

MINISTRY OF CIVIL AVIATION

CHAPTER I

National Aviation Company of India Limited

Jet Engine Overhaul Shops

Executive Summary

National Aviation Company of India Limited (Company) was incorporated on 30th March 2007 under the scheme of amalgamation of Air India Limited and Indian Airlines Limited. Erstwhile Indian Airlines Limited established (1991) a Jet Engine Overhaul Complex in Delhi (JEOC) and Air India had set up (1962) an Engine Overhaul Department in Mumbai (EOD). The Shops were certified by the Federal Aviation Authority (FAA), USA which enabled the Company to undertake the repair works of engines of other operators.

The main function of shops was to conduct mandatory and preventive maintenance of jet engines.

The performance audit of these shops revealed the following:

- Against the capacity to overhaul 48 V2500 engines per annum, the JEOC could utilize its capacity between 67 *per cent* and 83 *per cent* only, during the period 2004-05 to 2008-09. Due to lower production of engines, aircraft ranging from one to eleven were on ground for 1370 days during the above period. Thus, the Company lost potential revenue of approximately Rs. 291 crore.
- JEOC was unable to produce engines as per requirement during the period September 2005 to December 2006. To overcome the shortage, the Company had to take engines on lease. The Company incurred an extra expenditure of Rs. 34.68 crore on hiring of engines.
- Despite having in-house capability, the Company sent 23 engines and 18 HPC modules from JEOC to outside agencies for repair and incurred an expenditure of Rs. 498.66 crore, including an avoidable expenditure of Rs. 45.95 crore towards labour, transportation, mark up on material and testing charges.
- The Company carried out phoenix modification introduced by engine manufacturer M/s IAE in all of its engines at JEOC at a cost of Rs. 67.31 crore. It was, however, observed that on-wing life of the engine did not increase to the assured level and the envisaged benefits of reduction in maintenance cost were also not reaped.
- EOD, by and large, utilised its capacity fully during 2004-09.

Summary of recommendations

The Company should:

- (i) **Ensure that the work is completed within the TAT for effective utilisation of capacity**
- (ii) **Strictly enforce the terms of the lease agreement for repair of engines.**
- (iii) **Ensure inclusion of suitable clause in the contract to safeguard its interest in case of failure to achieve the assured result offered by the engine manufacturer on the implementation of the modification.**
- (iv) **Ensure timely realisation of dues from the customers.**
- (v) **Ensure that the obsolete inventories are reviewed and segregated for appropriate disposal.**
- (vi) **Take necessary action to lodge the warranty claims in time and obtain the claim amount at the earliest.**

1.1 Introduction

National Aviation Company of India Limited (Company) was incorporated on 30 March 2007 under the scheme of amalgamation of Air India Limited and Indian Airlines Limited. Erstwhile Indian Airlines Limited established (1991) a Jet Engine Overhaul Complex in Delhi (JEOC) and Air India had set up (1962) an Engine Overhaul Department in Mumbai (EOD). The Shops were certified by the Federal Aviation Authority (FAA), USA which enabled the Company to undertake the repair works of engines of other operators.

JEOC, Delhi undertakes repair/ overhaul works of JT8D and V2500 engines. The work load of JT8D engines has declined substantially since 2004-05 due to lower operation of Boeing Aircrafts and, therefore, the same has not been covered in the review. EOD, Mumbai carries out repair of PW 4000 series, GECF6-80C2/B1, GECF50C, CFM56-7B and limited repair works of GE-90 engines. The main function of the shops was to conduct mandatory and preventive maintenance of jet engines. The engine consists of several modules (sections) viz. Gear Box, Fan Module, Low Pressure Compressor (LPC), High Pressure Compressor (HPC), Diffuser, Combustor, High Pressure Turbine (HPT) and Low Pressure Turbine (LPT). The process involves disassembling the engine, cleaning of piece parts in the cleaning bay, detailed inspection, sending of parts to view room section for visual and dimensional inspection, sending of parts to repair section/outside agencies, final inspection after repair, and final assembly into modules/engine and testing of engine.

1.2 Scope of Audit

A performance audit of the Engine Overhaul Shops of the Company at Delhi and Mumbai was conducted covering the period of five years from 2004-05 to 2008-09 through test check of records maintained at these shops.

1.3 Audit objectives

The performance audit was conducted to assess:

- Utilisation of capacity for engine overhaul;

- Necessity for outsourcing of engines overhaul;
- Performance of overhauled engines;
- Utilisation of manpower; and
- Material management.

1.4 Audit criteria

The following criteria were adopted for assessing the performance of the shops:

- Annual capacity of Engine Production and achievement thereagainst;
- Agreements for hiring of engines on lease basis;
- Agenda and Minutes of Board of Directors;
- Agreements for outsourcing of repairs of company owned engines; and
- Norms fixed by the Company for completion of various maintenance activities.

1.5 Audit methodology

Records of Production Planning and Control Department, Production Department, Engineering Quality and Technical Services, Industrial Engineering Department and Material Management Department were examined. An entry conference with the Management was held on 4 August 2009. The field audit was done during the period from May 2009 to September 2009.

1.6 Audit findings

1.6.1 Capacity utilisation

1.6.1.1 JEOC, Delhi

The shop was capable to overhaul four V2500 engines every month besides carrying out rectification work. It was observed in audit that the shop achieved capacity utilisation between 67 per cent and 83 per cent during the period 2004-05 to 2008-09. As a result the Company was facing acute shortage of engines for its business operations and engines ranging from 6 to 16, in addition to 17 standby engines, were lying in the shop awaiting for overhaul during the period 2005-06 to 2008-09. The details of V2500 engines overhauled at JEOC against its capacity during the last five years are given in **Table 1.1** below:

Table 1.1

Year	Overhaul capacity	Engines removed for overhaul	Engines overhauled	Percentage of engines overhauled to capacity
2004-05	48	44	40	83.33
2005-06	48	44	34	70.83
2006-07	48	44	37	77.08
2007-08	48	41	32	66.67
2008-09	48	37	36	75.00
Total	240	210	179	

It was observed that the capacity utilisation of the shop was low during the period 2004-05 to 2008-09 and the shop could overhaul only 179 engines of 210 engines removed. Due to lower production of engines, the Company was unable to carry out its operation at optimum level and aircraft ranging from one to eleven were on ground for 1370 days during the period of review. Thus, due to failure of the shop to provide serviceable engines for business operations, the Company lost the potential revenue of approximately Rs. 291 crore.

1.6.1.2 EOD, Mumbai

The Management has considered the estimated production capacity of the EOD as 70 engines per year. The details of various types of engines (PW 4056, 4152 and 4090, GE 90, CFM 56 and CF6-80C2/B1) removed and produced during the last five years are given in **Table 1.2** below:-

Table 1.2

Year	Pending at the end of the previous year	Engines removed for repair/overhaul during the year	Engines produced during the year	Engines sent to outside parties for repair	Engines to be repaired at the end of the year
2004-05	Not Available	80	76	Not Available	Not Available
2005-06	Not Available	68	65	Not Available	16
2006-07	16	82	88	NIL	10
2007-08	10	60	54	3	13
2008-09	13	59	59	4	9
TOTAL		349	342	7	

1.6.2 Excess time taken in completion of jobs at JEOC Delhi

The Company had laid down standard hours required for various types of works viz. undress of engine, assembly/ disassembly of engines and L3 level maintenance (complete package of inspection and maintenance) for different modules. However, no standard hours have been fixed for L1 level maintenance (general visual inspection) and L2 level maintenance (repair of defects) of different modules. A review of 'Job Completed

Statement of 730 work orders out of total 2,528 work orders during the period 2004-09 revealed that 4,36,043 man hours were taken to complete 730 work orders as against prescribed 2,81,185 standard man hours which were more than 55 *per cent* of the norm. Consequently, 1,54,858 hours were consumed in excess of the laid down norms, which were equivalent to production of 34 engines (assuming L3 level maintenance of all the modules). The excess time ranging from 10.58 *per cent* (2004-05) to 168.69 *per cent* (2005-06) was taken to complete the work orders. The Company incurred Rs. 10.92 crore towards excess labour cost on account of inefficiency of the shop. The reasons for excess time taken were not on record as the Company did not carry out any variance analysis during the period.

The standard Turn Around Time (TAT) fixed by JEOC, Delhi for engine was 110 days. Audit observed that the percentage of cases where the engines were repaired beyond standard TAT ranged from 33 *per cent* to 74 *per cent* during 2005-06 to 2008-09 due to backlog and shortage of spares. Audit also observed that 25 engines were overhauled with a delay of more than 150 days beyond prescribed TAT (110 days).

The Management stated (November 2009) that no standard hours were fixed for the engine/module refurbishment due to wide variations in work scopes based on life done, distress observed and past history. The reply of the Management is not acceptable as the Company itself was carrying out variance analysis based on the standard hours till 2003-04. The Company had even observed wide variation ranging from 17 *per cent* to 291 *per cent* in the variance analysis carried out in respect of work orders closed and reflected in the Job Completion statement of January 2004 to March 2004.

1.6.3 Impact of underutilisation of shop capacity

1.6.3.1 Extra expenditure on leasing of engines

Despite maintaining a float of about 17 V2500 engines the availability of engines was in the negative zone, adversely affecting the Company's operations. Engines ranging from three (October 2005) to 18 (May 2006) were lying at JEOC for repair during September, 2005 to December, 2006. In the wake of the continuous adverse situation, the Company took three engines from International Aero Engine (IAE) on short term lease of 90 days (two in September 2005 and one in November 2005) on payment of US \$2500 per day in addition to hourly charges of US \$209 to improve the negative status of engine availability. Even after expiry of the lease period the Company was struggling for serviceable engines for its aircraft and, therefore, decided to extend the lease period of these engines. The engines taken initially for a period of three months to meet immediate requirement could be returned to the lessor after 20 months to 25 months. It was seen in audit that the Company further took one more engine on one-year lease on payment of US \$ 71,331 per month in December 2006 to ease the engine availability position. The Company incurred an extra expenditure of Rs. 34.68 crore on account of lease charges paid on four leased engines besides an expenditure of Rs. 0.28 crore on transportation thereof.

1.6.3.2 Swapping of engines

Due to acute shortage of V2500 engines for scheduled operations, the JEOC resorted to frequent swapping of engines between operating and non-operating aircraft. It was observed in audit that 131 engines were swapped due to non availability of serviceable

engines during the period 2004-05 to 2008-09. The shop incurred an extra expenditure on fuel required for testing the engine on swapping, besides expenditure on consumables and manpower, the amount of which was not ascertainable in audit.

The Management accepted the audit observation.

1.6.4 Shortfall in production due to shortage of spares

The Company was procuring spare parts of engines from International Aero Engines (IAE), the manufacturer of V2500 engines, on 60 days credit. Due to non payment of amounts payable by the Company within stipulated period, IAE imposed restrictions on supply of spares for a period of seven, four and three months during the year 2005-06, 2007-08 and 2008-09, respectively. Consequently, the engine production at JEOC was adversely affected. It was seen in audit that overdue amount payable to the supplier was merely one *per cent* to two *per cent* of the total expenditure of Company, but the same was paid after a delay of two to five months. This reflects inefficient procurement and financial planning. The Company did not take effective steps to rectify the situation despite an assurance given to the Parliament during 2006 that no payment issue shall be allowed to crop up to avoid interruption in supply of spares by IAE.

The Management stated that they could not hold inventory for two months requirement due to significant fund blockage. The reply is not convincing as 70 *per cent* to 76 *per cent* of average monthly stock held remained unutilised during the period 2006-07 to 2008-09 which was equivalent to production of five to six engines.

1.6.5 Sending of engines to outside repair agencies

The Company decided in May 2005 to outsource the repair of engines and sent 23 engines (V2500) from JEOC to foreign private agencies for repair to overcome the situation of non availability of serviceable engines. Consequently, the Company had to incur expenditure of Rs. 446.24 crore on overhaul of these engines. Out of this, an expenditure of Rs. 40.20 crore on labour, transportation, mark up on material and testing charges was avoidable had the Company repaired these engines in-house. Audit observed that considerable time was taken in obtaining approvals for repair and dispatch of the engines. The delay in sending the above engines for repair from 25 to 146 days after removal was mainly due to delayed approval of work scope. The repaired engines received back after further delay ranging from 25 days to 620 days beyond TAT due to delay in induction of engines in the shop, dispute in settlement of previous invoices and shortage of spare parts *etc.* Due to excessive delays in sending and getting back the engines, the Company failed to overcome non-availability of engines resulting in grounding of aircrafts.

The Management stated that the abnormally high removal of engines along with credit hold by IAE necessitated the outsourcing of engines for achieving normalisation of operation at the earliest. The fact remains that the total engines removal during any year under review did not exceed the shop capacity.

1.6.6 Sending of modules to outside agency despite having in house capability

It was observed in audit that despite having in house capability, JEOC got repaired 18 HPC modules from outside agencies during 2004-05 to 2007-08 at an expenditure of

Rs. 52.42 crore which included avoidable expenditure of Rs. 5.75 crore on labour, transportation and mark up on material.

1.6.7 Delay in setting up CFM 56-7b engine overhaul facility at old airport, Mumbai

The BOD of Company approved (December 2005) setting up of an overhaul facility for CFM 56-7B engine at Mumbai for providing total engine management and support to Air India Charters Limited (AICL), its subsidiary, as well as for attending third party works. The scheduled completion date of project was October 2007. The Project Report envisaged repair of 51 engines during the period ending 31 March 2009. The Company, however, commissioned the above facility at the cost of Rs. 27.33 crore in July 2008 with the delay of 8½ months. The delay was in arranging the required tools for the erection of facility and non completion of Air Conditioning and dust proofing of power plant.

Audit observed that the Company overhauled only 4 engines during the period July 2008 to March 2009 as against the projected repair of 51 engines for the period October 2007 to December 2009. The facility, thus, remained largely under-utilised.

Recommendation No. 1.1

The Company should:

- (i) **Ensure that the work is completed within the TAT for effective utilisation of capacity**
- (ii) **Fix norms for L1 and L2 level of maintenance of engine modules so as to have effective control over the utilisation of manpower.**

1.6.8 Repair of piece parts of engines

1.6.8.1 Failure to enhance capability augmentation of repair of piece parts

JEOC was set up with the objective of cost control and capability augmentation for repair of engine piece parts. It was observed in audit that the shop could not enhance enough facility to contain the repair of piece parts and continued to send items for repair to outside agency. During the period from 2004-09 it could enhance facility for repair of piece parts of V2500 engines (having 121 types of repairs of piece parts) from two to five of total piece parts. As on 31 October 2009, the number of in house repair of piece parts is four *per cent* of the total piece parts. The Company incurred an expenditure of Rs. 84.11 crore on outside repair of piece parts during 2006-09.

The Management stated that with the merger of Indian Airlines and Air India and consequential increase in the number of engines being handled, the increase in piece parts repair possibilities can be explored in the future.

1.6.8.2 Sending of irreparable components for repair to outside repair agency

The JEOC was sending engine parts without inspection to outside vendor for repair which was declared scrapped when found not repairable and returned to the Company. The to and fro transportation cost was borne by the Company. It was noticed in audit that during 2004-05 to 2008-09, 1,19,993 parts were sent to outside vendor for repair of which 47.68 *per cent* were declared scrapped. In view of the high percentage of scrap

rate, the shop should have identified the repairable parts before sending to repair agency. Thus, the expenditure incurred on transportation of these scrapped parts could have been avoided.

The Management stated that the parts are sent out despite their known to be rejected in order to explore the possibility of their retrieval. The reply is not acceptable as the Company has its own Retrieval Committee to identify the repairable parts.

1.6.9 Avoidable outsource repair of leased engines

As per the Lease Agreement entered by the Company with M/s Orix the overhaul of engines taken on lease was required to be performed by Approved Maintenance Performer and by qualified personnel acceptable to the FAA. The Company sought (August 2004) approval from the lessor to start work on the engines removed from aircraft at JEOC but the latter denied it on the pretext that JEOC was not approved by the manufacturer for warranty repairs. Consequently, the Company got repaired 23 engines, during the period 2004-09, from outside parties by incurring an expenditure of Rs. 414.39 crore which included an extra expenditure of Rs. 38.21 crore on account of labour, markup on material, transportation and testing charges. The decision of the Company to send the engines to outside parties was contrary to the agreement as it did not specify that the maintenance facility should be IAE approved warranty shop.

The Management stated that the words used in the agreement are 'Approved Maintenance Performer' which requires that the maintenance performer should be approved by the lessor. The reply is not acceptable as the agreement states that the maintenance should be performed by Approved Maintenance Performer and by qualified personnel acceptable to FAA. Thus, JEOC being FAA approved Shop was qualified for the maintenance work.

Recommendation No. 1.2

The Company should strictly enforce the terms of the lease agreement for repair of engines.

1.6.10 Performance of overhauled engines

1.6.10.1 Performance of V 2500 engines

V2500 engine consists of eight modules and are maintained on "On Condition" philosophy. Each module has specified soft life ranging from 10,000 to 24,000 flying hours at which time major refurbishment (L3 level) is done during shop visit for restoring the engine to its normal operating efficiency. A test check of the records of 266 modules removed at JEOC during the period 2005-09 for overhaul revealed that 49 modules achieved actual life ranging from 24 *per cent* to 50 *per cent* of certified soft life whereas 80 modules achieved life ranging from 50 *per cent* to 75 *per cent*. Consequently, the Company had to incur extra expenditure on the refurbishment of these modules. The extra expenditure could not be ascertained in audit as the Company was not maintaining the cost records for each overhauled module.

The Management has accepted that modules could not achieve their soft life because they were swapped frequently due to production constraints and unscheduled removals.

1.6.10.2 Early engine removal

It was seen in audit at JEOC that there was large number of unscheduled removal of engines during 2004-09 as shown below in **Table 1.3**:

Table 1.3

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Total engine removals ¹	55	56	52	45	43
Scheduled engine removals	31	21	17	11	03
Unscheduled engine removals	23	30	34	33	34
Percentage of unscheduled removal to total removal	44	62	67	75	93
In-flight shutdown	01	05	01	01	06

From the above it is seen that percentage of unscheduled removal is on increase. It highlighted poor maintenance of engines and higher maintenance cost. Further, 14 cases of In-Flight Shut Down (IFSD), excluding five cases of IFSD due to Foreign Object Damage (FOD), during the last five years endangered the safety of passengers as well as aircraft.

The Management stated that the large number of unscheduled removals were primarily due to High Pressure Compressor related issues. The reply is not acceptable as the percentage of HPC failure to total unscheduled removals was 24 *per cent* during the period.

1.6.10.3 Wasteful expenditure on improvement of HPT module

The Company carried out phoenix modification introduced by engine manufacturer M/s IAE in all of its engines at JEOC at a cost of Rs. 67.31 crore with an anticipated increase of 25 *per cent* in on-wing life of V2500 A1 engines and corresponding decrease in hourly maintenance cost of the engines. During audit it was observed that on-wing life of the engine did not increase to the assured level as is evident from 34 unscheduled engine removals due to HPT failure during the period from 2004-05 to 2008-09. As the engines were removed at shorter intervals, the benefits of reduction in maintenance cost envisaged were also not reaped.

The Management stated that post phoenix life of Nozzle Guide Vanes being more than 9000 hours; the projected 25 *per cent* increase in on-wing life was, thus, achieved. The reply is not convincing as the post phoenix on-wing life of the entire engines, should have increased from 6000 hours to 7500 hours, as claimed by IAE, but average yield of on-wing life of engines remained around 6000 hours.

1.6.10.4 Wasteful expenditure on improvement of HPC module

JEOC removed 19 engines due to HPC related distress occurred during 2004 and 2005, of which 6 were IFSD. The matter was taken up (August 2005) with IAE who recommended certain modifications in the module. Accordingly, the Company carried out all the modifications suggested in the form of Service Bulletins (SB) at a cost of Rs. 10.30 crore on almost all the engines. Even after incorporating all the SBs recommended by the engine manufacturer, the Company experienced 22 engine failures

¹ Total engine removals include scheduled engine removals, unscheduled engine removals and in-flight shutdown

during 2007 to 2009 due to distress in HPC module out of which two were IFSD. It was observed in audit that the Company did not safeguard its interest while accepting the proposed modification in case of failure of HPC Modules. Further, the Company also did not seek any support from IAE which the latter was ready to provide. The Company has further entered into an agreement with IAE in April 2007 for implementation of a 'keep the fleet flying' (KTFF) package to improve the life of HPC modules. HPC modules are now being built under this package which would cost approximately Rs. 162 crore over a period of first three years and Rs. 94.50 crore over the next seven years.

The Management stated that support to be provided by IAE was purely at their discretion. The reply is not acceptable as the engine manufacturer was ready to review the cases for support for failed engines but the Company did not pursue the matter with them.

Recommendation No. 1.3

The Company should:

- (i) Formulate and implement a comprehensive Maintenance Policy for refurbishment of engines to achieve maximum on-wing life.***
- (ii) Ensure inclusion of suitable clause in the contract to safeguard its interest in case of failure to achieve the assured result offered by the engine manufacturer on the implementation of the modification.***
- (iii) Strengthen its Quality Control Mechanism.***

1.6.11 Repairs of engines of outside parties

1.6.11.1 Delay in raising of bills

It was observed in audit that in 45 cases, JEOC raised bills on outside parties after lapse of 31 to 500 days since the closure of work order, resulting in blockage of funds. Consequently, Company suffered loss of Rs. 0.60 crore on account of interest, at the rate of eight *per cent* per annum.

1.6.11.2 Non maintenance of records of repairs

During the period 2004-05 to 2008-09, 79 engines, including Auxiliary Power Units, were repaired for outside parties. Audit observed that no records/ registers were maintained for recording actual utilisation of man / machine hours, *etc.* to carry out the repair/ overhaul of engines received from the customer. A proper control system was required to ensure that the outside jobs were carried out as per prescribed procedure and within specified time.

The Management, while admitting the audit observation, stated (November 2009) that EOD has complex operation involving 20,000 items per engine and without proper IT system, it was not possible to maintain actual utilisation of parts and manpower for carrying out shop activities.

Recommendation No. 1.4

The Company should:

- (i) **Improve the internal control system to ensure that the outside party job is carried out economically.**
- (ii) **Ensure timely realisation of dues from the customers.**

1.6.12 Inefficient utilisation of manpower

A review of the workshop labour hours utilisation at JEOC revealed that the Company paid overtime for 4,27,866 hours during the period April 2004 to March 2009. The overtime was to be allowed in exceptional cases, however, an analysis of overtime hours *vis-à-vis* number of engines produced during the period revealed that in spite of allowance of 4,27,866 overtime hours the JEOC never achieved its capacity of 48 V2500 engines in any of the years under review. It was observed that the overtime hours (1,44,861) taken to produce 40 engines in the year 2005-06 were higher by 1,223 *per cent* of the overtime hours (11,843) taken to produce almost equal number of engines (39) during the year 2008-09. It indicates that the Company was not able to utilise available labour hours efficiently.

Audit further observed that the objective of allowing overtime allowance was defeated as normal working hours to the extent of 1,38,459 were lost due to mandatory break of 11 hours² allowed to the concerned employees in terms of clause 11.4 of the Memorandum of Settlement signed (August 2002) by the Management with the Indian Aircraft Technician Association. Further, it was observed that a total of 42,516 idle hours were observed at JEOC during the period 2004-05 to 2008-09. Thus, the Company incurred an avoidable expenditure of Rs. 0.81 crore on overtime and lost 1,80,975 hours on account of night off and idle hours.

1.6.13 Non-moving and obsolete inventory

Non-moving inventory constitutes items which have not moved for a period ranging from two years to five years. As on July 2009, inventory valuing Rs. 8.65 crore was non moving at JEOC, of which inventory worth Rs. 0.40 crore constituted items not moved at all since their purchase.

In case of EOD, approximately 8000 spares pertaining to JT9D engines valuing to Rs. 70 crore were lying as obsolete items and 2394 items valuing Rs. 15.96 crore were identified as non moving engine spares as on 31 March 2009.

The Management stated (December 2009) that the list of above inventories was hosted on the Company's website for sale; however, there was no response to it.

Recommendation No. 1.5

The Company should ensure that the obsolete inventories are reviewed and segregated for appropriate disposal.

² As per Memorandum of Settlement reached on 3 August 2002 between Indian Airlines Limited and Indian Aircraft Technicians' Association, the technicians were required to report for duty after availing 11 hours break.

1.6.14 Blockage of funds due to delay in submission/late recovery of warranty claims

According to provisions of Service Policy of IAE, warranty claims for Life Limited Parts (LLP) fitted with V 2500 engines manufactured by it must be presented within 180 days after the removal of the engine or part for which warranty has been claimed.

A review of the warranty claims lodged by JEOC revealed that out of total warranty claims of Rs. 10.14 crore till September 2008, claims worth of Rs. 7.31 crore were not lodged within the stipulated period and the delay ranged from one month to 73 months over and above the stipulated period of 180 days. Failure of the Company to lodge warranty claims within the stipulated period resulted in loss of interest of Rs. 1.91 crore on delayed settlement of claims.

The Management accepted that due to infrastructural deficiencies there was delay in filing of claims.

Recommendation No. 1.6

The Company should take necessary action to lodge the warranty claims in time and obtain the claim amount at the earliest.

1.6.15 Conclusion

The capacity utilisation of JEOC was low during the period 2004 to 2009 resulting in low availability of engines for operation of aircrafts. On various occasions aircrafts had to be grounded. In order to improve the situation, the Company took engines on short term lease and also resorted to outsourcing of repair of engines. This did not help as considerable time was lost in dispatch of engines for repair and getting back overhauled engines. Further, the engines overhauled in the shop failed to give expected life in spite of implementing all the modifications recommended by the engine manufacturer. There was lack of efforts to upgrade facility to undertake in house repair of piece parts. The total financial implications amounted to Rs. 501.97 crore. Thus, the operations of JEOC, Delhi were not efficient, effective and economical.

The disposal of obsolete/non moving inventory was not done within reasonable time at EOD, Mumbai.

The matter was reported to the Ministry in February 2010; their reply was awaited (March 2010).