron forwarded (July 2012) a Statement of Case (SOC) to the Directorate of Ops (T&H) for scaling and procurement of fleet specific flying clothing involving financial effect to the tune of ₹2.03 crore (approximate) stating therein that any delay in this process would affect the operations of the fleet in future as the unit would not be capable of undertaking missions that need this flying clothing. The Directorate of Ops (T&H) forwarded (November 2012) the SOC to the Directorate of Stores for necessary action. In response, the Directorate of Stores informed (November 2012) the Directorate of Ops that I&S Branch was the co-ordinating agency for all indigenized flying clothing and requested them to follow up the progress of the case with JD QAS (Flying clothing). It was also stated that future provisioning would be made after requisite scaling of the helmets and masks for use by the aircrew of C-130J aircraft.

Audit observed (October 2013) that the scaling action for fleet specific flying clothing was not completed even after more than two years of raising the squadron.

In response, the Directorate of Stores stated (October 2013) that the scaling action for flying clothing for aircrew operating C-130J aircraft had not been completed and the Directorate of QAS (Aero) further informed (October 2013) Audit that since the case for indigenization of flying clothing for C-130J aircraft had not been referred to their Directorate, no action on the same had been initiated by them and that process of indigenization of flying clothing for C-130J aircraft was likely to take 2-3 years for completion after due testing and certification.

By the Squadron's own admission (July 2012), delay in the scaling and provisioning of flying clothing for C-130J aircraft would affect the operations of the Squadron in undertaking the intended operation.

Thus, the case reveals ineffective coordination among various Directorates at Air HQ resulting in delay in scaling and provisioning of requisite flying clothing, thereby affecting the operations of the special Operations Squadron.

- **Non-compatibility and shortage Oxygen Masks**

MI-17V5 helicopter fleet operating at Wing 'A' (unit) assigned with extensive flying with minimum of flight altitude of 10,000 feet, requires every helicopter to be equipped with oxygen system comprising oxygen regulators, disconnectors and oxygen masks for being used by aircrew as well as passenger.

Audit noticed (September 2013) shortage of all these items vis-à-vis posted pilots, the availability being only 87 *per cent*. Since, 50 *per cent* of the available 87 *per cent* oxygen masks were unserviceable, the available quantity of serviceable masks was grossly insufficient to meet the requirement of posted aircrew. Consequently, aircrew were using passenger oxygen masks which did not have built-in microphone forcing them to resort to non-standard practice of wearing the mask over the headset microphone entailing a flight safety hazard. Also, the aircrew were not able to use helmets during sorties entailing flying above 10,000 feet due to non-compatibility of oxygen mask and helmet.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) informed (August 2014) that the case had been referred to the Directorate of Ops (T&H) for furnishing clarification to Audit.

The fact remains that non-compatibility of oxygen mask and helmet coupled with shortage and un-serviceability of oxygen masks has adverse flight safety implications for aircrews of the unit.

- **Incorrect assessment in provisioning of Oxygen Regulator for Jaguar aircrew– ₹16.8 crore**

Oxygen Regulator is a critical item which has a direct bearing on cockpit availability⁴⁵ for Jaguar aircrew. The Maximum Potential Establishment (MPE) of the item is 57 months.

Audit noticed (October 2013) that the Directorate of Stores had initiated (May 2009) a proposal for procurement of 65 Oxygen Regulators at a total cost of ₹16.80 crore @ ₹25.84 lakh each, taking into consideration MPE of only 36 months instead of the prescribed 57 months, without giving any justification for their doing so. Reduction of MPE from 57 months to 36 months, however, kept the sanction for the proposal within the delegated financial powers of Air HQ (₹20 crore with IFA's concurrence).

IFA concurred with the proposal in July 2009 and Air Officer in-charge Maintenance approved the same in July 2009. Accordingly, the Directorate of Stores forwarded (July 2009) 'Schedule of Requirement' along with draft 'Request for Proposal' duly vetted by IFA to the Directorate of Procurement for initiating procurement action. The lowest price ₹30.98 crore offered (December 2009) by M/s Aviation Defence Spares Ltd., U.K. was, however, found to be beyond Air Headquarters' financial powers, and, thus, required Ministry's approval.

Instead of going for Ministry's approval, an internal meeting was held (March 2010) under the Chairmanship of Assistant Chief of Air Staff (ACAS) (Logistics) to discuss on the procurement of Oxygen Regulators for Jaguar Aircrew, in which proposed Qty 65 of Oxygen Regulators was reduced to Qty 35 on the following grounds:

- Keeping in view the critical requirement of Oxygen Regulators and the gestation period for supply of new ones being at least 15 months,

⁴⁵ Each fighter aircraft has one Oxygen Regulator and two Oxygen Regulators for trainer aircraft

immediate requirement was to be met through repaired/overhauled ones.

- The overhauled regulators would be available with one year OEM warranty and the cost of overhaul would be less than one-third the cost of new ones.
- Considering an ideal yield repair of 75 per cent, 30 repairable Oxygen Regulators would be recovered.

Accordingly, it was decided (April 2010) by ACAS (Logistics) in the CNC Meeting to restrict the requirement of the Oxygen Regulators to 35 only. The Directorate of Procurement, therefore, placed (May 2010) a supply order on M/s Aviation Defence & Spares Ltd UK for supply of 35 Oxygen Regulators at a cost of ₹15.85 crore, which were received at 24 ED AF between May 2011 and December 2011.

Audit observed (October 2013) the following irregularities in the provisioning of Oxygen Regulators:

- Reduction of MPE from 57 to 36 months without any justification, kept the proposal within the delegated powers of Air HQ, resulting in reduced availability of a critical item.
- Subsequent reduction in the provisioning of Qty 65 of Oxygen Regulators - assessed on the basis of already reduced MPE - further reduced the availability of a critical item.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) submitted their reply and stated (August 2014) that the reduction in quantity be looked in the correct perspective, which resulted in savings to the exchequer and reduction in inventory carrying cost, as Oxygen Regulator is a very costly item that can

be repaired and reused. However, reasons for reduction MPE from 57 to 36 months were not explained.

Their reply is not acceptable for the following reason:

- Out of 23 repairable Oxygen Regulators sent for repair, only 12 (*i.e.* 52.17 *per cent*) Regulators were repaired (June 2014) and the remaining 11 (*i.e.* 47.83 *per cent*) Regulators were rendered non-repairable. As opening of Letter of Credit was under process, no repaired Regulator has been received till August 2014. Thus, in effect, no repaired Regulator has been received even after a lapse of more than *four* years. This only shows that the reduction of Qty 65 of Oxygen Regulators to Qty 35 was not based on realistic and genuine grounds.

Thus, the case reveals that initial unjustified reduction in MPE from 57 months to 36 months coupled with subsequent reduction in the assessed Qty 65 of Oxygen Regulators to 35 on the basis of unrealistic and unconfirmed grounds only to keep the procurement proposal within the delegated financial powers of Air HQ impacted adversely on the availability of this critical item.

While delay in provisioning of flying clothing was resulting in non-accomplishment of envisaged mission, introduction of substandard and unsuitable flying clothing without mandatory testing, certification and inspection by the designated agencies was the cause for low satisfaction level and serious flight safety ramifications flagged by the field units across IAF.

3.7.8 Financial Management

3.7.8.1 Budget

The Directorate of Stores operates following Revenue Major Heads for procurement of stores. Year-wise allotment and expenditure under these heads

during the period from 2010-11 to 2012-13 are tabulated below:

(₹ in Lakh)

Code Head	Year	Allotment	Expenditure	Savings(-)/ Excess (+)	Percentage Savings (-)/ Excess (+)
744/02 (Ration)	2010-11	8945.00	8945.00	--	--
	2011-12	10825.00	10825.00	--	--
	2012-13	10858.25	10202.73	(-) 655.52	(-) 6.04
745/02 (LPG, Coal & Firewood)	2010-11	245.00	245.00	--	--
	2011-12	266.00	125.00	(-) 141.00	(-) 53.01
	2012-13	140.00	162.02	(+) 22.02	(+) 15.73
746/02 (Aviation Turbine Fuel & Aerolubes)	2010-11	250510.00	250510.00	--	--
	2011-12	322537.33	316640.00	(-) 5897.33	(-) 1.83
	2012-13	360041.00	354837.00	(-) 5204.00	(-) 1.45
746/03 (Main Grade Fuel)	2010-11	14970.00	14970.00	--	--
	2011-12	15730.00	15730.00	--	--
	2012-13	20025.00	19975.92	(-) 49.08	(-) 0.25
747/04 (Ordnance)	2010-11	363.06	340.00	(-) 23.06	(-) 6.35
	2011-12	3.50	3.50	--	--
	2012-13	16.31	0.00	(-) 16.31	(-) 100
748/02 (Flying Clothing)	2010-11	2986.01	2895.00	(-) 91.01	(-) 3.05
	2011-12	3200.00	3185.00	(-) 15.00	(-) 0.47
	2012-13	628.98	625.33	(-) 03.65	(-) 0.58
748/04 (DGOEF Clothing)	2010-11	5009.26	245.00	(-) 4764.26	(-) 95.11
	2011-12	0.00	0.00	--	--
	2012-13	9.98	9.98	--	--
750/02 (Misc)	2010-11	120.67	120.00	(-) 00.67	(-) 0.56
	2011-12	15.00	15.00	--	--
	2012-13	77.68	77.68	--	--

Source: Details of allotment and expenditure furnished by Air HQ vide their letter No. Air HQ/61739/Cen/Audit/Stores dated 16 September 2013.

Audit observed considerably low expenditure particularly against the budget allotment for DGOEF⁴⁶ Clothing items (Code Head 748/04) both in terms of *percentage* and amount, and called for (December 2013) the exact reasons for the same along with details of surrender of funds.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) stated (August

⁴⁶ Director General of Ordnance & Equipment Factory

2014) that as DGOEF supplies were normally erratic in nature, the targets were not adhered to during the specified period as per delivery schedules.

The reply, however, did not explain the reasons for allotment of ₹5009.26 lakh in 2010-11 despite the fact that in the past two financial years *i.e.* 2008-09 and 2009-10 expenditure was ₹750.00 lakh against the allotment of ₹748.59 lakh and ₹920.00 lakh against the allotment of ₹921.29 lakh respectively, nor did it furnish details of instances of non-adherence to targets as per delivery schedules.

3.7.8.2 Booking of Capital expenditure on installation of Halon Reclamation and Refilling Facility to Revenue Head - ₹6.64 crore

Production of Halon gas has been banned worldwide through Montreal Protocol of 1999, as it is an Ozone Depleting Substance. But it is permitted to be used for critical application; including use in Military aircraft, for fire-fighting purposes till the right equivalent is available.

As its sources of supply were depleting worldwide, IAF planned (May 2010) to stock up Halon gas to meet the next 30 years' requirement at the designated Stock Holding Depot (SHD). For the purpose, a reclamation and refilling facility was needed to be established, as during its storage, Halon gas needs to be recycled to ensure that its purity levels are maintained.

Accordingly, the Directorate of Stores initiated a case in May 2010 and sought the approval of Deputy Chief of Air Staff (DCAS) (CFA) in consultation with Integrated Financial Advisor (IFA) under Schedule-I⁴⁷ of Financial Regulations (FR) (meant for incurring expenditure on Capital Procurement) for installation of reclamation and refilling facility for Halon Gas comprising equipment and allied infrastructure at SHD 'A' at an estimated cost of ₹5.99 crore as capital procurement following revenue route in terms of Government orders of September 2007. The Government orders permits procurement of items specified therein - which are basically capital in nature based on twin criteria of cost being ₹10 lakh and above and life being seven years and above but expenditure in respect of which was being booked to revenue heads-

⁴⁷ Power to incur expenditure on capital procurement by CFA (*i.e.* DCAS, Air HQ) up to the financial limit of ₹10.00 crore.

following revenue route with the stipulation that expenditure of capital nature is classified accordingly under appropriate capital heads.

While processing of the case for obtaining the concurrence of PIFA and approval of CFA, ACAS (Logistics) observed (January 2011) that this being an unscaled item and one time requirement, the procurement could be made under Schedule–XII J(1A) (Revenue expenditure for equipment not authorized/scaled). Accordingly, PIFA concurred with the proposal in February 2011 and AOM approved the proposal as CFA in February 2011 under Schedule - XII J (1A). Subsequently, the Directorate of Stores placed an indent (March 2011) on the Directorate of Procurement which in turn placed a supply order in May 2012 on M/s Neometrix Engineering (P) Ltd, Noida for supply and installation of Halon Reclamation and Refilling Facility (HRRF) along with accessories at a total cost of ₹6.64 crore from Revenue Code Head 746/03 (Main Grade Fuel).

Audit noticed (September 2013) the following irregularities in the above procurement:-

- i) Booking of Capital expenditure to Revenue Head in violation of Government orders of 2007.
- ii) Wrong concurrence of PIFA/CFA
- iii) Procurement of technical store by the Directorate of Stores which is responsible for provisioning and procurement of non-technical stores.

While PIFA's comments on Audit observation on wrong concurrence were awaited (September 2014) despite reminders, the Directorate of Stores stated (October 2013) in response to Audit observation (September 2013), that since neither the Principal Integrated Financial Adviser (PIFA) nor the CFA recorded any comments on the Schedule, the case was processed further for procurement under Schedule XII (J1A) following concurrence by the PIFA and approval by the CFA (AOM). The Directorate of Stores further informed that since gas expenditure was being booked under Code Head 746/03 (Main Grade Fuel), HRRF being a related subject was also booked under the same Code Head. Endorsing the reply of the Directorate of Stores, Air HQ stated (May 2014) in response to SOC issued (March 2014) by Audit that since the

case was not opposed by IFA and CFA, the case was processed under delegated financial powers and could not be termed as wrong projection of case by ACAS (Logistics).

Air HQ's reply is not acceptable as cost of HRRF being above ₹10.00 lakh and its life being more than *seven* years, procurement thereof was required to be treated as Capital procurement and expenditure thereon to be booked to Capital Code Head in terms of Government orders of 2007. As such the above procurement is in violation of the said Government orders.

3.7.8.3 Loss due to non-implementation of Fall Clause in procurement of Petrol, Oil and Lubricants

The IAF has been procuring main grade petroleum products like Aviation Turbine Fuel (ATF), High Speed Diesel (HSD), Superior Kerosene Oil etc., from three Public Sector Companies (PSCs)⁴⁸ – IOCL, BPCL and HPCL by entering into Rate Contracts.

Air HQ entered into rate contracts with these companies for procurement of ATF for the period April 2002 to March 2005, April 2005 to March 2008 and April 2008 to March 2011 extended from time to time up to 31 March 2014⁴⁹ and for procurement of HSD for the period November 2004 to 31 October 2007 and November 2007 to October 2010 extended from time to time up to 31 December 2013⁵⁰.

The rate contracts, inter-alia, contained a 'Fall Clause' to the effect that 'the prices charged by the seller shall not exceed the prices at which they sell them to any other customer during the period of contract excepting on sale to 'other oil companies' and sales through exports. This clause would not apply where any price concession has been especially authorized by the Ministry of Petroleum and Natural Gas to any specific category of customers. However, the seller would keep the buyer informed of the same specifically indicating

⁴⁸ Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL) and Hindustan Petroleum Corporation Limited (HPCL)

⁴⁹ 1st Extension (01/04/11 to 31/03/12), 2nd Extension (01/04/12 to 31/03/13), 3rd Extension (01/04/13 to 31/03/14)

⁵⁰ 1st Extension (01/11/10 to 30/06/11), 2nd Extension (01/07/11 to 31/12/11), 3rd Extension (01/01/12 to 31/12/12) and 4th Extension (01/01/13 to 31/12/13)

the items and the rates with the approval of the Ministry of Petroleum and Natural Gas.

During the review of the functioning of the Directorate of Stores, Audit observed (August 2013) that since IOCL had been giving significant amount of discounts in the range of ₹106 per Kilolitre (Kl) to ₹3050 per Kl on the sale of ATF to many bulk consumers like Indian Airlines/Air India/NACI, Lufthansa, British Airways and other foreign airlines and in the range of ₹600 per Kl to ₹1125 per Kl on the sale of HSD to many bulk consumers like Indian Railways, UP State Road Transport Corporation, Rajasthan State Road Transport Corporation Ltd etc., the IAF had lost approximately ₹713.09 crore (₹703.36 crore on procurement of ATF during the period from 2003-04 to 2010-11 and ₹9.73 crore on procurement of HSD during the period from 2006-07 to 2012-13) due to inaction on the part of IAF to enforce the 'Fall Clause' of the rate contract to negotiate and avail of such discounts.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) accepted (August 2014) the facts, without, however, clarifying as to why Ministry as well as IAF failed to enforce the 'Fall Clause', until the issue was highlighted (September 2009) by Audit after which IAF/Ministry negotiated (March 2011) with the three PSUs and started getting discount on ATF from April 2011 onwards - as has been discussed in the succeeding paragraph.

3.7.8.4 Recurring annual savings at the instance of Audit

Audit noticed (August 2013) that consequent upon the issue regarding loss due to non-implementation of Fall Clause having been raised (September 2009) in Audit, IAF/Ministry had negotiated (March 2011) and obtained from all the three PSUs a discount of ₹300 per Kl on procurement of ATF for the period from 1 April 2011 to 31 March 2012, ₹550 per Kl for the period from 1 April 2012 to 31 March 2013 and ₹1100 per Kl for the period from 1 April 2013 to 31 March 2014. In this way saving of ₹107 crore by way of availing of discount on procurement of ATF had accrued to IAF/Ministry up to March 2014.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) accepted

(August 2014) that IAF had been getting the discount which was ₹1300 per Kl for the ATF and ₹183.75 per Kl for Diesel in the current financial year *i.e.* 2014-15.

3.7.8.5 Failure to take advantage of Prompt Payment Discount - ₹9.58 crore

Audit noticed (August 2013) that while Indian Navy had been availing the Prompt Payment Discount (PPD) of ₹10 per Kl from April 2000 and ₹20 per Kl from April 2005 on making full payment within 20 working days from the receipt of the bills pertaining to primary oils (fuels) including ATF and HSD, IAF had failed to do so, resulting in an approximate loss of ₹9.58 crore during the period from 2003-04 to 2012-13 on procurement of ATF as no provision for PPD was made in the relevant rate contracts.

In response to the paragraph issued to Ministry (June 2014), Air HQ on the directions (August 2014) of Ministry of Defence (Fin/Budget) accepted (August 2014) the facts without, however, clarifying as to why no provision for the PPD was made in the relevant contract as was the case with Indian Navy.

3.7.8.6 Non-crediting of dealership commission on issue of LPG into Public Fund

Consequent to the introduction of LPG as a fuel for cooking in the Armed Forces and authorization of cooking gas equipment to the cook-houses as sanctioned by Government of India from time to time, Government of India, Ministry of Defence issued (February 1991) instructions on the utilisation of dealership commission⁵¹ being allowed to Armed Forces by Oil Companies based on number of cylinders sold per month.

As per the instructions, dealership commission on issue of LPG by nationalized oil companies to Armed Forces would be utilized for meeting the

⁵¹ The total dealership commission - renewable from time to time - being allowed by Oil Companies was ₹5.30 per cylinder in February 1991 and ₹7.30 for sale up to 2500 cylinders and ₹6.50 for sale of 2501 and above cylinders per month, in July 1994. A sum of ₹3.62 per cylinder out of the total dealership commission allowed by the Oil Companies was to be taken as rebate to Defence Department and reduced from the total bills and the balance amount of the dealership commission was to accrue to the executive authorities for the purpose of meeting the operating cost of distributorship.

operating cost on the authorized items⁵² to run the gas agency and the unutilized balance amount, if any, as on 31 March of each year would be remitted⁵³ to the Government. These accounts would be got audited by the CDA concerned as any other auditable document.

The Ministry had sanctioned (September 2003) direct procurement of LPG by IAF units from LPG agencies of PSU oil companies and allotment of funds⁵⁴ through controlling Command HQ to meet the requirement of security deposits as well as purchase of LPG. Accordingly, Air HQ had issued (July 2005) instructions to Command HQs to project funds for one time expenditure and annual recurring expenditure to Air HQ for procurement of LPG.

Government of India, Ministry of Defence, clarified (January 2007) that whether running Free Issue LPG, Payment issue LPG or Free/Payment Issue LPG, the dealership commission so accrued would be utilized on the authorized items and the unutilized balance amount if any as on 31st March of each year would be remitted to the Government and got audited by the concerned CDA as any other auditable document accordingly. The Directorate of Stores circulated (February 2007) the clarification to all Command HQs for its compliance.

Audit observed (September 2013) that in gross violation of the Ministry's orders, unutilized_balance amount of the dealership commission accrued as on 31st March each year was not being remitted to the Government by Air Force authorities on the plea that Gas Agencies were being operated as Regimental Institutes out of Non Public Fund (NPF) and no money from Public Fund *i.e.* Consolidated Fund of India was involved. IAF had made a net profit of ₹2.24 crore in 2005-06 alone⁵⁵. Subsequent information was not available.

In response to the paragraph issued to Ministry (June 2014), Air HQ stated (August 2014) that Air Force Gas agencies did not fall under the ambit of

⁵² Repair of LPG appliances, purchase of stationery, expenditure on employment of part-time help/extra duty pay to run the agency, inventory control and any other expenditure to improve the efficiency of dealerships and cooking appliances.

⁵³ Under Major Head 0076 Minor Head 110 (c)-Receipt Head (Revenue Accounts)(Other Non-Tax Revenue).

⁵⁴ From Locally Controlled Head 745/01.

⁵⁵ Subsequent information not available.

Government sanction of January 2007, as these were run on self sustaining basis without any financial assistance/support from the Government fund.

Air HQ's reply is not acceptable for the following reasons:

- At the time of authorizing direct procurement of LPG by IAF units from LPG agencies of PSU oil companies, funds were provided from Government fund to meet the requirement of security deposits as well as purchase of LPG. Scrutiny of the records at the Directorate of Stores revealed (September 2013) that funds for security deposit and recurring annual expenditure on procurement of LPG *per annum* were demanded by the Air Force Units/Commands and provided by Air HQ. It is, therefore, incorrect to say that no financial assistance/support from the Government fund was provided.
- Non-remittance of unutilized balance of dealership commission accrued as on 31 March each year to Government is in contravention of the Ministry's own instructions of January 2007.

3.7.8.7 Conclusion

The Directorate of Stores is a centralized agency for planning, provisioning and indenting of all types of non-technical stores required by the units of IAF. The Directorate of Stores also maintains liaison at appropriate level with different Ministries of the Central Government and Public/Private Sector Undertakings. However, Audit observed several instances of irregular approval and concurrence by CFAs and IFA respectively and wrong booking of expenditure. There were also several cases of irregular procurement of flying clothing, Arctic Gloves Battery Heated, NATO Suit complete and Flame Retardant Overall without scaling/approval of the Ministry. Audit noticed cases of procurement of substandard Fire Retardant Overalls, and untested & uncertified helmets endangering the lives of pilots. There was a considerable delay in procurement of fire protection clothing, and scaling/procurement of Fleet Specific Flying Clothing for a special operations squadron. The Directorate of Stores was also not able to maintain effective liaison with PSUs as a result of which IAF suffered loss of ₹713.09 crore due to non-implementation of fall clause in procurement of fuel and loss of ₹9.58 crore due to failure in taking advantage of prompt payment discount.

The other important issues were non-crediting of revenue of ₹17.92 crore (approx) into Public Fund Account. A saving of ₹107 crore by way of availing discount on procurement of ATF during the period 2011-12 and 2013-14 accrued to IAF at the instance of Audit.

3.7.8.8 Recommendations

1. Strict adherence to the laid down procedure regarding scaling and obtaining sanction of appropriate CFA may be ensured.
2. Special efforts should be made by the Directorate of Stores for early finalisation of the scales of the items being procured so as to avoid criticalities at user units.
3. Quality control of the flying clothing needs to be strengthened to guard against supply of sub-standard and un-certified items.
4. The Directorate of Stores may consider preparing a data base of rates and discounts offered by oil PSUs to other Government/Private customers through liaison with the Ministries at appropriate level.

The matter was referred to Ministry in June 2014, their reply was awaited (September 2014).

3.8 Audit on Aerospace Safety in Indian Air Force

3.8.1 Introduction

Flight Safety mission Statement of Indian Air Force (IAF) is to ensure operational capability by conserving human and material resources through prevention of aircraft accidents. No operational goals can be achieved if pilots and aircraft are lost. As risk is inherent in military aviation, it has to be assessed and managed effectively in order to accomplish the mission. Thus, the prevention of aircraft accident is an increasingly important factor in the maintenance of a combat capability of IAF. The terminology of flight safety has been replaced by “Aerospace Safety”.

Mention was made in Paragraph No. 7 of Audit Report No. 8 of 1998 regarding high rate of aircraft accidents, lack of training and infrastructure, lack of flying experience and training equipment, technical defects attributed to deficient maintenance procedure and delay in finalization of investigation. The Audit review addressed the issues pertaining to investigation of accidents and follow up measures taken by IAF during the period 1991-97. Based on this Audit Report and after taking evidences of the representatives of Ministry of Defence (Ministry) and Hindustan Aeronautical Limited (HAL) in August and September 2000, Public Accounts Committee (PAC) finalised its report (29th Report) which was presented to the parliament on 21st March 2002. In its Action Taken Note (ATN) of September 2008 on the recommendation of the PAC, Ministry had assured PAC about implementation of preventive measures, enhancing quality of training, acquisition of advance jet trainer (AJT) and simulators, and early regularization of losses. During current audit (August 2013 to December 2013), we examined the issues pertaining to investigation of accidents and follow up measures taken by IAF during the period 2010-13. We *inter alia* observed that these issues continue to persist as there was lack of trainer aircraft, delay in finalization of court of Inquiries (CoI) which resulted in delay in finalization of pensionary benefits and implementation of remedial measures for prevention of accidents, non implementation of preventive measures to avoid recurrence of such accidents and delay in regularization of losses of aircraft accidents/Incidents. This has been discussed under Audit findings in the succeeding paragraphs.

3.8.2 Organisational Structure

Directorate of Aerospace Safety (DAS) at Air Headquarters (Air HQ) headed by Air Marshal (AM) and assisted by Principal Director/Director/Joint Director level officers is assigned with the mission of enhancing the safety of the men and material resources of the IAF while operating in peace and war. Prevention and Investigation are two major task areas of DAS.

3.8.3 Audit Objective

The Audit was conducted with a view:

- to ascertain whether the causes of aircraft accidents/Incidents were identified by IAF, risk identified and remedial measures suggested/taken and losses regularised in time;
- to obtain status with regard to availability of requisite ground infrastructure and support services, control measures, their suitability and effectiveness;
- to ascertain that the arrangement exists to identify training needs of IAF personnel, up-dation thereof, arrangement made for imparting the requisite training and expected results thereof;
- (whether critical weaknesses in technology having direct bearing on aerospace safety were identified in time by aircraft operating units and outcome thereof.

3.8.4 Scope of Audit

Scrutiny of the records for the period 2010-11 to 2012-13 was carried out from August 2013 to December 2013 at the Directorate of Aerospace Safety (DAS), the Directorate of Air Veterans and the Institute of Aerospace Safety. In addition, eight⁵⁶ aircraft operating wings under four⁵⁷ IAF Commands out of 45 Wings under seven IAF Commands were selected for detailed audit. Selection of field units was done to ensure that all types of fighter⁵⁸ aircraft are covered in audit.

⁵⁶ 2 Wing, 7 Wing, 8 Wing, 11 Wing, 15 Wing, 20 Wing, 33 Wing and 40 Wing.

⁵⁷ Headquarters (HQrs) Western Air Command, HQrs Central Air Command, HQrs Eastern Air Command and HQrs South West Air Command.

⁵⁸ MiG variants, Jaguar, Mirage and Su-30.

3.8.5 Source of Audit Criteria

Following sources were used as audit criteria:

- General Financial Rules, 2005 (GFR)
- Indian Air Force Equipment Regulations IAP– 1501
- Manual of Flight Safety Management (IAP 3030)
- AFO 34/06, policy letters issued by the Ministry of Defence (MoD)
- Policy Page of Flight Safety Organization at Air HQ
- Executive Committee Report on flight safety

3.8.6 Audit Methodology

The Audit scope, objectives, and criteria were discussed with the Principal Director (PD) of the Directorate of Aerospace Safety (DAS) in an entry conference held on 17 September 2013. Audit evidence was gathered through examination of records, issue of questionnaires to Air HQ, and issue of Preliminary Slips etc. Audit findings were also discussed with PD of the DAS in the exit conference held on 10 February 2014. A statement of case (SOC) was sent to Air HQ on 21 March 2014 and paragraph was sent to the Ministry in June 2014. On the directions (August 2014) of the Ministry of Defence (Finance/Budget), Air HQ furnished reply to the Paragraph (August 2014), which has been suitably incorporated in the paragraph. However regarding audit observation on delay in procurement of Basic training Aircraft (BTA), Intermediate Jet trainer (IJT) and Advance Jet Trainer (AJT) Air HQ stated that Ministry may reply appropriately which was awaited (September 2014).

The Audit findings as discussed in the succeeding paragraphs are based on the analysis of records, data/ information collected from the entities through audit memos/questionnaires and response of Air HQ to the statement of case and the Paragraph.

3.8.7 Audit Findings

3.8.7.1 Aircraft accidents/Incidents

Accidents

Aircraft accidents are grouped in three categories (Cat-I, Cat-II and Cat-III) and cover all damages of more than 10 *per cent* of the total cost of the aircraft as shown below:-

Cat-I- These are serious accidents in which aircraft is destroyed or damaged beyond economical repair (BER) or cost of damage of the aircraft, excluding damage to aero-engine(s) is more than 50 *per cent* of the total cost of the aircraft.

Cat-II-Aircraft sustains extensive damage and the cost of damage/repair, excluding damage to aero-engine(s), is 31 *per cent* to 50 *per cent* of the total cost of the aircraft.

Cat-III- Aircraft sustains major damage and the cost of damage/repair, excluding damage to the aero-engine(s), is 11 *per cent* to 30 *per cent* of the total cost of the aircraft.

Incidents

Minor damages to the aircraft where the cost of damage is upto 10 percent are categorized as Incidents as shown below:-

Cat IV- Minor damage to the aircraft (airframe) where the cost of damage is up to 10 *per cent* of the total cost of the aircraft.

Cat V-All flying/ground Incidents, considered worth reporting in the interest of aerospace safety.

Report No. 34 of 2014 (Air Force and Navy)

Scrutiny of the data on aircraft accidents/Incidents for the period from April 2010 to March 2013 furnished (August 2013) to Audit by DAS revealed that, 42 aircraft of different⁵⁹ variants met with accidents which comprised 37 flying accidents and 05 ground accidents. While Court of Inquiry (CoI) in respect of five flying accidents was under finalization, the provisional loss recorded by DAS in respect of 37 accidents was ₹856.72 crore. The year wise break up of these accidents/Incidents is given in the Table below:-

Year	Total flying hours	Flying Accidents				Ground Accidents				Total flying/ground accident	Fatal (No of deaths)	Rate ⁶⁰ of accidents	Incidents ⁶¹
		Cat I	Cat II	Cat III	Total	Cat I	Cat II	Cat III	Total				
2010-11	227480	12	-	02	14	01	-	-	01	15	02 (14)	0.62	449
2011-12	227322	13	01	02	16	-	-	01	01	17	04 (04)	0.70	517
2012-13	230200	05	-	02	07	02	-	01	03	10	02 (09)	0.30	568
Total	685002	30	01	06	37	03	-	02	05	42	08 (27)	0.54	1534

(Data on accidents/Incidents furnished by DAS to Audit in August/October 2013)

It would be seen from the above Table that:-

- 33 accidents (79 per cent) were serious (Cat-1) where aircraft were totally destroyed or rendered beyond economical repair (BER). In the remaining 09 accidents (1 Cat II and 8 Cat III), the aircraft were in repairable condition. We noticed that seven⁶² aircraft were still under repair (January 2014) even after a lapse of one and half year to about four years and two⁶³ aircraft had resumed⁶⁴ (June 2014) flying after necessary repairs. Due to delay in repair/recovery, these seven aircraft

⁵⁹ MiG-21 T 96, MiG-21 Bis, MiG-27, MiG 29, Su 30, Mirage-2000, Jaguar, Kiran, Hawk, Chetak, Mi-8, Mi-17, Mi-26, ALH & AN-32.

⁶⁰ Accident Rate = (No. of flying accidents/total flying hours) x 10,000 as indicated in accident/Incident review.

⁶¹ Due to Technical Defects (TD), Human Error (HE), Bird Strike (BS), Foreign Object Damage (FOD), Natural Operational Risk (NOR), Un-Resolved (UR) incidents and Misc.

⁶² MiG-21, MiG-29, Jaguar TS, Kiran (2), Chetak and AN-32 intimated by Air HQ in January 2014.

⁶³ Mi-8 & Mi-17

⁶⁴ In response to Audit query (June 2014), information furnished by DAS vide no Air HQ/16561/3/9B/PC/Ty BM/AS dated. 18 June 2014.

were not available for operations with IAF, thereby decreasing the force level.

- The overall rate of accidents during the period 2010-2013 between 0.30 and 0.70 had shown a decreasing trend in comparison to such rate being between 0.89 and 1.52 for the period 1991-97 as reported in Audit Report of 1998.
- Although there was a decrease in total number of accidents in the year 2012-13 yet compared to preceding years the ground accidents had increased during 2012-13 involving a fatal accident also.
- In all eight accidents were fatal in which IAF lost 27 personnel (12 officers and 15 PBOR⁶⁵).
- The number of Incidents (Cat –IV and V) however, had increased by 27 *per cent* from 449 in year 2010-11 to 568 in year 2012-13.

Stream-wise and Cause-wise details of accidents have been discussed below.

A. Stream-wise accidents

In the Audit Report of 1998, we had pointed out that during the period 1991-97 most of the accidents involved fighter aircraft and ranged between 63 and 79 *per cent*. We had pointed out that even though there was decline in total number of accidents during the period 1996-97, the accidents involving fighter stream remained as high as 75 *per cent* of the total accidents. Besides in 62 percent of the fighter aircraft accidents, the aircraft involved were MiG variants. In response (September 2008) Ministry had brought out following preventive measures before PAC:

- Each accident is investigated by an independent Court of Inquiry (CoI) consisting of specialists from various fields;
- Preventive measures like determination of cause and timely introduction of preventive measures;
- Measures to enhance the quality of training to improve the skill levels and thrust on acquiring simulators and advance jet trainers;

⁶⁵ Personnel below officer rank

- Constant interaction with HAL at highest level to discuss serious flight safety measures. Original Equipment Manufacturer (OEM) are also approached to provide support to overcome the technical defects.

Stream-wise flying accidents of various fighters, trainer, transport and helicopters for the period 2010-13 as provided (August 2013) to audit by the DAS are tabulated below:

Period	Fighter	Trainer	Helicopter	Transport	Total
2010-11	06	01	07	00	14
2011-12	10	04	01	01	16
2012-13	06	00	01	00	07
Total	22	05	09	01	37

(Data on accidents furnished by DAS to audit in August/October 2013)

Our analysis revealed that accidents in fighter stream were higher and ranged between 43 and 86 *per cent* of the total flying accidents. Further, though there was decline in the number of accidents during the year 2012-13 yet the accidents in fighter stream was higher at 86 *per cent* of the total accidents. Also, out of 22 accidents involving fighter aircraft, 15⁶⁶ aircraft (68 percent) were of MiG variants of which 13 MiG aircraft were totally damaged and had become beyond economical repair (BER).

Thus, the *percentage* of accidents in fighter aircraft had increased from then 79 *per cent* (1991-97) to 86 *per cent* (2010-2013) of the total accidents. Also the accidents of MiG variants had increased from then 62 to 68 *per cent* of the total accidents of fighter aircraft. This brings into question the efficacy of implementation of the preventive measures instituted by the Ministry pursuant to the recommendations of the PAC. The details are discussed in the succeeding paragraphs:

⁶⁶ MiG-21 T 96 (05), MiG-21 Bis (05), MiG-27 (03) and MiG-29 (02)

B. Cause-wise accidents

Data on accidents due to human error (HE), technical defects (TD), and bird strike (BS) as provided (August/October 2013) to audit by the DAS is tabulated below:

Year	Cause-wise Accidents/Incidents					
	Accidents			Incidents		
	HE	TD	BS	HE	TD	BS
2010-11	06	08	00	61	217	96
2011-12	10	06	00	56	254	121
2012-13	03	04	00	39	308	140
Total	19	18	00	156	779	357

(Data on accidents/Incidents furnished by DAS to audit in August/October 2013)

As is evident from the Table above that 19 (i.e 51 per cent) of the flying accidents had occurred due to human error whereas 18 (i.e 49 per cent) of these flying accidents were due to technical defects. Further, though TD was the major contributor with 779 (i.e 60 per cent) of the Incidents, the Incidents due to bird strike were also significant with 357 (28 per cent) Incidents during the review period. Thus during the period 2010-13 all the flying accidents were due to human error and technical defects. Further analysis of cause wise accidents is discussed below:-

I Technical Defects

During scrutiny of Court of Inquiry (CoI) and connected records, we observed (October 2013) that 18 (out of 37) flying accidents had occurred due to technical defects out of which finalisation of CoI of three accidents was pending (October 2013). We noticed (October 2013) from the finalised 15 CoIs that one fighter aircraft crashed due to system failure on the part of gas supply vendor and quality assurance agencies in IAF, seven accidents were due to engine material failure, two accidents were due to engine flameout and five accidents were due to airframe material failure.

We further observed (March 2014) that 6⁶⁷ (40 *per cent*) out of 15 finalised CoIs remained inconclusive as the IAF could not establish the exact cause of technical defect that had led to the accident. Details of these cases are given in Annexure II. In one of these six accidents where cause of accident could not be established, IAF lost 11 personnel (2 officers, and 9 PBOR). We therefore suggested in the paragraph issued (June 2014) to the Ministry that IAF should include a technical expert from other Government agency as a member of CoI to conclusively establish the exact cause of accident.

In response to the paragraph, Air HQ stated (August 2014) that recommendation of the Audit regarding inclusion of outside representative in the CoI has been addressed in Air Force Order (AFO 8/14) issued in May 2014 wherein member of CoI are being taken from Government and public sector agency like HAL/ National Aeronautical Lab (NAL) etc. Air HQ further stated that the number of unresolved cases would decrease with the future induction plan of aircraft where in advance Flight Data Recorder (FDR) systems and other recording facilities would be available with the investigators to find out the root cause of accident. Air HQ also stated that with the advancement of technology and availability of investigation tools in Indian labs, the unresolved cases would decrease drastically.

The fact, however, remains that despite being pointed out in Audit in 1998 and assurance given by the Ministry in September 2008 to the PAC regarding minimizing the accidents; the accidents due to technical defects had increased from then 44 to 49 *per cent*. The mechanism for constant interaction with HAL, OEM etc. representative, promised by the Ministry to PAC in 2008 as a method to overcome the accidents due to technical defects was formalized only in the year 2014 after being reiterated by Audit. In addition, six (40 *per cent*) out of 15 finalised CoI had remained inconclusive as IAF was unable to identify the actual cause of TD and by Air HQ own admission (August 2014) the uncertainty having implication on flight safety would continue to persist till such time the advanced technology was made available to the investigators.

⁶⁷ MiG-21 (02), MiG-27 (02), Kiran and Mi-17

II. Human Error

Human Error (HE) comprises error on the part of aircrew on flying duty or ground duty or both. We had pointed out in Audit Report in 1998 that majority of HE accidents (41 *per cent*) were caused as a result of inadequate flying skill, error of judgement etc. based on findings of CoI. The PAC in its report (March 2002) on the Audit Report of 1998 had pointed out that the increasing trend of HE accidents indicated that the remedial steps taken were grossly inadequate. In ATN, Ministry assured PAC (September 2008) that measures to enhance quality of training to improve skill levels, ability to exercise sound judgement and improved situational awareness were constantly being reviewed and implemented. Besides, renewed thrust on acquiring simulators and the Advance Jet Trainer (AJT) was a step towards improving the quality of the man behind the machine.

We noticed (October 2013) from the findings of CoI of aircraft accidents (2010-13) that 19 (51 *per cent*) flying accidents had been attributed to human errors caused as a result of inadequate flying skill, error of judgment, poor supervision, lack of situational awareness, disorientation of the pilots, mishandling of controls and incorrect decision. Details of such flying accidents are mentioned in Annexure III. Our scrutiny (October 2013) further revealed that in these nineteen accidents IAF had lost 16 personnel (10 Officer and 06 PBOR). Two such major accidents are discussed below based on findings of respective CoIs:

- Chetak helicopter after taking off from Kalaikunda was to route to Bagdogra via Pannagarh and Purnea overflying the Singharsi Valley. But while taxiing, the captain changed the route and announced his destination to Singharsi helipad which was cleared by Deputy air traffic controller (DATCO) without understanding the implication of change in destination. Since there was nil visibility at Singharsi helipad, the helicopter crashed (September 2010) killing all three

personnel (2 officers and 1 PBOR) on board. Ground safety staff was held responsible for this accident.

- The tail rotor blades of two MI-17 helicopters collided, caught fire and crashed (August 2012) killing nine crew members (05 officers and 04 PBOR) on board. The mid air collision took place because the procedure of maintaining a minimum distance between the rotor disc was violated.

Thus accidents due to human error during the period 2010-13 continued to be caused by the same factors as were observed by audit in 1998 for accidents occurred during the period 1991-97. Further the rate of percentage of accidents due to these reasons had increased from then 41 *per cent* to 51 *per cent* of the total accidents during the stated period. Evidently the assurance given by the Ministry has not been fulfilled.

Our further scrutiny of Quarterly Flying Training Return relating to training provided by IAF also revealed that there was acute shortage of flying aids for basic training (Stage I), follow-on flying training (Stage II) and advanced training (Stage III). Details are discussed below:-

II(a) Basic Flying Training

We noticed (October 2013) from the brief submitted (September 2012) by DAS to the Ministry about the measures initiated to overcome flying training deficiencies that HPT-32 aircraft inducted in IAF in 1984 was used for basic flying training (Stage I) and Kiran aircraft inducted in IAF in 1968 was used for Intermediate (Stage II) flying training after trainee pilots had flown HPT-32 aircraft. HPT-32 aircraft was phased out in 2009 as the same was found to be accident prone. However, instead of taking timely action for replacement of this aircraft, the task of basic flying training was shifted to Kiran aircraft. DAS further apprised (September 2012) Ministry that training efforts available on Kiran aircraft had reduced considerably therefore flying training syllabus for basic flying trainees was truncated (2009-2012) by IAF

pending replacement of HPT-32 aircraft. DAS in their brief further informed (September 2012) Ministry that in order to make good the deficiencies of training resources, availability of Kiran aircraft was planned to be enhanced by making 40 aircraft kept under storage flyworthy, increasing procurement of spares and overcoming shortage of aero engines by enhancing overhaul task of 4 Base Repair Depot (BRD). Enhanced availability of aircraft was aimed to strengthen the basic flying training of pilots. We noticed (December 2013) from aircraft repair and overhaul firm task 2014-15 and forecast task 2015-18 for Kiran aircraft that repair/overhaul tasks to make the 40 Kiran aircraft fly worthy were allotted (November 2013) to HAL by IAF with a delay of over one year and even then the tasks were staggered as 2014-15 (8 aircraft), 2015-16 (10 aircraft), 2016-17 (12 aircraft) and 2017-18 (10 aircraft).

We also observed (October 2013) that contract for 75 Basic Trainer Aircraft (BTA) as replacement of HPT-32 aircraft was concluded (May 2012) between Ministry and M/s Pilatus Aircraft Ltd. Deliveries against this contract commenced in February 2013 and the first *ab-initio* course on BTA commenced from July 2013. 20 BTAs had been delivered (October 2013). However the delivery of the remaining 55 was to be completed only by August 2015.

Thus, the trainee pilots had to undergo basic flying training on ageing Kiran aircraft during the period 2010-2013 meant for Intermediate (Stage II) flying training. Contract for replacement of HPT-32 aircraft was concluded (May 2012) by Ministry after 3 years of phasing out of HPT-32 aircraft. The risk inherent to aerospace safety and trainee pilots in this manner of training would, however, persist till August 2015 in view of non availability of full Strength of BTAs.

Ministry did not reply on delay in procurement of BTA (September 2014).

II(b) Intermediate flying training

Intermediate (Stage II) training of pilots is imparted on Kiran aircraft. Kiran aircraft were inducted in 1968 and is aged aircraft. Government of India accorded approval (July 1999) for design and development (D&D) of Intermediate Jet Trainer (IJT) at a cost of ₹180 crore so as to replace the vintage Kiran aircraft. As per approval two prototype aircraft were to be manufactured by HAL, and tested/approved by Centre for Military Airworthiness and Certification (CEMILAC) for giving air-worthiness clearance (AWC) by 2004.

We observed (October/November 2013) that IJT was urgently required to replace the Kiran aircraft which were to be phased out from 2014 onwards. Audit observation regarding induction of IJT are discussed in Para No 2.1 of this report.

In reply to audit observation (November 2013), Air HQ stated (March 2014) that the delay in production and supply of IJT was attributable to HAL. Air HQ further stated that initial operational clearance (IOC) for prototype aircraft planned for March 2004 was revised several times by HAL and final IOC was expected to be completed in December 2014.

The fact remains that the non-availability of a replacement of IJT even 15 years after the Government sanction coupled with uncertainty in its production would adversely affect the Intermediate (Stage II) training of pilots especially as even the existing Kiran aircraft of 1968 vintage had been decided (September 2012) by IAF to be phased out from year 2014 onwards.

Ministry did not reply on delay in procurement of IJT (September 2014).

II(c) Advanced Training

Advanced training (Stage III) is intended to impart air combat and weapon delivery training to trainee pilots segregated for the fighter stream following the intermediate training (Stage II).

We had observed in Audit Report of 1998 that lack of AJT was the main reason for human error accidents as pilots converting on sophisticated MiG-21 from Kiran trainers had difficulties in coping with the quantum jump in performance and technology of MiG-21 as compared to pilots converting on Hunters. In ATN, Ministry admitted (September 2008) that the MiG 21 and hunter aircraft used for advanced training were not specially designed as advanced trainer and had inherent limitation for imparting air combat and weapon delivery training. In their ATN, Ministry stated (September 2008) that IAF had identified the requirement of AJT for safe and smooth transition of young trainee pilots.

Against the total requirement of 106 AJT for Stage III training, IAF acquired 66 AJT by 2012 against two contracts (2004 and 2007). Contract for balance 40 AJT from HAL was signed in July 2010. The delivery of these aircraft was scheduled from 2013 to 2017.

Audit scrutiny (October 2013) of the brief submitted (September 2012) by DAS to Ministry about the measures initiated to overcome flying training deficiencies brought out that delivery of all contracted aircraft would substantially improve the aerospace safety environment. However, we observed (October 2013) that only 5 aircraft had been delivered by HAL against the 7 planned in 2013-14. Thus, non-availability of full complement of AJT aircraft till 2017 would continue to affect the advance training of pilots, which by IAF's own admission (September 2012), would have implications for the aerospace safety environment.

Therefore, though the deficiency of 40 AJT had been identified (August 2007) by IAF and in their ATN (September 2008) Ministry had apprised the same to the PAC for safe and smooth transition of young trainee pilots, the full complement of AJT aircraft was yet (August 2014) to be made available to IAF.

Ministry did not reply on delay in procurement of AJT (September 2014).

III. Bird Strike

In response to the recommendation of the PAC on the issues raised in the Audit Report, Ministry in the ATN (September 2008) had stated that preventive measures to combat bird menace like study with aims to deprive the birds of food, installation of modern facilities etc. were in their active consideration.

We noticed (October 2013) from the records made available by DAS that IAF had decided (2006) to have bird survey done over major IAF airfields by a professional organization and a contract was accordingly given to Bombay Natural History Society (BNHS). The contract was however terminated (2006) due to poor performance of researchers employed by BNHS in the field. Thereafter, an Ornithological Cell in DAS with personnel having Ornithological background was established (2007), which was tasked to work exclusively and extensively on bird hazard prevention. With a view to provide a safer environment for conduct of operations and enhance aerospace safety aspect proactively, IAF had also decided (January 2008) to induct Avian Radar, a proven contemporary technology that could detect the bird movements in day as well as in night and microlight aircraft to survey local flying area for survey of garbage dumps, animal slaughter and carcass etc.

We observed (October 2013) that there was increasing trend of bird-hits after creation of ornithology cell as shown below:-

Year	No of bird strikes						
	Accidents				Incidents		
	Cat I	Cat II	Cat III	Total	Cat IV	Cat V	Total
2008-09	-	-	01	01	42	32	74
2009-10	01	-	-	01	49	35	84
2010-11	-	-	-	-	39	57	96
2011-12	-	-	-	-	39	82	121
2012-13	-	-	-	-	38	102	140
Total	01	-	01	02	207	308	515

We further observed (September 2013 and October 2013) that during the period 2010-13 there was no accident due to BS although there were two accidents during the preceding two years (2008-09 and 2009-10). However,

there was increase in number of Incidents due to bird strike during the period 2010-13. As against 574 Incidents reported in the Audit Report of 1998 during the period 1991-97 (average 96 per year), 357 Incidents occurred (average 119 per year) during 2010-13 despite the creation (2007) of ornithology cell.

While Ministry did not furnish any reply to the DP, in response to the Statement of Case (SOC), DAS stated (May 2014) that the anti-bird modules were a continuous process and need to be fine tuned as per the changes in the environment and that continuous validation and inspection of new modules was being undertaken by Ornithology Cell, and such continuous assessment by the wild life biologist was a norm even in advanced countries.

The reply is not acceptable as even after formation (2007) of Ornithology cell, the number of Incidents due to BS had shown an increasing trend as during the period 2010-13 the average number of Incidents due to BS was 119 per year as against average of 96 per year during the period 1991-97. Further, proactive measures like induction of Avian radar and microlight aircraft had not fructified (August 2014) as discussed below thereby exposing IAF to recurrence of such Incidents in future.

III (a) Delay in induction of avian radar

The Avian radar system is a bird detecting radar that is capable of detecting, monitoring and recording data. The radar is also able to operate round the clock and in all-weather conditions. The system is mobile and can be integrated with the Air Traffic Control (ATC) system at operating bases.

We noticed (October 2013) that DAS had initiated (January 2008) a proposal for procurement of 40 Avian radars at a cost of ₹160 crore. The number of radars were later on revised (June 2008) to 41 after taking into account one additional radar for Andaman and Nicobar command. Total requirement of 45 radars was worked out after including the requirement of four radars for Indian Navy. Air Staff Qualitative Requirements (ASQRs) of Avian radar was firmed

up in June 2008 and the request for proposal (RFP) was floated (2009) to four vendors who submitted (May 2010) their technical and commercial bids. The proposal was evaluated by technical evaluation committee (TEC) for compliance of RFP. Two vendors qualified for the TEC and were asked to offer radars for field trials. One of these vendors withdrew (April 2011) from the field trials and the only observation on the performance of the radar offered (May 2011) by the second vendor was regarding the capability of providing 3D coverage of airspace as per ASQRs. Therefore, procurement process was discontinued on the advice of Technical Manager (TM) (Air) because of the anomaly noticed (May 2011) by the Field Evaluation Trial (FET) team. While ratifying (November 2011) the ASQRs IAF diluted the parameter of 3D coverage to 2D and height from 10,000 feet from ground level to “not less than 2000 meter”. Thereafter RFP was issued (April 2012) to 4 vendors and technical bids of Avian radar were opened by TEC in August 2012. The FET of the radar was pending (August 2013) due to non-finalisation of FET team.

Matter was taken up with Ministry (June 2014) and in response IAF stated (August 2014) that the previous procurement process was discontinued due to single vendor situation at FET stage and not due to anomaly in ASQR. The ASQR was revised to bring in more competition. IAF further stated that Contract Negotiation Committee (CNC) for procurement of Avian radars was in progress and the contract was likely to be signed in the current financial year.

The reply is not acceptable as the previous procurement process was discontinued on the advice of TM (Air) due to anomaly in ASQRs, as stated above, which resulted in non-induction (August 2014) of avian radars envisaged in January 2008 for detection of birds round the clock and in all-weather conditions.

III(b) Delay in Procurement of Microlight aircraft

Microlight aircraft are used to survey local flying area (LFA), around airfields including survey of obstacles around LFA; survey of garbage dumps, animal slaughter and carcass dumping areas etc. and exposure to other agencies directly involved with aerospace safety environment.

IAF procured (1999) 24 Streak Shadow Microlight (Microlight) aircraft which were inducted between December 1999 and May 2002. These aircraft were distributed to 19 Air Force units under four Commands. The Total Technical Life (TTL) of Microlight aircraft was fixed as 10 years by engineering branch at Air HQ subject to passing one time detailed checks.

We observed (October 2013) that in December 2009 when the force level of microlight aircraft was sixteen, IAF had considered the available number of microlight aircraft inadequate. To meet the requirement of all 58 aircraft operating stations a SOC for induction of 121 microlight aircraft in IAF to enhance its capability of countering the bird menace in various aircraft fleet and also for adventure/sports flying activities was initiated (December 2009) at a cost of ₹188 crore. 71 of the proposed micro light aircraft were meant for aerospace safety and balance for adventure activities. All the existing microlight aircraft were downgraded by May 2012. We further noticed that with the decrease in force level of Microlight during the period 2009-2012 the bird strike Incidents had increased as discussed in Para 7.2.3. The contract for replacement/induction of microlight aircraft was yet (October 2013) to be concluded and all the 58 aircraft operating stations were deprived of this technology to combat bird menace.

Matter was taken up with the Ministry (June 2014) and in response IAF stated (August 2014) that Contract Negotiation Committee (CNC) for procurement of microlight aircraft was in progress and the contract was likely to be signed in the current financial year. IAF also stated (August 2014) that there was no procedural delay in projection of requirement.

The reply is not acceptable as the lead time for induction of microlight aircraft was 12 to 36 months from the date of signing of contract. Had the case been initiated earlier after taking into account the TTL of the existing microlight aircraft, the contract could have been concluded in time to replace/induct these aircraft.

Thus, delay in initiation of case for replacement of Microlights and delay in conclusion of contract resulted in non-availability of microlight aircraft with all the aircraft operating stations of IAF for last two years, which is an aerospace safety hazard.

3.8.7.3 Non-availability of Simulators

It was mentioned in the Audit Report of 1998 that four of the five simulators procured from the manufacturer abroad for imparting training on MiG-21 aircraft were lying unserviceable since long. The performance of fifth simulator, which was partially unserviceable, was unreliable due to ageing. PAC drew attention to the comments in the Audit Report and recommended (March 2002) that effective steps be taken to make the existing simulators serviceable/operational and to initiate action for new acquisition to fill in the gap so as to provide efficient training to pilots in acquiring higher flying skills. In their ATN, Ministry stated (September 2008) that action was in hand to upgrade four⁶⁸ simulators and whenever new aircraft were inducted, procurement of simulators was also to be contemplated alongside.

We observed (September 2013) from the data provided (September 2013) by Air HQ that simulators for Mirage-2000, Jaguar DARIN I⁶⁹, Jaguar DARIN II⁷⁰, Air Combat Simulator (ACS), Advance Jet Trainer, Sukoi-30, MiG-27, MiG-29 and AN-32 were available and serviceable. Jaguar simulator DARIN-I was upgraded in December 2006, Jaguar simulator DARIN-II was upgraded

⁶⁸ Jaguar DARIN-I, Jaguar DARIN-II, Mirage-2000 and Air Combat Simulator

⁶⁹ Darin-I - Display Attack Ranging Inertial Navigation-I (old version of Jaguar aircraft)

⁷⁰ Darin-II - Display Attack Ranging Inertial Navigation-II (upgraded version of Jaguar NAWASS version with better avionics)

in December 2011, Mirage-2000 simulator in May 2010 and ACS in July 2013. Thus Jaguar DARIN-II, Mirage and ACS radars were upgraded after 18 to 58 months of the commitment given by Ministry to PAC based on the recommendation on the data given in Audit Report of 1998. We further observed (October 2013) that at Air Force Stations Jamnagar and Pune, the simulators were either not available or remained unserviceable as discussed below:

- We observed (October 2013) that a Jaguar Squadron (Sqn) was moved (August 2007) from Pune to Jamnagar after a review of operational considerations with Jaguar DARIN I Maritime aircraft (Ist Sqn). Another Sqn was resurrected (March 2008) with Jaguar DARIN-II aircraft (IInd Sqn). However, no “Jaguar Simulator” was available at AFS Jamnagar for imparting simulator training to Operational (Ops) pilots and under trainee (UT) pilots. Thus, in absence (October 2013) of simulator, the Ops and UT pilots of these two Sqns were being sent to AFS Gorakhpur (for simulator training in old version of Darin-I) and AFS Ambala (for simulator training in latest version of Darin-II) respectively.

In response to paragraph (June 2014), Air HQ stated (August 2014) that a case had been initiated at Air HQ for procurement of simulators for all Jaguar bases. Ist Sqn is planned to be upgraded to DARIN-III⁷¹ standards and the proposal accordingly includes DARIN-III simulator for this Sqn and DARIN-II simulator for IInd sqn. Till the procurement of these simulators was completed, the two squadrons would continue to train on simulators at Gorakhpur and Ambala. The reply was silent on the impact on prescribed hours/ squadrons due to sending of pilots for simulator training to Gorakhpur and Ambala.

The fact remains that the procurement of simulator for the two Sqns was pending even after a lapse of six years. Thus, till materialisation of

⁷¹ DARIN-III- Display Attack Ranging Inertial Navigation-III (Upgraded version of Jaguar DARIN-I aircraft with improved navigational, weapon aiming accuracy and modern avionics systems)

simulators, day-to-day commitment of the squadrons and hours prescribed for simulators training for Ops and UT pilots would continue to get affected.

Reply of the Ministry was awaited (September 2014).

- We observed (October 2013) that Full Machine Simulator (FMS) and Part Task Training (PTT) simulators of SU 30 MKI aircraft were received from OEM by AF unit in April 2010. Since receipt, the simulators could not be fully exploited as FMS simulator remained unserviceable for 163 days between August 2011 and August 2013 and PTT simulator was un-serviceable for 180 days between November 2011 and September 2013.

In response to paragraph (June 2014), Air HQ stated (August 2014) that as on date the simulators were serviceable and being utilised for training. Regarding un-serviceability, it was stated that a case for comprehensive AMC (Annual Maintenance Contract) was initiated in January 2011 on Proprietary Article Certificate (PAC basis) and the case file was with Ministry for expenditure angle sanction and approval of draft contract.

The fact remains that the simulators had not been gainfully utilized. Besides, despite the lapse of warranty in July/August 2011, the AMC was yet (August 2014) to be concluded.

3.8.7.4 Non-availability of infrastructure

I. Non-availability of infrastructure for newly inducted helicopters

In order to enhance the capability of the Mi-17 V5 helicopter fleet to undertake operations by night with greater safety and efficiency, contract for procurement of 80 Mi-17 V5 helicopters with night capability and associated

equipment from M/s Rosoboronexport Russia was signed (December 2008) at a total cost of 1.345 billion USD (Approx ₹6416 crore). These helicopters were received by May 2013 and allotted to seven Helicopter Units (HUs). Out of 80 Helicopters, 14 Helicopters were allotted as replacement of Mi 17 IV to one HU and balance 66 Helicopters were allotted among six⁷² newly raised HUs. For infrastructure requirement for Helicopters in six HUs, the work services like Dispersal and link taxi tracks, covered parking, hangers and maintenance complex, tarmac etc. were approved by the Cabinet Committee on Securities (CCS) in 2008 at a cost of Rs. 87.20 crore.

We observed (October 2013 and March 2014) that despite the fact that CCS approval for infrastructure works was accorded in 2008, yet the competent financial authority (Ministry/Air HQ) accorded sanctions for creation of infrastructure at four stations (Srinagar, Suratgarh, Bagdogra and Phalodi) between March 2010 and October 2010. While the work services at one station (Phalodi) was completed, the probable date of completion of these works at three stations was between October 2013 and May 2014 and these works were yet to be fully completed (August 2014⁷³). The work services in remaining two stations (Barrackpore and Purnea) are yet (August 2014) to be sanctioned for want of revised CCS sanction due to relocation of HUs from Kalaikunda and Nagpur to Barrackpore and Purnea respectively.

In response to paragraph, Air HQ stated (August 2014) that there was no delay on part of the IAF. Air HQ also stated that reasons for delay in creation of infrastructure at Air Force bases were due to time taken by IIT in vetting of drawings, non working season, deficiency of labour; delay in finalisation of tender by CE (AF) SZ etc. Scrutiny of facts stated by Air HQ revealed that mandatory airfield infrastructure for safe operations of these newly inducted helicopters was not available at Barrackpore and Purnea whereas important infrastructure like link taxi track, tarmac and hangars was not available at

⁷² 154 HU (Srinagar), 155 HU (Suratgarh), 156 HU (Bagdogra) 157 HU (Barrackpore), 158 HU (Phalodi), 159 HU (Purnea)

⁷³ Reply to Paragraph furnished by Air HQ in August 2014

Srinagar and Bagdogra which was an aerospace safety risk for operation of 44 helicopters valuing ₹3529 crore from these four HUs.

II. Delay in implementation of Modernization of Airfield Infrastructure

An Expert Committee (Excom) under the chairmanship of the Director General (Inspection & Safety) set up in 2004 had undertaken an in-depth study of the various causes of aircraft accidents/Incidents and made 222 recommendations in its report (2005) for implementation by IAF. By June 2007, 215 recommendations were implemented. The seven recommendations which were not implemented, were related to foreign object damage (FOD) prevention, review of aircraft related committees, bird hazard in IAF, solid waste management at 10 identified airfields, execution of solid waste management in 16 states through Ministry of Urban Development and ineffectiveness of urgent purchase system. We had called for (October 2013) the present position of implementation of these recommendations but DAS did not furnish any reply (September 2014).

We noticed that a proposal for modernization of navigational aid (MONA) was initiated in 2004. During the course of study, airfield lighting system was also included in the proposal which was also recommended by Excom in 2005. Accordingly the name of the proposal was changed to Modernization of Airfield Infrastructure (MAFI). Under the project, 59 airfields are to be equipped with modern technology equipment related to Air Traffic Management System, Instrumentation Landing System, Doppler VHF Omni directional Range, Tactical air Navigation, Automatic Terminal Information System, Automatic Message Switching System. The project is to be implemented in two phases in which phase I is to cover 30 airfields and phase II the remaining 29 airfields. Phase-I comprised of installation, integration, calibration and commissioning of the various equipments at 30 airfields. Contract for the MAFI project was signed with Tata Power Strategic Electronics Division (SED) on 16 March 2011 and the Project was to be implemented by September 2014.

We observed (October 2013) that contract for MAFI project was signed only in March 2011 after six years. We also observed that though as per the contract, the MAFI was to be completed at 30 selected airfields, the work at the pilot base i.e AFS Bhatinda, had not yet (October 2013) been completed.

In response, Air HQ stated (August 2014) that detailed project report (DPR) for MAFI was ratified by staff equipment policy committee in February 2007 at an estimated cost of ₹1216.44 crore. Subsequently, expression of interest was published in Ministry website in September 2007 and RFP was forwarded to 3 shortlisted vendors in January 2008; TEC report was accepted by Director General (Acquisition) in March 2009 and commercial proposals were opened in August 2009. M/s TATA power SED emerged the L-I vendor and after joint survey report of the 30 bases in phase I the project was approved by Air HQ in May 2010; the CFA approval to the project was accorded by CCS in March 2011. The contract was signed in the same month. Air HQ also added that the L-2 in this case had filed a writ petition in November 2009 at High Court of Delhi and the court proceedings also contributed to the delay in finalizing the contract. The petition was finally dismissed in January 2012.

The reply is not acceptable as Indian Air Force (IAF) took two years in ratification of Detailed Project Report (DPR) since its recommendation in 2005. Further, IAF took 38 months since issue of the RFP (January 2008) till conclusion of the contract (March 2011) against the prescribed timeline of 18-24 months (without trials) in the Defence Procurement Procedure -2006. Also the justification of delay due to court proceeding is not acceptable as the contract was concluded in March 2011 itself whereas the court proceedings were still pending and were finalised only in January 2012. Thus, the project was not processed with due urgency despite the fact that it is to aid in aerospace safety of the IAF and the proposal which had been initiated in 2004 was still pending.

3.8.7.5 Investigation of accidents

The PAC on noting the inordinate delays in finalisation of investigations and assessment and regularisation of losses on account of accidents/Incidents mentioned in the Audit Report of 1998 had recommended (March 2002) that suitable steps be taken to complete the assessment/regularisation expeditiously. In the ATN (September 2008), Ministry while up-dating the figures of pending CoI/Loss statement had assured PAC that all efforts are being made to settle the pending cases for regularisation of losses.

We noticed that Ministry had prescribed (October 2006) the following timelines for processing of flying accident cases and finalization of Court of Inquiry (CoI):

i.	Constitution of CoI	Within 48 hours of accidents	
ii.	Time limit for completion of CoI proceedings	Within 06 months of the accident	
iii.	Time to be taken for completing the formalities such as approval of concerned authorities at Air HQ	Within 03 months of completion of CoI	
iv.	Time limit for completion of remedial administrative action	Within 03 months of receipt of Chief of Air Staff (CAS)	
v.	Time to be taken for regularisation of loss	By Controller of Defence Accounts	3 months
		By Ministry/ Ministry of Defence Finance	3 months of receipt in Ministry

Thus, finalisation of CoI in respect of flying accident cases should not take more than 09 months from the date of constitution of the CoI. Remedial measures should be implemented and loss statements should be regularised within 12 months and 15 months respectively from the date of constitution of CoI. Air Officer in-charge Maintenance (AOM) had issued a task directive (November 2007) for regularisation of losses within 12 months or even earlier.

Timeline for finalisation of pensionary benefits to the family/Next of Kin (NOK) is 240 days from the date of death as prescribed by Air Officer In-charge Personnel (AOP).

Our examination (October 2013) of the CoI proceedings and the data relating to regularisation of loss statements revealed that delay in finalisation of CoI and regularisation of losses still persisted as discussed in succeeding paragraphs.

I. DELAY IN FINALISATION OF COURT OF INQUIRY

Our scrutiny of the CoI register for the period 2010-13 at Directorate of Aerospace Safety (DAS) revealed that 42 CoIs of aircraft accidents were dealt with by DAS during this period, out of which only 10 (24 *per cent*) were finalised within the time limit. 27 CoIs were finalised with a delay ranging from one to more than 24 months and 5 CoIs (2 CoIs of 2011-12 and 3 CoIs of 2012-13) were pending finalisation (October 2013). The details are tabulated below:

Total CoIs Handled	Delay range of finalised CoIs				Finalised without delay	Pending	
	Upto 6 months	6 to 12 months	12 to 24 months	Beyond 24 months		2011-12	2012-13
42	17	6	3	1	10	2	3

(CoI register maintained at DAS)

Delays in finalisation of CoIs had occurred inspite of the fact that Ministry had increased the timeline for finalisation of CoI from then four months (July 1993) to nine months (October 2006). We further observed that the delays in finalisation of CoI had mainly occurred at Air HQ's level. As against the permissible time line of 3 months for processing and approval of COI at Air HQ, the time taken was from 4 to 21 months in eight out of ten delayed CoI where delay range was from six month to over 24 months.

These delays had cascading effect in release of pensionary benefits to the family/ Next of Kin (NOK) in fatal accidents, implementation of remedial measures to avoid recurrence of accidents due to such causes and regularization of the losses as discussed in succeeding paragraphs.

II. DELAY IN PENSIONARY BENEFITS IN FATAL CASES

We observed (October 2013) that as against the timeline of 240 days in finalization of pensionary benefits in fatal accidents, as stated at Para 7.5, there were delays in release of pensionary benefits like special family pension, liberalized family pension, death-cum-retirement gratuity etc. to the dependents and NOK of the IAF personnel who had lost their lives in such accidents. Such delays ranged between 3 to 24 months as shown below:-

Total nos of fatal cases	No of cases where there was no delay in finalisation of pensionary benefits	No of cases where there was delay beyond prescribed period in finalisation of pensionary benefits to the NOK of deceased person.			
		Up to 3 months	3 to 6 months	6 to 12 months	12 to 24 months
27	5	3	4	11	3

The matter was taken up with the Ministry through a paragraph (June 2014) and in response Air HQ stated (August 2014) that to avoid any delay on part of the IAF, a new specially trained AAIB⁷⁴ (Aircraft accident Investigation Board) was constituted (May 2014) duly approved by Chief of Air Staff (CAS) for investigation and timely submission of CoI in all Cat-I accident cases and to avoid any delay in finalisation of CoI, Air Force Order (AFO) No. 34 issued in October 2006 was further refined/ streamlined and superseded by AFO No. 08 issued in May 2014. Air HQ also stated that delay in finalisation of pensionary benefits was due to various reasons like late receipt of papers/

⁷⁴ AAIB is a team at DAS which is deputed by Air HQ at the site of accident for an independent investigation (in addition to CoI) in all Cat I and some accidents of serious or peculiar nature and render a separate report to DG (I&S).

incomplete pension papers submitted by the NoK, delay in flying accident report and subsequent issue of causality report. Air HQ further stated that the timeframe for settlement of family pension in service death cases had been reduced (September 2013) by from 240 days to 180 days.

The fact remains that the reduced timeline for finalisation of family pension in service death cases was unlikely to provide any relief to the dependents and next of kin (NOK) of these personnel since IAF was not able to finalise the CoIs even after increase in timelines from four months to nine months. Further, delay in pensionary benefits due to late/incomplete receipt of papers from the NOK/dependents only brings in question the role of specially designated directorate for air veterans⁷⁵ at Air HQ. The fact also remains that these delays remained unnoticed and the Air Force Order (AFO) was revised (May 2014) by Air HQ only after being pointed out (October 2013) by Audit.

III. DELAY IN IMPLEMENTATION OF REMEDIAL MEASURES

The PAC (March 2002) had questioned the efficacy of preventive measures instituted by Ministry/IAF from time to time. In response MoD had stated that by and large the recommendations made by CoI are implemented. However, there were instances where specialist directorates feel that the particular recommendation made by CoI is not valid. In those cases specific recommendation is not implemented. Regarding monitoring mechanism Ministry had stated that follow up action on various recommendations accepted by Air HQ is to be taken by concerned specialist directorates. Prevention cell at Directorate of Flight Safety (now DAS) monitors the follow up action being taken by various agencies.

During the period 2010-13, 32 CoIs of flying accidents were finalised in which 218 remedial measures based on Chief of Air Staff remarks were issued by Air HQ for implementation by aircraft flying units to avoid recurrence of such accidents. We observed (October 2013) on scrutiny of the register of court of Inquiry that remedial measures were fully implemented only in 15 out of 32 CoIs upto October 2013. In respect of remaining 17 finalised CoIs, 45

⁷⁵ Directorate for air veterans is responsible for processing of cases for grant of pensionary benefits to widows/Next of Kin (NOK) of IAF personnel who die while in service.

remedial measures suggested in CAS remarks were not implemented. The non implemented remedial measures included measures like providing flight data recorder/cockpit voice recorder to MI-17 helicopter units, psychological study of aircrew involved in Cat-1 accidents, to procure load cells to accurately determine the centre of gravity (CG) of load on MI-26 helicopter, fitment of Solid State Flight Data Recorder (SSFDR) on Mig-27 by HAL, modification of flying helmets on a fast track basis as the existing helmets flew off during ejection by pilots, to introduce the mechanism of pilot induced oscillation (PIO) as part of ground training syllabus, etc., which had implications for flight safety. As regards monitoring mechanism we also noticed that no periodicity was laid down in AFO No. 34 issued in October 2006 although it provided that the concerned command and specialist directorate must keep the prevention cell at DAS informed about the follow up action.

In response to the paragraph, Air HQ stated (August 2014) that remedial measures which were under the direct control of Air HQ, were implemented immediately and the remedial measures which involved other agencies like HAL and OEM and required to be implemented in phased manner were regularly monitored by the concerned Directorate/Weapon Cells at Air HQ.

The reply is not acceptable as 24 (over 50 percent) out of pending remedial measures were those which were under direct control of Air HQ. Details of such cases are mentioned in Annexure IV. The fact remains that remedial measures in majority of the finalised CoIs have not been implemented which had implications for Aerospace Safety.

Thus, despite an assurance given by Ministry (2008) that inadequacy and shortcoming in the preventive measures were being constantly monitored to ensure an effective accident prevention programme, the remedial measure suggested in majority of the CoI finalised in the period covered in Audit review, were yet (August 2014) to be implemented. As regards timelines for informing DAS about follow up action taken, the same were laid down in AFO No. 08 issued in May 2014 wherein first feedback on action taken was to be reported to DAS within two months and subsequent feed backs are to be rendered on monthly basis till implementation of all remedial measures.

IV. DELAY IN REGULARISATION OF LOSSES

PAC while deploring inordinate delay in assessment and regularisation of losses pointed out in Audit Report of 1998, recommended that suitable steps be taken to complete assessment of losses and regularisation of pending cases expeditiously for the period 1991-2000. Ministry in ATN (September 2008) stated that all efforts were being made to settle the pending cases.

We noticed (October 2013) that Ministry had stipulated (October 2006) a timeline of 15 months for regularisation of loss from the date of constituting a CoI for flying accident cases. Keeping in view the inordinate delay in regularisation of losses at all levels, Air HQ had issued a Task Directive (November 2007) laying down the duties and responsibilities of various functionaries for timely regularisation of losses due to aircraft accidents and a time frame of 12 months. Task Directive (November 2007) also prescribed that the time limits for various activities be adhered to strictly. We observed (October 2013) from the data contained in the Annual Audit Certificate (AAC) for the year 2012-13 issued by Controller of Defence Accounts (Air Force) regarding details (June 2013) of losses awaiting regularisation from Ministry that 378 loss statements in respect of accidents/Incidents involving fighter, trainer, transport aircraft and helicopter were pending for regularisation as per Table given below:

Sl. No.	Period of accidents / Incidents	Range	Total No. of loss cases	Amount of loss (₹ Crore)	Reason for pendency
1	1988-94	20 to 25years	04	0.36	Due to non-receipt of regularisation sanction from CFA and pending audit report from Controller of Defence Accounts
2	1994-98	15 to 20 years	17	30.73	
3.	1998-2000	13 to 15 years	23	106.16	
3	2000-2003	10 to 13 years	71	328.77	
4	2003-2008	5 to 10 years	187	828.21	
5	2008 -2013	Below 5 years	76	126.91	
Total			378	1421.14	

It is evident from the Table above that as against the reduced timeline of 12 months (November 2007) even the timeline of 15 months prescribed (October

2006) by Ministry was not adhered to. This resulted in accumulation of large number of loss statements of aircraft accidents/Incidents and was indicative of an urgent need for strict monitoring at DAS. It is pertinent that out of 378 cases, 44 cases (12 *per cent*) amounting to ₹137.25 crore pending for regularisation pertain to period prior to March 2000.

The above observations were communicated to the Ministry through a paragraph (June 2014). While vetting the figures given in paragraph, Air HQ stated (August 2014) that the regularisation was pending for want of sanction from the CFA and Audit Report⁷⁶ on the loss statement from the Controller of Defence Accounts (CDA). Air HQ further stated that 73 cases amounting to ₹29 crore have been regularised and balance were yet to be regularised. These 73 cases included six cases prior to March 2000.

Thus, despite an assurance given (September 2008) by Ministry to PAC, regularisation sanction of CFA was still pending in respect of losses occurred during 1988-2000. Viewed against a timeline of 6 months (3 months for audit report by the CDA and 3 months for regularisation sanction by Ministry/Ministry of Defence (Finance) prescribed by Ministry in 2006, delay upto 25 years in regularisation of losses was unacceptable. Such delays were not only violative of the timelines prescribed by Ministry/Air HQ for regularisation of losses but strike off/write⁷⁷ off of these aircraft from IAF inventory remains held up for want of regularisation sanction.

CONCLUSION:

Audit Report of 1998 had highlighted the issues regarding high rate of aircraft accidents, lack of training and infrastructure, lack of flying experience and training equipment, technical defects attributed to deficient maintenance procedure and delay in finalization of investigation. In its Action Taken Note of September 2008 on the recommendation of the Public Account Committee, Ministry of Defence had assured about implementation of preventive

⁷⁶ Internal report given by CDA on loss statement raised by IAF.

⁷⁷ In case where the loss is not caused due to any willful negligence/default and no one is held to blame for the accident, the loss is to be regularised on 'Strike off' basis and in case where loss has occurred due to negligence/default and one or more individuals have been held to blame for the accident, the loss is required to be regularised on 'Write off' basis.

measures, enhancing quality of training by acquisition of advance jet trainer, simulators and other training aids and early regularization of losses. However, these issues continued to persist as Indian Air Force was unable to take concrete action in this regard even after five years of issue of ATN.

Indian Air Force lost 33 aircraft and 27 personnel (12 officers and 15 personnel below officers rank) during 2010-13. The *percentage* of accidents in fighter aircraft particularly in MiG variants increased during the period 2010-13 as compared to 1991-97 of the total accidents. Technical defects and human errors were the main causes of flying accidents. Accidents due to technical defects and human errors had increased from then 44 and 41 *per cent* (1991-97) to 49 and 51 *per cent* (2010-13) respectively. Damaged aircraft were not available for operations for a prolonged period due to delay in repair/recovery of aircraft.

Training of pilots was compromised as basic training of trainee pilots was conducted on ageing trainer aircraft meant for Intermediate training due to non-availability and delay in replacement of basic trainer aircraft. Intermediate training was/is being imparted on vintage trainer aircraft as their replacement is still uncertain. Indian Air Force continued to face disadvantage on account of use of ageing intermediate trainer aircraft. Advance training being imparted was sub-optimal due to non-availability of full complement of advance jet trainer and non-availability/un-serviceability of simulators.

Though there was no accident due to Bird Strike during the period of audit, however, the Incidents due to bird strike had increased. Avian radars and microlight meant for prevention of bird strikes was not made available due to delay in procurement. As a result, IAF had to continue with ineffective present system of avoiding bird strike.

Newly procured 44 helicopters for undertaking operations by night with greater safety and efficiency were inducted in Indian Air Force without adequate infrastructure. This coupled with delays in modernisation of airfield infrastructure (MAFI) at 29 Air Force Stations even after lapse of a decade have an aerospace safety risk for operations.

Delays in finalisation of CoIs ranging from one to more than 24 months had resulted in delays in grant of relief to the family/NOK of IAF personnel who had lost their lives in flying accidents and implementation of remedial measure to avoid recurrence of flying accidents. The delays had mainly occurred in according approval of concerned authorities at Air HQ. In many cases the CoI failed to conclusively establish the exact cause leading to accident. Timelines fixed by Ministry of Defence for regularisation of losses was not adhered to resulting in accumulation of large number of loss statements of aircraft accidents/Incidents.

RECOMMENDATIONS

1. Air Force needs to further improve the quality of training to minimise the accidents due to errors of skill and judgment. It should also frame a long term induction and de-induction plan for timely replacement of trainer aircraft and other Aerospace Safety facilities to mitigate the risks inherent to aerospace safety and trainee pilots.
2. Air Force needs to take timely action for creation of adequate infrastructure and induction of aircraft should be synchronized with creation of infrastructure for safe operation of aircraft. Modernisation of Air Force bases should be accorded priority to match with standard Air Force bases of developed countries.
3. Air Force should devise a control mechanism at each level to complete CoI within the prescribed time frame; and monitor implementation of remedial measures to avoid recurrence of accidents. Timeline for regularisation of losses due to flying accidents/Incidents should be strictly adhered to at all levels to avoid accumulation of loss statements of aircraft accidents/Incidents.

The matter was referred to the Ministry in June 2014, their reply was awaited (September 2014).

3.9 Storage of special equipment and weapons in IAF

3.9.1 Introduction

Indian Air Force (IAF) has a huge inventory of sophisticated equipment and weapons which include aircraft, helicopters, missiles and other related stores. With the induction of advanced aircraft such as SU-30 MKI, Advance Jet Trainer (AJT), upgraded MiG Bis and the future Medium Multi Role Combat Aircraft (MMRCA), more sophisticated air armament stores including rockets, bombs, missiles, etc., are required to be stored in high quality, dust free and a temperature controlled environment. Moreover, the life expired missiles need to be stored in suitable environment till their disposal to avoid environmental hazard. Thus, availability and maintenance of adequate and suitable storage space for these weapons and costly equipment is of utmost importance.

The entire inventory available in the IAF intended for use by various user formations / units is normally held at Equipment Depots (EDs), Air Stores Parks (ASP), Base Repair Depots (BRD) and Operational wings. The nature and scope of stores to be handled by various agencies are decided by Air Headquarters (Air HQ). The EDs and ASPs function under the direct functional and administrative control of HQ Maintenance Command (HQMC).

3.9.2 Audit Objectives

Audit was conducted with a view to assess whether

- Appropriate storage accommodation for all weapons and equipment at right time and place was available;
- The existing storage accommodation was maintained in storage worthy condition;
- Adequate measures are in place to address the safety issues concerning ammunition; and

- Action taken for proper storage and prompt disposal of life expired items;

3.9.3 Audit Criteria

Audit criteria used for benchmarking the audit findings were

- (i) Indian Air Publications 1501 and 1502
- (ii) Storage and Transport of Explosives Committee (STEC) instructions
- (iii) Centre for Fire, Explosives & Environment Safety (CFEES) instructions
- (iv) Air Force instructions
- (v) Original Equipment Manufacturer (OEM) instructions
- (vi) Contracts for storage accommodation, air conditioning and other storage facilities

3.9.4 Audit Scope and Methodology

A test check of the records for the period 2010-11 to 2012-13 was carried out at seven out of twelve EDs, three out of 12 BRDs, one out of three ASPs and five out of 45 Wings / Air Force Stations(AFS) during the period from August 2013 to December 2013. Selection of field units was done on the basis of their profile, strategic risks involved, nature of equipment/weapons being maintained there and operational requirements. Audit objectives, scope of audit and sources of audit criteria were discussed with the HQMC in an entry conference held on 28 August 2013.

The field audit was conducted during August to December 2013. Audit evidence was gathered through issue of questionnaire to the units audited, Audit queries etc., and from the records examined. Audit findings as discussed in the succeeding paragraphs are based on the analysis of records, data, information and replies furnished by the units audited to the questionnaire/audit memoranda issued to them. A Statement of Case was issued to Air HQ/Units/Commands concerned on 14 February 2014. Audit findings were discussed with the HQMC in the exit conference held on 30 May 2014. Reply/comments (May 2014) furnished by the concerned

Command HQrs/ units audited have been incorporated in the draft audit paragraph as appropriate.

The subject paragraph was issued (June 2014) to the Ministry. On the direction (August 2014) of Ministry of Defence (Finance /Budget) to submit the reply directly to Audit, Air HQ submitted the reply in September 2014.

3.9.5 Audit Findings

Audit findings are classified under the adequacy of storage accommodation, maintenance of storage accommodation, adequacy of safety measures taken and disposal of life expired armaments and are discussed below:

3.9.5.1 Lack of adequate storage accommodation due to delay in provisioning /approval/construction of work services

Indian Air Publication 1502 and STEC instructions stipulate various conditions for storage of equipment such as store house *i.e.*, building of permanent construction providing adequate cover and security, firm level flooring, spacious doorways, roof height, adequate lighting etc.

Audit observed (August-December 2013) that out of the 16 units selected for audit, six units had inadequate storage accommodation resulting in storage of costly aircraft spares, explosives, missiles, aero-engines in inappropriate accommodation/ temporary sheds/in the open posing hazard for their safety as discussed below:

- Equipment Depot (ED) 'A' of Indian Air Force is the mother depot equipped with storage facilities for different type of explosive stores. Majority of these stores are voluminous and heavy in nature and are received on a regular basis from Ordnance factories and abroad since its formation (1953). These stores are required to be kept inside the storage sheds (*i.e.*, Danger buildings). Ministry of Defence (Ministry) had accorded (March 2007) administrative approval (AA) for provision of five Air conditioned (AC) sheds at ED 'A' at an estimated cost of

₹20.49 crore for storage of missiles and other stores needing air conditioned storage environment. However, the work had not commenced till 2014 (even after a lapse of seven years) as “No Objection Certificate” (NOC) could be obtained by ED ‘A’ only in August-September 2009 from Forest Department and Government of Madhya Pradesh for cutting/removal of 1412 trees. The delay in commencement of work, had resulted in seeking revision (April 2013) of AA for ₹31.34 crore which was 53 *per cent* more than the original cost of ₹20.49 crore. In response to audit observation (June 2014), Air HQ in its reply (September 2014) while accepting the facts stated that the project was delayed due to long time taken in obtaining the NOC for tree cutting. Tree cutting procedure was likely to be complete by September 2014. Consequently, the work pertaining to AC sheds sanctioned in 2007 was yet to be completed even after a lapse of seven years resulting in storage of costly weapon stores being kept in temporary sheds which are not considered appropriate for their storage.

- The unit 26 Equipment Depot, AF, Bangalore is tasked with the responsibility of storing repairable aero-engines for their repair/overhaul at Hindustan Aeronautics Limited (HAL), Bangalore and subsequent despatch of aero-engines to the concerned units. These aero engines were stored in the sheds of HAL. However this facility was withdrawn (1991) by HAL which forced the Depot to keep the repairable engines in cases in the open space. Depot pursued the matter with HAL during the period between 1991 and 2003 for acquisition / transfer of land (1.88 acre) but the same had not fructified. Consequently, 26 ED approached (January 2003) HAL to transfer the land on lease basis for construction of storage accommodation. HAL agreed (March 2003) to transfer the land on a long term lease for 30 years at an annual rent of ₹3173. However, Ministry opined (October 2004) that the land had to be transferred free of cost as the transfer was intra-ministry for which HAL did not agree (April 2005). The land transfer issue was under correspondence amongst Ministry, Defence

Estate Officer (DEO), Bangalore, HQ MC, Air HQ and HAL for about six years between 2003 and 2009. Subsequently, HAL informed (2009) that the land measuring 1.88 acre was required by it for the expansion /creation of facility / infrastructure. Finally 26 ED proposed (April 2012) a work service costing ₹12.49 lakh [revised (July 2013) to ₹14.08 lakh] for constructing storage accommodation in the existing land at the depot itself.

In response to audit observation (June 2014), Air HQ in its reply (September 2014) while accepting the facts stated that the fund for provision of shed for storing aero-engine had been released (June 2014) and the work would commence shortly. It was also informed (September 2014) by Air HQ that presently the aero-engines were kept in the covered shelter at HAL Engine division as a goodwill gesture.

The fact remains that IAF remained dependent on HAL for the safety/storage of aero engines for the last 22 years and could not set up alternative storage accommodation during the period.

- The unit 43 ED AF located within AFS Hakimpet was facing acute shortage of storage accommodation for ideal storage of Kiran aircraft spares also in view of earmarking (March 2007) of the depot as Store Holding Depot (SHD) for Intermediate Jet Trainer (IJT) aircraft. A Board of Officers (April 2009) identified the site along with 62 trees for new infrastructure and recommended (February 2010) construction of permanent accommodation at a cost of ₹4.94 crore.

After a lapse of two years, Headquarters Training Command (HQTC) accorded (March 2012) an AA for provision of permanent accommodation for 43 ED at a cost of ₹4.93 crore. Audit however observed (October 2013) that Military Engineer Services (MES) authorities requested (May 2013) AFS, Hakimpet for an alternate site as the earmarked site was in low lying area and considered difficult for

carrying out construction. Hence, the tendering process was kept in abeyance till finalization (May 2013) of alternate site. AFS approached (July 2013) HQTC after four years with a proposal of alternate site without any financial implications. Presently, the vital aircraft stores were held in temporary accommodation at the depot. In response to audit observation (October 2013), the depot (43 ED AF) accepted the facts (October 2013) and stated that administration shared the error in due diligence process of selection of site along with MES. Further, Headquarters Maintenance Command (HQMC) stated (April 2014) that due to thick vegetation, bushes and jungle, MES authorities could not enter inside the proposed site for survey and oversight with regard to difficulty of the proposed site occurred.

Air HQ in its reply (September 2014) while accepting the facts stated that the work had commenced (April 2014) and would be completed by July 2015 and the entire store would be shifted to new accommodation thereafter.

The fact remains that despite recommendation of Board of Officers (April 2009) for construction of storage accommodation, the work sanction was accorded after a delay of two years and MES authorities, after a lapse of more than one year had requested for an alternate site and finally, the construction of storage accommodation was inordinately delayed for five years. Consequently, vital aircraft stores valuing ₹54.89 crore continued to be held in temporary accommodation.

- We observed (September 2013) that AFS, 'B' was authorized as per policy page to hold 10 days requirement of war wastage reserve (WWR) and AAT⁷⁸ storage of Net Explosive Quantity (NEQ) of 2.94 lakh Kgs against the existing storage capacity which was only 71,500 kgs. To overcome this shortage of space, a BOO assessed

⁷⁸ Annual Armament Training

(October 2010) the requirement for construction of new Weapon Storage Area (WSA) and recommended (October 2010) demolition of six temporary sheds and construction of eight igloos⁷⁹ and four new buildings to increase the storage capacity to 1.86 lakh Kgs of NEQ. However, after a lapse of two years, Ministry accorded (October 2012) sanction for provision of work services at a cost of ₹24.72 crore with a probable date of completion (PDC) of 106 weeks (*i.e.*, by October 2014). We further observed (September 2013) that though the work had been released (October 2012), the tendering process was in progress even after a lapse of more than one year, as the tender documents needed modifications to comply with the instructions of CFEES which was a mandatory requirement for all WSA works.

In addition, AFS 'B' projected (October 2010) the requirement of construction of 11 new danger buildings⁸⁰ in the newly acquired land measuring 40 acres to meet the authorized storage of WWR and AAT stores of the station as well as futuristic requirement arising out of new procurements. The subject work was held up for clearance of CFEES and the excess armament stores continued to be held in blast pens⁸¹ since October 2010.

In response to audit observation (June 2014) on non-obtaining of mandatory clearance from CFEES, Air HQ in its reply stated (September 2014) that the tender documents had to be modified to comply with the instruction of CFEES and the case was processed with Ministry for obtaining Financial Concurrence(FC) and observations of Ministry are still under progress. It was further stated that inflation was also one of reasons for receipt of higher quote than AA amount, and the fund has been released for the execution of the work in August 2014.

⁷⁹ Igloo is an above ground, earth covered magazine made of reinforced concrete or steel

⁸⁰ Buildings where explosives are stored

⁸¹ Blast pens are meant for storage of aircraft during Ops

The fact remains that without ensuring adequate storage, the storage authorization of NEQ was made four times the existing capacity. Moreover, due to delay in getting sanction from Ministry and construction of storage accommodation, the explosive stores were being temporarily held (October 2010) in blast pens, not conducive for their storage. AFS 'B' should have taken mandatory clearance from CFEES in time. Besides, due to inadequate planning, the works services projected in the year 2010 were still (September 2014) in tendering stage.

- We observed (October 2013) that AFS 'C' was authorised to hold NEQ of 90,200 Kgs, against which the unit was holding (November 2010) NEQ of 3.10 lakh Kgs in its WSA spread over two locations. The storage facility was inadequate for entire NEQ. Further, some of the excess stores were stored in non-standard accommodation while some stores were held in open. A BOO recommended (November 2010) work services for alteration and up-gradation of the non-standard accommodation to standard accommodation in accordance with CFEES norms. Accordingly, Headquarters South Western Air Command (HQ SWAC) accorded (January 2011) AA for addition/alteration to the existing WSA at AFS Bhuj at a cost of ₹3.16 crore. The work was completed (January 2013).

Besides, it was also informed (October 2013) by unit authorities that AFS 'C' had taken up (January 2012) the case for acquisition of 100 acres of land for additional over-ground storage accommodation in order to avoid improper storage of armament stores such as bombs stored in open area at the unit. To a specific audit query (July 2014), as to how the requirement of 100 acres of land was assessed, the AFS, Bhuj did not produce (August 2014) the relevant documents. Air HQ in its reply (September 2014) stated that AFS 'C' was pursuing the case vigorously for acquisition of land.

The fact remains that even though certain storage accommodation were made standard accommodation for the storage of excess store, increase of holding of excess NEQ before ensuring standard accommodation was not a prudent decision.

- The unit 45 ED AF, Agra is the mother depot for spares of IL-76/78 and Airborne Warning and Control System (AWACS) aircraft fleet and it has to keep a 20 *per cent* reserve of spares in stock. A BOO assembled (January 2012) for construction of Engine Bay at the depot for storage of IL engines as the stores (20 *per cent*) were housed in temporary building and aero engines were kept open in a Hangar since January 2010 recommended (January 2012) construction of the Engine Bay for 24 aero engines and Air HQ accorded (March 2013) AA at a cost of ₹5.75 crore with a PDC of 156 weeks from the date of release *i.e.*, by March 2016. We observed (June 2014) that pending completion of the work, eight engines valued ₹13.06 crore were being kept in the open area inside the depot.

In response to audit observation (June 2014) regarding keeping the engines in open area, Air HQ in its reply (September 2014) while accepting the facts stated that the engines are only to be stored in open when cased due to unavoidable local conditions. It further added that presently all engines were shifted to alternative location and covered with tarpaulin to avoid damage.

However as seen in Audit as per the BOO (May 2012) statement the engine cases lying in the open are likely to deteriorate due to extreme climatic conditions with temperature rising to 48 – 50⁰C during summer and dropping to 0⁰C in winters, which lead to damage/deterioration of engines placed inside the cases and thereby affecting their technical life.

Thus, in spite of existence of clear provisions/instructions for the proper storage of accommodation for the explosives/weapons, there was lack of

accommodation at the six test checked units out of 16 units resulting in costly weapon stores being kept in open space/blast pens exposing them to the vagaries of nature. The lack of proper storage accommodation would result in deterioration/damages of stores which may become unusable at the time of operational requirement jeopardizing the security of the nation.

3.9.6 Maintenance of storage accommodation

Indian Air Publication (IAP) 1502 envisages that equipment must be properly stored in the interest of economy and to ensure that equipment is fit for use at the time of requirement. IAP 1502 also encompasses ideal storehouse conditions, optimum atmosphere with reference to temperature and humidity, cleanliness, etc., and lays down the conditions for maintenance of stores of general purpose. Storage and Transport of Explosives Committee ⁸²(STEC) Pamphlet Nos. 3, 8 and 26 stipulate technical requirements for construction of buildings for military explosives, guidelines on air conditioning & humidity control in explosive areas and regulations for the storage of ammunition & explosives in the field respectively.

Audit observed (September 2013) storage deficiencies in two out of 16 selected units as discussed below:

- ED 'A' is the mother depot equipped with storage facilities for different type of explosive stores. Four sheds at depot (No.31, 72, 73 and 79) were of pre 1954 vintage and had developed multiple cracks on walls, pillars, roof, floor and platforms. Hence, a BOO recommended (November 2010) to undertake the work *i.e.*, the addition/alternation of sheds on priority along with the specifications of STEC.

HQMC accorded (October 2011) AA for the work at a cost of ₹76.61 lakh with a PDC of 108 weeks (*i.e.*, by October 2013).

⁸² STEC is under Ministry of Defence (R&D) which issues various pamphlets prescribing the construction of buildings & traverses, air-conditioning etc., for military explosives / areas.

However the requirement of Reinforce Concrete Column (RCC) columns outside the shed and height of roof trusses were not included in the sanction. Due to which, the cost was revised (August 2012) to ₹1.73 crore based on the recommendation (June 2012) of MES authorities and PDC was extended up to August 2014.

In response to audit observation (February 2014) on delay in completion of the work services, HQMC stated (May 2014) that a separate design and structural engineering followed in this case contributed to the delay. The present progress of work was 40 *per cent*. Air HQ in its reply (September 2014) while accepting the facts stated that the timely detection of mistake by higher engineering authorities avoided loss to the state, which otherwise would have been incurred on construction of inappropriate sheds.

Consequently, the work initiated in 2010, had not been completed in its entirety (September 2014) in spite of a lapse of three years due to improper initial assessment of requirement of work services that led to a cost escalation of 126 *per cent*.

Pending completion of the work, though the stores shifted to other sheds had been covered with water proof tarpaulin/polythene sheets in order to safeguard from seepage/leakage, the fact remains that it was not appropriate for storage of explosives stores.

- Air conditioning plants of four sheds (No. 4, 6, 21 and 54) located at ED 'A' were of 1972 vintage and required replacement/proper controlled climatic conditions as per the OEM⁸³ specifications. Hence, a BOO assembled (November 2010) to assess the requirement of the work services. HQMC accorded (September 2011) AA for the work at a cost of ₹95.97 lakh with a PDC of 52 weeks (*i.e.*, September 2012) from the date of issue of AA.

In response to audit observation (June 2014) in regard to delay in replacement of AC plants, Air HQ in its reply while accepting the facts

⁸³ Original Equipment Manufacturer

stated (September 2014) that as per the recommendations of engineer authorities, the AC plants at sheds were kept serviceable with minimum essential repairs till suitable replacement to ensure that environment conditions remained within the prescribed limits. It was also stated that present progress of work in respect of replacement of AC plant was 45 per cent.

The fact remains that replacement of AC plants projected in November 2010 was yet (September 2014) to materialize even after a lapse of nearly four years, which necessitated shifting of stores to other AC sheds by the depot on this account.

- 44 ED located at Air Force Academy (AFA) Dindigul had earlier (January 2007) catered for receipt, storage, maintenance, accounting, provisioning and issue of HPT-32 aircraft spares. The role of depot was revised (May 2013) to cater for receipt, storage, maintenance, provisioning, inspection, issue and accounting of entire range of Pilatus PC-7 Mk-II aircraft⁸⁴ and its associated equipment and spares.

Contract for Pilatus aircraft and its associated spares was concluded (May 2012) and the stores started arriving from November 2012. The representatives of the OEM visited the depot and recommended (May 2013) for storage of associated spares in an air conditioned room for optimal temperature control. The depot initiated four proposals for minor works to up-grade /modify storage accommodation *viz.* re-flooring in aero lube store (November 2012), air conditioning in aircraft battery store (March 2013), air conditioning in aircraft avionics/rotable store (June 2013) and special repairs to aircraft tyre stores (May 2013).

Audit observed (October 2013) that even though the contract for Pilatus was concluded (May 2012) and stores started arriving (November 2012), no simultaneous action was taken by IAF for providing air conditioned accommodation for these spares, instead action was initiated after a lapse of one year of the recommendation

⁸⁴ Pilatus PC-7 Mark II aircraft procured by IAF for imparting basic flying training to pilots

(May 2013) by the OEM representatives. HQMC stated (May 2014) that the stores were currently stored in HPT-32 store accommodation. Air HQ in its reply (September 2014) stated that all the four works were not completed yet.

Thus, in the absence of sufficient air conditioned accommodation, aircraft spares including costly and delicate avionics valuing ₹166.15 crore continued to be held in non-air-conditioned accommodation, in contravention of OEM recommendations.

Though IAF was aware of the importance of weapon storage facilities for different types of explosives store, the explosive store at mother depot were kept in non-standard sheds in dilapidated condition, further some explosive stores were held in non-air-conditioned sheds against OEM's recommendations. Besides, the works services for the storage of spares in respect of newly inducted aircraft were under taken only after their arrival. This is indicative of the fact that IAF had not given adequate importance towards maintenance of storage accommodation which is likely to cause deterioration in spares in the present situation.

3.9.7 Adequacy of safety measures

Explosives are chemical substances or combination of chemical substances, which by nature are liable to be ignited by a spark, friction or percussion. Once these are involved in a fire, they create sudden and intense pressure on its surroundings, usually characterized by the evolution of large quantity of heat, sound and flash. Consequently, any fire involving explosives/ammunition might lead to disastrous consequences as a result of mass fire/explosion unless dealt with speedily and effectively. STEC pamphlet No.6 and 15 stipulate the regulations/guidelines of fire protection and fighting fires in Government explosives establishments.

Audit observed (September 2013) that three out of 16 units reviewed, had inadequate fire fighting facilities, thereby exposing the stores/equipment and human life to any mishap/accident as discussed below:

- Air Stores Park (ASP) 'D' is an ammunition depot and is responsible for storage and maintenance of explosive stores. As per Defence Act 1903 (Section 3 and 7), no building shall be constructed within the limits of 900 meters from the crest of the outer parapet of IAF Stations and installation. The Government of India, Gazette notification (December 1962) imposes restriction on usage of land lying within 1000 yards.

We observed (September 2013) that contrary to this provision; ASP is located in a densely populated area surrounded by posh colonies, restaurants and marriage halls. Though, civil administration issued (2007 and 2009) notices to stop all the constructions within 900 meters from the boundary wall of ASP 'D' constructions were still mushrooming there.

In response to audit Observation (September 2013), ASP informed (October 2013) that though the matter regarding shifting of the depot was examined by Ministry and considered (October 2003) not feasible, the issue was again taken up by the depot with civil authorities by arranging regular meetings and the case was moved for shifting the depot owing to the mushrooming population, which was under examination by Ministry.

Fact remains that the depot continues to operate from a densely populated area, with the associated risk of potential disaster in case of any incident of fire/explosion.

We further observed (September 2013) following deficiency in regard to fire fighting measures at the ASP 'D':

- Against the authorized establishment (2012-13) of 64 civilian fire crew, only 42 civilian were positioned, leaving a deficiency of 22 fire crew since 2010-2011. Also, only five fire engine drivers were available against an authorization of 10 fire engine drivers.
- ASP was authorized (2010-11 to 2012-13) for five large trucks for fire fighting and one trailer fire pump. However, there was a deficiency of

one major fire fighting appliance Truck Fire Fighting Large (TFFL) and one trailer fire pump since 2010-11.

- No fire alarm system/fire detection system was provided in the storage accommodation of explosives to prevent any loss from fire in case of any mishap. The proposal (June 2013) for provision of fire alarm system and water hydrant was still under process.

In response to audit observation (September 2013) on deficiency of both fire crew and equipment, the ASP stated (October 2013) that 15 air warriors were posted (2010-11 to 2012-13) for fire fighting to make good the shortage of fire fighting staff with a deficiency of seven civilian fire crew.

Air HQ in its reply (September 2014) while accepting the facts stated that CFEES had not considered fire hydrant system as a reliable source and recommended that automatic fire detection-cum-alarm system were not required to be installed in explosive storage buildings as per STEC regulations. In regard to deficiency of fire crew, it stated that deficiencies were being made good through extra duties by available fire crew till posts were filled up permanently after release of vacancies by Ministry/Air HQ.

However, the fact remains that STEC regulations indicate provision of general fire alarm system which was not catered in the storage buildings. Besides, deficiency of fire crew (September 2014) and equipment has rendered the ASP vulnerable to fire hazards/mishaps.

- ED 'A' is the mother depot equipped with storage facilities for different types of explosive stores. Audit observed (September 2013) deficiency of fire fighting equipment such as fire buckets and fire beaters in respect of all the storage sheds.

In response to audit observation (September 2013), the depot stated (September 2013) that purchase orders had been raised (April to July 2013) to make good these deficiencies.

Fact remains that the depot had continued to function without a fire fighting equipment (September 2013) making it vulnerable to fire hazards.

- 11 BRD, AF is a premier BRD of the IAF tasked with Medium/Capital Repair of MiG 29 and Medium Repair of MiG 23 UB aircraft. Audit observed (September 2013) that there were acute deficiencies in holding of firefighting equipment such as fire extinguishers, fire buckets and fire beaters. On being pointed out in Audit (September 2013), the depot stated (September 2013) that action had been initiated to procure the deficient items and its materialization was at various stages of procurement.

In response to audit observation (June 2014) in respect of ED 'A' and 11 BRD, Air HQ in its reply (September 2014) while accepting the facts stated that the deficient fire fighting equipment are made good through procurement and further stated that it was always ensured to position adequate number of Minor fire fighting appliance at all critical areas, and the fire fighting infrastructure was geared up to handle any eventuality.

Fact remains that, the depot had been functioning without fire fighting equipment, that too with time-gap arrangement making it vulnerable to fire hazards and the depot had initiated procurement action for standard fire fighting equipment only after being pointed out in Audit.

Thus, in contravention of the orders promulgated by the Government of India, one ammunition depot continues to exist in densely populated location with the associated risk of potential disaster in case of fire explosion. Also, there was lack of manpower/ vehicles/ fire alarm system etc., in the depot. There was lack of fire fighting equipment in another depot. These indicate that no firm action has been put in place by Air HQ for safety measures in these weapon depots thereby compromising the safety of these explosives, thus neglecting adverse consequences.

3.9.8 Disposal of Life Expired armaments

STEC Pamphlet No.18 lays down the guidelines for disposal of waste explosives and ammunition by burning/demolition. Audit observed (September 2013) that in two units out of 16 units reviewed, there were delays in timely disposal of life expired armament/ammunition which could lead to any mishap/accident as discussed below:

- Armament/ammunition stores which are declared surplus to IAF requirement with no alternative use are disposed-of by ED 'A' through suitable methods *viz.* by detonation, burning, cooking off⁸⁵, breaking down and conversion/mutilation⁸⁶. In respect of the stores disposed-of at the demolition ground, right of collection of metal scrap is auctioned through M/s MSTC⁸⁷ Limited and a contract is awarded annually to the successful bidder. Air HQ assigns the annual task to the depot for the disposal of life expired arms and ammunition.

Audit observed (September 2013) that demolition task undertaken by the depot had been restricted only to the extent of the contractual obligation with the scrap contractor. Consequently, the depot had not been achieving the demolition task assigned by the Air HQ and the depot continued to accumulate large quantities of life expired armament such as R-73 missiles, rockets, detonator etc., which had fallen due for demolition/disposal.

In response to audit observation (June 2014), Air HQ in its reply (September 2014) while accepting the facts stated that at times demolition task at the depot was restricted only to the extent of scrap to be generated in order, not to exceed the contractual obligation with scrap contractor and further indicated that the anomaly pointed out by Audit had been addressed in the draft contract for the year 2014-15 and on its approval there would be no restriction for the scrap generation.

⁸⁵ Method of disposal of SAA in the incinerator

⁸⁶ Conversion- to convert any life expired armament either into scrap by breaking down or by mutilation. Mutilation- reshaping of life expired non-explosive armament by means of hammering / cutting.

⁸⁷ MSTC Limited, is a PSU earlier known as Metal Scrap Trade Corporation Limited

The fact remains that in spite of clear stipulation of guidelines, the depot was carrying out the demolition task to generate the scrap only for meeting the contract obligation in spite of accumulation of large quantities of life expired armaments.

- Audit observed (September 2013) that ASP 'D' was holding life expired armament/explosive stores occupying a total floor area of 361.19 sq metre. Thus accumulation could result in critical shortage of storage space. In response to audit observation (September 2013), ASP stated (October 2013) that reasons for delay in disposal of life expired stores was due to non-availability of demolition range and non-conducive weather condition for demolition.

Air HQ while accepting the facts (September 2014) stated that the life expired stores are unfit for intended use but are not unsafe and do not pose any additional threat or storage deficiency.

The fact remains that non-compliance of the instructions/guidelines prescribed for disposal of life expired ammunition is a potential hazard to the unit as well as to the densely populated area around the unit.

There was a delay in disposal of life expired store in one unit due to absence of demolition range. Another depot was carrying out the demolition task to generate the scrap only for meeting the contract obligation in spite of accumulation of large quantities of life expired armaments. These indicate improper assessment/action on the part of concerned authorities besides delay in timely disposal of life expired ammunitions.

3.9.9 Conclusion

Due to inadequate storage and delay in creation of additional storage accommodation for special equipment such as weapons, the critical stores are being held in inappropriate storage/open/other sheds which not only resulted in congestion in the sheds but also made the material handling difficult. In respect of stores which require air conditioned storage accommodation, the

delay/non-provision of storage accommodation had led to air armament stores being kept in sub-standard accommodation which could result in deterioration of their quality. Priority was not given to works for repairing the seepage/leakage of the storage sheds leading to shifting of stores to other sheds.

Deficiencies of fire fighting equipment and shortage of crew continued due to delay in their provisioning making the units vulnerable to fire hazards.

3.9.10 Recommendations:

1. EDs should hold only authorized weapon stores till the completion of adequate and appropriate accommodation in order to avoid exposure of excess stores in the open space/inappropriate storage leading to their deterioration.
2. Weapon stores are required to be provided with suitable safety measures prescribed by the manufacturers and as per STEC regulations issued from time to time.
3. Priority should be given to creation of adequate and appropriate storage area so as to coincide with receipt of store materials at the time of new aircraft inductions.
4. Action is required to be taken to ensure that the weapon storage depots located in the residential area are shifted to other places in the larger interest of safety of local civil population. Adherence to the Defence Act stipulation that no construction should be within 900 meters from the outer parapet of IAF station should be ensured.
5. Life expired armament stores are required to be disposed-of within the prescribed time limits.
6. Suitable fire fighting systems should be installed in the depots as specified in the STEC guidelines.

The matter was referred to the Ministry in June 2014; their reply was awaited (September 2014).

Works Services

3.10 Excess provision of Married Accommodation

Excess Provision of Married Accommodation for Non-Combatants Enrolled resulted in extra expenditure of ₹0.72 crore.

Scales of Accommodation for the Defence Services, 2009 authorised 100 *per cent* accommodation for the Non-Combatants Enrolled [NCs (E)]. However, the 100 *per cent* authorisation was reduced (April 2011) to 75 *per cent* by the Government of India (GoI). An instance of violation of the authorisation resulting in avoidable expenditure to the tune of ₹0.72 crore was noticed (July 2012) in Audit as discussed below:

A Board of Officers (Board) had assembled (October 2011) at Air Force Station (AFS), Jamnagar to assess the requirement of married accommodation for Defence Security Corps (DSC) and Non Combatants(Enrolled) [NCs (E)]. The scope of proposal (January 2012) *inter-alia* included Married Accommodation for 37 NCs(E) of Wireless Experimental Unit (WEU) at Khambaliya, a lodger unit of AFS, Jamnagar and 29 for DSC personnel. Based on the recommendations (January 2012) of the Board, Air HQ accorded (March 2012) a sanction for construction of 66 Dwelling Units (DUs) at a cost of ₹11.94 Crore. Accordingly, the Chief Engineer, Air Force [CE (AF)], Gandhinagar concluded (April 2013) a contract for ₹10.21 crore.

Audit scrutiny (September 2013) revealed that WEU, Khambaliya had authorisation of only 37 NCs(E). Taking into account 75 *per cent* authorisation, the construction of DUs should have been restricted to 28 DUs. Thus by providing 9 DUs in excess of the authorisation, Indian Air Force (IAF) had to incur an additional expenditure of ₹0.72 crore.

On the matter being pointed out in Audit (March 2014), Headquarters South Western Air Command (HQ SWAC) accepting the facts stated (April 2014) that the authorisation of 100 *per cent* Married accommodation was taken erroneously by the Board and there had been failure to notice the error at all levels at Air Force station and by Military Engineer Services (MES) authorities. It further added (July 2014) that to avoid such recurrence in future, policy letters have been circulated for compliance.

In response to the paragraph issued in May 2014, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) while accepting the facts stated (August 2014) that the non reference of GoI's order which reduced scale to 75 *per cent* of establishment, by the BOO was an act of omission.

Thus, on account of excess provision of married accommodation for NCs(E), the Indian Air Force (IAF) had to incur an avoidable expenditure of ₹0.72 crore.

The matter was referred to the Ministry in May 2014; their reply was awaited (September 2014).

Miscellaneous

3.11 Avoidable expenditure on maintenance of simulators

Injudicious decision to continue with Annual Maintenance Contract despite grounding of HPT-32 fleet, Indian Air Force incurred an avoidable expenditure of ₹0.92 crore.

Ministry of Defence (Ministry) concluded (March 2004) a contract with M/s TSL Technologies Pvt. Ltd., New Delhi (OEM⁸⁸) for procurement of 18 simulators⁸⁹ at a cost of ₹7.5crore. These simulators were installed and commissioned (February 2009) at four Air Force Stations⁹⁰ and were under warranty up to 12 December 2011. Out of 18, ten simulators were procured for

⁸⁸ Original Equipment Manufacturer

⁸⁹ Cockpit Procedure Trainers (CPTs) and Practice Procedure Platforms (PPPs)

⁹⁰ 406 AFS Bidar, 408 AFA Hakimpet, 413 AFS Tambaram and 409 AFS (AF Academy)

HPT-32 aircraft and eight for Kiran aircraft⁹¹ for imparting basic flying training to pilots.

On completion of warranty, the simulators were required to be maintained through Annual Maintenance Contract (AMC). For maintenance of all simulators, Ministry concluded (December 2011) a contract with M/s DEFSYS Solutions Pvt. Ltd., Bangalore⁹² for a period of three years at a total cost of ₹1.60 crore (exclusive of duties and taxes) and payment was to be made in 12 equal instalments (*i.e.* ₹13.33 lakh) on quarterly intervals commencing from April 2012 onwards. There was a provision (clause 13) in the contract for change/modification after conclusion of the contract.

Audit observed (July 2013) that there was a fatal accident (July 2009) involving HPT-32 aircraft and there were 189 incidents/accidents on HPT-32 aircraft upto July 2009 caused by engine cut⁹³. To undertake an in-depth analysis of maintainability and reliability of HPT-32 aircraft and its engine, a High Power Study Team (HPST) was constituted (July 2009) by Air HQ and M/s. HAL (Transport Aircraft Division) was also tasked to undertake technical investigation to find out the cause of failure and suggest remedial measure etc. In the meantime, IAF decided (August 2009) to discontinue the flying of HPT-32 fleet till the finalization of HPST report. The HPST in its report recommended (December 2009) that HPT-32 aircraft was designed and developed in the early 1980s and it did not meet present day standards. The technical investigation carried out by HAL was inconclusive in its findings. Hence, IAF took a final decision (June 2012) for closure of recovery of HPT-32 fleet (grounding of fleet).

However, Audit observed that despite grounding of HPT-32 aircraft from June 2012, IAF continued to pay equated quarterly instalment for maintenance of 10 simulators of HPT-32 aircraft even though there was a provision in the maintenance contract (December 2011) for change/modification after conclusion of the contract. Eight instalments amounting to ₹1.17 crore⁹⁴ had been paid as of April 2014⁹⁵ on account of maintenance to

⁹¹ HPT-32 and Kiran aircraft = These aircraft are being utilized for imparting basic and Stage II training to pilots respectively.

⁹² Designated firm by the OEM

⁹³ While flying in the air, engine abruptly stopped working

⁹⁴ Inclusive of taxes and duties and deduction of LD amounting to ₹2.40 lakh.

Out of total payment of ₹1.17 crore, ₹65 lakh paid on account of maintenance of HPT-21 aircraft and ₹52 lakh paid on account of maintenance of Kiran aircraft

⁹⁵ Position updated as per information furnished by Air HQ in September 2014

the firm. Had IAF shown due diligence and exercised amendment clause provided in the contract after grounding of HPT-32 fleet in June 2012, expenditure incurred/likely to be paid from June 2012 onwards amounting to ₹0.92 crore to the firm could have been avoided.

In response to the paragraph issued in May 2014, Air HQ on the direction (August 2014) of Ministry of Defence (Finance/Budget) accepting the facts stated (August 2014) that HPT-32 simulator had been shifted by Headquarter Training Command (HQ TC) to three training establishment⁹⁶ to impart training between August 2012 and July 2013. Therefore, no need was felt to invoke the amendment clause.

The reply is not acceptable as scrutiny of documents (July 2013) relating to finalization of maintenance contract revealed that HQ TC had informed Air HQ (December 2010) that these HPT-32 simulators would be put to use on revival of HPT-32 aircraft fleet. Fact remains that Air HQ came to know about the grounding of HPT-32 aircraft within six months (June 2012) of conclusion (December 2011) of AMC and could have exercised the change/modification clause of AMC to avoid expenditure of ₹0.92 crore likely to be paid to firm from June 2012 onwards. Besides, shifting of simulators to these training establishment would not serve any purpose as two⁹⁷ out of three establishments did not impart flying training and the third unit (National Defence Academy) was to impart only theoretical training to cadets in flying and aviation subjects as per policy page.

The matter was referred to Ministry in May 2014; their reply was awaited (September 2014).

3.12 Recovery at the instance of Audit

An amount of ₹1.43 crore was recovered at the instance of Audit.

Ministry of Defence (Ministry) decided (May 1976) to deposit 25 *per cent* of the revenue earned from cultivation of land held by Army, Air Force (AF) and

⁹⁶ Three training establishment = Electronic and Instrument Training Institute (E&ITI) -, Bangalore - two simulators, Mechanical Transport Institute(MTI), Tambaram – two simulators and NDA(AF Training Team), Kharagwasla (Pune)- six simulators.

⁹⁷ Electronic and Instrument Training Institute (E&ITI)-, Bangalore and Mechanical Transport Institute(MTI), Tambaram

Navy into public fund and rest 75 *per cent* into non-public fund⁹⁸. These orders were superseded (December 1995) by MoD which stipulated that all revenues realized from the land placed under the management of Army, Navy and AF were to be deposited into Government Treasury so as to form part of the Consolidated Fund of India.

It was noticed in Audit (May 1999) that these orders were not being complied with by Indian Air Force (IAF). The issue regarding non-compliance of orders (December 1995) had been taken in the Local Test Audit Report for the year 1999-2000 (July 1999). Air HQ took up (January 2000) the matter with Ministry for revoking its orders (December 1995) and for restoration of status quo ante existed prior to December 1995 but continued to deposit the 100 *per cent* revenue realised from the cultivation of land into non-public fund upto December 2000. Thereafter, the IAF stopped cultivation on Defence land (January 2001). The proposal (January 2000) of IAF was turned down by the Ministry in May 2002.

Audit pursued the matter from time to time. Due to non compliance of orders upto 2007, Audit raised the issue again in March 2008. However, Air HQ again referred (2008) the case to the Ministry for regularization of the revenues deposited into non-public fund. The Ministry declined (December 2008) the regularization and stated that Air HQ had no mandate to deposit the receipt in non-public fund. In May 2010, Air HQ again re-submitted the case for reconsideration. The Ministry reiterated (June 2010) its earlier stand. In September 2013, IAF recovered an amount of ₹1.43 crore from all affected units and deposited the same into the Government Treasury.

Thus, due to vigorous pursuance of the matter by Audit since 1999, an amount of ₹1.43 crore was recovered.

In response to the paragraph issued in April 2014, Ministry in its reply (July 2014) accepted the facts.

⁹⁸ Non-public fund is a fund other than the public fund and is used by AF units for the welfare of its personnel.