सत्यमेव जयते

Report of the Comptroller and Auditor General of India for the year ended March 2012

The Report has been laid on the table of the Parliament house on 18-07-2014

Union Government (Defence Services)
Air Force and Navy
No. 4 of 2014
(Compliance Audit)

CONTENTS

PREFACE

This Report for the year ended March 2012 has been prepared for submission to the President under Article 151 of the Constitution. The Report relates mainly to matters arising from test audit of the financial transactions of Ministry of Defence, Air Force, Navy, Coast Guard, associated Research and Development units and Military Engineer Services. Results of audit of Ministry of Defence, in so far as they relate to Army and Ordnance Factories, Army HQ, Ordnance Factory Board, field units of Army, Ordnance Factories, associated Research and Development units and Military Engineer Services have been included in a separate Report.

The Report includes 29 paragraphs.

The cases mentioned in the Report are among those which came to notice in the course of audit during 2011-12 and early part of 2012-13 as well as those which came to notice during earlier years, but could not be included in the previous Reports.

OVERVIEW

The total expenditure of the Defence Services during the year 2011-12 was ₹1,75,898 crore. Of this, the Air Force and Navy spent ₹46,134 crore and ₹31,270 crore respectively. The combined expenditure of the two services amounts to 44 *per cent* of the total expenditure on the Defence Services. The major portion of the expenditure of the Air Force and Navy is capital in nature, constituting almost 62.04 *per cent* of their total expenditure.

This Report contains major findings arising from the test audit of transactions of the Air Force, the Navy, Defence Research and Development Organisation, the Coast Guard and the Military Engineer Services. Some of the major findings included in the Report are discussed below.

I Unfruitful expenditure on development of a system

Due to injudicious decision to persist with a programme for development of Electronic Warfare suite sanctioned to enhance the operational capability of an aircraft, an investment of ₹156 crore was rendered largely unfruitful.

(Paragraph 2.1)

II Delay in upgradation of an aircraft

Due to delay in initiation and conclusion of the contract, facilities for upgradation of an aircraft could not be set up in time despite an investment of ₹272 crore on Transfer of Technology resulting in grounding of more than 50 *per cent* of the transport aircraft fleet.

(Paragraph 2.2)

III Avoidable expenditure in procurement of aero-engines

Despite being aware of long term requirement of aero-engines, IAF failed to project the entire requirement which resulted in an extra avoidable expenditure of ₹227 crore on procurement of 100 aero-engines.

(Paragraph 2.3)

IV Non-inclusion of variable percentage of profit in the contract for acquisition of Landing Craft Utility

The contract for acquisition of eight Landing Craft Utilities (LCUs) at a cost of ₹2169 crore, allowed a flat 10 *per cent* profit to the Shipyard. Inclusion of performance related profit in the contract would have given the Ministry control over the profit element based on the performance of the shipyard. By allowing a fixed 10 *per cent* profit element, Ministry denied itself the leverage of reducing the profit to an extent of ₹40.96 crore. Besides, provision of ₹9 crore towards Project Management Cost in the contract was unjustified.

(Paragraph 2.4)

V Avoidable expenditure on procurement of test equipment

Procurement of additional test equipment worth ₹11 crore to meet the increased work load was avoidable as the test equipment for setting up the base repair level facility at BRD had already been procured earlier which could cater to the increased work load.

(Paragraph 3.1)

VI Delay in commissioning of testers

Due to non-inclusion of commissioning clause in the contracts, testers procured at a cost of ₹5.47 crore could not be commissioned for over four years and had since been rendered unserviceable.

(Paragraph 3.2)

VII Directorate of Mechanical Transport, Air Headquarters

Directorate of Mechanical Transport (DMT) at Air HQ is responsible for planning, forecasting, provisioning and budgeting in respect of ranges of vehicles and their associated equipment. During detailed audit of DMT Air HQ and units thereunder from April 2012 to September 2012, Audit observed that 408 Aircraft Support Vehicles (ASVs) costing ₹132.09 crore planned (2007) in the backdrop of Ops Parakaram could not be procured. Besides, 37 weapon loader trolleys

valuing ₹6.63 crore procured for SU-30 units were found unsuitable, thereby depriving these units of a vital ASV. The newly introduced Common User Vehicles (CUVs) were diverted to use for other than the intended purpose. Delay in outsourcing of staff cars by Air Force Station, New Delhi despite Ministry's insistence, deprived IAF of envisaged (2008) annual savings of ₹1.95 crore on outsourcing of staff cars.

(Paragraph 3.3)

VIII Availability of airfield infrastructure/runways in Indian Air Force

Airfield is an area of land comprising runways, taxi-tracks, dispersals, blast pens and entire zone of safety surrounding the area which is used for the operation of the aircraft. During scrutiny of records pertaining to ten runways resurfacing projects, Audit observed that there were cases of delays in sanction of works for runways resurfacing and blast pens. There were also delays in execution of works especially due to change of design sought after the sanction leading to time and cost overruns. Runways at three stations were not fit for operation of fighter aircraft. In most of the cases, the work executed by the contractor was of substandard quality and supervision by MES was also poor.

(Paragraph 3.5)

IX Blocking of funds due to improper planning and execution of work

Sanction of work for re-routing of electrical lines without obtaining necessary consent from the Revenue Authorities led to blocking of funds amounting to ₹6.14 crore from the year 2008.

(Paragraph 3.6)

X Avoidable payment of Income Tax

Failure of MoD to adhere to the contractual provision for availing of concessions on duties resulted in avoidable payment of ₹69.40 crore on account of Income Tax.

(Paragraph 3.7)

XI Allotment of office space to a private organisation

Irregular allotment of office space to a private organisation by DRDO led to a revenue loss of ₹5.67 crore to the State.

(Paragraph 3.8)

XII Recoveries at the instance of Audit

At the instance of Audit, the IAF authorities recovered an irregular payment of ₹0.70 crore made to the IAF personnel and a private firm. Principal Controller of Defence Accounts (Navy) recovered ₹1.39 crore from a private firm as liquidated damage for the late delivery of fuel barges, only after being pointed out by Audit**.**

(Paragraph 3.10 and 4.10)

XIII Inadequacies in the refit of a submarine

Failure on the part of the Indian Navy to synchronise the procurement of 204 types of spares necessary for undertaking the refit of a submarine, in 2006 affected the quality and completeness of the refit. Additionally, the belated procurement of only 89 spares at a later date led to an extra expenditure of ₹18 crore.

(Paragraph 4.1)

XIV Unfruitful expenditure of ₹33.91 crore on Maintenance Dredging

Maintenance Dredging is an annual activity undertaken to maintain a minimum depth in Naval channels and areas for the safe navigation of ships, submarines and other crafts. Even though dredging in monsoon was not a viable option, dredging during the peak monsoon due to delay in tendering and conclusion of the contract, rendered an expenditure of ₹33.91 crore unfruitful.

(Paragraph 4.6)

XV Unfruitful expenditure on construction of a Hangar

Improper selection of the contractor, subsequent poor contract management and faulty design of the structure resulted in an unfruitful expenditure of ₹6.72 crore in construction of a hangar at

INS Rajali, Arakkonam. Even after lapse of more than a decade, the operational requirement at INS Rajali, for an additional hangar, could not be met.

(Paragraph 4.8)

XVI False claim of Dip Money

All qualified divers of the Indian Navy, belong to a specialised cadre, and are entitled to "Diving Allowance" and "Dip Money". However, at INDT (Delhi), weak internal controls, improper document maintenance and falsification of official records, led to an incorrect payment of ₹10.24 lakh as Dip Money.

(Paragraph 4.9)

XVII Excess payment of Island Special Duty Allowance in Navy

Island Special Duty Allowance (ISDA) for the personnel serving at the Andaman and Nicobar Islands, is not admissible during leave / training beyond 15 days at a time and beyond 30 days in a year and during suspension and joining time. However incorrect interpretation of the Government Orders relating to regulation of payment of ISDA by the Navy led to an overpayment of ₹3.29 crore. Further, despite being aware of this irregularity, the Navy did not take any steps to rectify the situation.

(Paragraph 4.11)

XVIII Avoidable expenditure on Short Refit of Indian Coast Guard Ship Vikram

As per the Coast Guard Instructions for ships awaiting decommissioning/disposal, only essential repairs termed as Essential Repairs Dry Docking (ERDD) should be undertaken to ensure safe floatation till disposal of the vessel. Contrary to this, an expensive Short Refit (SR) was carried out at a cost of ₹5.66 crore on Indian Coast Guard Ship Vikram due to lack of co-ordination between the two Directorates of ICGHQ which was avoidable.

(Paragraph 5.1)

XIX Qualitative Requirements based projects at Naval DRDO laboratories

Scrutiny of 24 projects aimed at achieving indigenization, undertaken by Navy affiliated DRDO laboratories at a cost of ₹731.51 crore revealed that 21 projects i.e. 87 *per cent*, did not adhere to the original time frame for completion. Seven projects witnessed cost overruns ranging from 34 to 348 *per cent*. Scrutiny of 12 projects related to critical naval technologies, showed delays, technological obsolescence, difference of perceptions between Navy and DRDO on success criteria, delayed communication of QRs and frequent changes in QRs by Navy contributing to failure in induction of indigenously developed capability.

(Paragraph 6.1)

CHAPTER I: INTRODUCTION

1.1 About the Report

The Report relates to matters arising from the Compliance Audit of the financial transactions of Ministry of Defence and its following organisations:

- Indian Air Force (IAF)
- Indian Navy (IN)
- Indian Coast Guard
- Defence Research and Development (R&D) Organisation of the Ministry of Defence and its laboratories dedicated primarily to IAF/IN
- Defence Accounts Department dealing with IAF/IN
- Military Engineer Services (MES) dealing with IAF/IN

Transactions relating to Air Force are audited by the office of the Principal Director of Audit, Air Force [PDA (AF)], New Delhi and the audit of transactions in respect of Navy/Coast Guard are carried out by the office of the Principal Director of Audit, Navy, [PDA (N)], Mumbai.

The audit conducted by these two offices is of three distinct types: Financial Audit, Compliance Audit and Performance Audit.

Financial Audit is the review of financial statements of an entity that seeks to obtain an assurance that the financial statements are free from material misstatements and present a true and fair picture.

Compliance Audit scrutinises transactions relating to expenditure, receipts, assets and liabilities of the audited entities to ascertain whether the provisions of the Constitution of India, applicable laws, rules, regulations and various orders and instructions issued by the competent authorities are being complied with.

Performance Audit is an in-depth examination of a programme, function, operation or the management system of entity to assess whether the entity is

achieving economy, efficiency and effectiveness in the employment of available resources.

This Report relates to matters arising from the Compliance Audit and contains findings pertaining to capital and revenue acquisitions, installation/ upgradation of systems and work services. Total financial value of cases commented upon in this Report is ₹2650.34 crore. A brief financial analysis of the expenditure incurred on the Air Force, Navy, R&D (related to Air Force and Navy) and Coast Guard as a part of the over-all defence budget of the country has also been included.

1.2 Authority for audit

Article 149 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 govern the scope and extent of audit. Detailed methodology of audit and reporting is prescribed in the 'Regulations of Audit and Accounts, 2007'.

1.3 Planning and conduct of audit

Audit areas are prioritised through an analysis of risks so as to assess their criticality in key operating units. Expenditure incurred, operational significance, past audit results and internal control issues are amongst the prime factors which determine the severity of the risks. This exercise in turn guides the formulation of the annual audit programme. The number of units selected for audit is determined by matching the high-risk areas with available resources. Besides, high-value capital acquisitions and procurements are audited by specially constituted dedicated teams.

In general, interaction with the audited entity is encouraged from the initial stage in the auditing process. Audit findings are communicated during discussions at the end of an audit exercise and followed up in writing through Local Test Audit Reports/Statements of Case. The response from the audited entity is considered and results in either settlement of the audit observation or referral to the next audit cycle for compliance. Some of the more serious irregularities are processed for inclusion in the Audit Reports which are submitted to the President of India under Article 151 of the Constitution of India, for laying them before each House of Parliament.

At present, the audit of these two offices comprises of 850 units. During 2011-12, audit of 195 units/formations was carried out by utilising 8489 man days.

1.4 Internal control and co-ordination between Internal and External audit

The Finance Division of the Ministry of Defence is headed by the Secretary (Defence/Finance)/Financial Adviser (Defence Services) (FADS) who is responsible for financial scrutiny, vetting, advice and concurrence of all proposals of the Ministry of Defence. FADS is also responsible for internal audit and for accounting of the defence expenditure. Internal financial advice is provided both at the Service Headquarters level as also at levels of Command Headquarters and other units. Internal financial control is further aided by periodic internal audit by the Controller General of Defence Accounts (CGDA), the Head of the Defence Accounts Department, who functions under the FADS. The Principal Controllers of Defence Accounts, Air Force and Navy functioning under CGDA are located at Dehradun and Mumbai respectively. They are responsible for internal audit, financial advice at unit level and for scrutiny, payments and accounting of all personnel claims and bills for supplies and services rendered, construction, repair works, miscellaneous charges etc. received from Air Force and Navy/Coast Guard units.

The internal audit is expected to ensure effective implementation of the rules, procedures and regulations enunciated in the Defence Procurement Procedure, Manuals, Codes, etc. The offices of PDA (AF) and PDA (N) actively seek assistance and co-operation from internal audit in examination and scrutiny. Internal auditors have to carry out 100 *per cent* checks. The external/statutory audit bases its audit on sample/test check. The Inspection Reports (IRs) generated by external audit on the basis of local audit are issued to the audited entities as well as to their internal auditors i.e. Defence Accounts Department. These IRs are pursued to their logical conclusion after ascertaining the views of the internal auditors. Draft paragraphs proposed to be included in the Audit Report are sent to the Defence Secretary. Simultaneously, a copy is also forwarded to CGDA. The Ministry furnishes its response only after vetting by the FADS.

1.5 Profile of audited entities

1.5.1 Organisation – Key responsibilities

The Ministry of Defence at the apex level, frames policies on all defence related matters in consultation with the Finance Division. The Ministry is divided into four departments, namely Department of Defence, Department of Defence Production, Department of Research and Development and

Department of Ex-Servicemen Welfare. Each department is headed by a Secretary. The Defence Secretary functions as the Head of the Department of Defence and is also responsible for coordinating the activities of other departments.

The Indian Air Force is headed by the Chief of the Air Staff. Air Headquarters (Air HQ) is the apex body and chief management organisation of the Indian Air Force. The ultimate and overall administrative, operational, financial, technical maintenance and control of IAF rests with Air HQ. Operational and maintenance units of IAF normally consist of wings and squadrons, signal units, base repair depots and equipment depots.

The Indian Navy is headed by the Chief of the Naval Staff. Naval Headquarters (NHQ) is the apex body and chief management organisation and is responsible for command, control and administration of the Indian Navy. Operational and maintenance units of Indian Navy consist of warships and submarines, dockyards, naval ship repair yards, equipment depots and material organisations.

The Coast Guard was created to protect the country's vast coastline and offshore wealth. The Director General, Coast Guard exercises general superintendence, direction and control of the Coast Guard.

Military Engineer Services (MES) is one of the largest Government construction agencies. Engineer-in-Chief is the head of the MES. The MES is responsible for conclusion of contracts, execution of work services and maintenance of existing buildings of the Armed Forces. It works under the Engineer-in-Chief Branch of Army Headquarters.

The Defence Research and Development Organisation undertakes design and development of weapon systems and equipment in accordance with the expressed needs and the qualitative requirements laid down by the Services. Certain laboratories are dedicated exclusively to Air Force and Navy like the Gas Turbine and Research Establishment (GTRE), Electronics and Radar Development Establishment (LRDE), Centre for Airborne System (CABS), Naval Science and Technological Laboratory (NSTL), Naval Physical and Oceanographic Laboratory (NPOL) and Naval Materials Research Laboratory (NMRL), etc. These organisations also render scientific advice to the Service Headquarters. They work under the Department of Defence Research and Development of the Ministry of Defence.

The Defence Accounts Department is headed by the Controller General of Defence Accounts who provides services to the armed forces in terms of financial advice and accounting of defence services receipts and expenditure as well as defence pensions.

1.6 Significant audit observations

Audit has over the years, commented on many critical areas of defence pertaining to Indian Air Force, Indian Navy, Indian Coast Guard and dedicated R&D projects. The Ministry of Defence, on its part, has taken several measures in response to these observations. An important step taken to improve procurement procedures has been the introduction of Defence Procurement Procedure and Defence Procurement Manual and their regular updation.

The present Audit Report points out significant deficiencies/shortcomings in the procurement processes followed- both under Capital and Revenue Heads - by the Ministry of Defence as well as by the Services. The Report highlights cases where there have been deviations from the prescribed procedure. The acquisition process lacked proper planning, effective price negotiation and proper monitoring. Due to delay in initiation and conclusion of the contract, facilities for upgradation of an aircraft could not be set up in time despite an investment of ₹272 crore on Transfer of Technology (Paragraph 2.2). Improper decision for development of EW suite to enhance the operational capability of an aircraft led to an investment of ₹156 crore being rendered largely unfruitful (Paragraph 2.1). IAF failed to project the long term requirement of aero-engines resulting in extra avoidable expenditure of ₹227 crore (Paragraph 2.3). Testers procured at a cost of ₹5.47 crore could not be commissioned due to non inclusion of commissioning clause in the contract (Paragraph 3.2). Another case in point was non-inclusion of the variable percentage of profit in the contract for acquisition of LCUs which led to loss of leverage of ₹40.96 crore over M/s GRSE. Besides, provision of ₹9 crore towards Project Management Cost in the contract was unjustified (Paragraph 2.4).

The Report also highlights cases involving substantial expenditure in which either the procurement failed to achieve its intended objectives due to lack of synergy in planning or the procurement had been delayed. Audit found that infrastructure worth ₹2.23 crore for housing the radars could not be utilized due to change in the induction plan (Paragraph 3.4). It was detected that, failure on the part of Navy to synchronize the procurement of spares with the refit of a submarine coupled with delay on the decision to procure spares affected the quality and completeness of the refit of a submarine. Besides,

procurement of 89 spares at a later date led to an avoidable expenditure of ₹18 crore (Paragraph 4.1). Failure on the part of Indian Coast Guard to dovetail the procurement of Inverters and INS GPS with surveillance radars resulted in an extra expenditure of ₹2.87 crore (Paragraph 5.2)

Instances of violation of contractual terms and disregard for instructions have also been reported. Failure of the Ministry to adhere to the contractual provision for availing of concessional duties resulted in avoidable payment of ₹69.40 crore on account of Income Tax (Paragraph 3.7). The procurement of coffee was made in deviation of the prescribed procedure which denied a level playing field to the prospective vendors, resulting in an avoidable expenditure of ₹53 lakh (Paragraph 4.4). Similarly, an extra expenditure of ₹73 lakh was incurred on transportation of Arming devices due to Navy's injudicious decision of accepting the change in delivery point from CIP Mumbai airport basis to FOB ex-Italian port basis (Paragraph 4.3). In contravention of contractual conditions, Navy failed to revise the delivery dates in a contract and instead advised the PCDA (Navy) to refund the Liquidated Damages of ₹37.98 crore (Paragraph 4.5).

Several cases have been highlighted where greater vigil and promptness in decision making on the part of the department was required. Procurement of additional test equipment worth ₹11 crore was avoidable as the test equipment for setting up the base repair level facility had already been procured (Paragraph 3.1). During detailed audit of Directorate of Mechanical Transport (DMT) Air HQ and units thereunder from April 2012 to September 2012, Audit observed that 408 Aircraft Support Vehicles (ASVs) costing ₹132.09 crore planned (2007) in the backdrop of Ops Parakaram could not be procured. Besides, 37 weapon loader trolleys valuing ₹6.63 crore procured for SU-30 units were found unsuitable, thereby depriving these units of a vital ASV (Paragraph 3.3). Acceptance of a non-functional Air Conditioning Plant, procured by Navy at a cost of ₹1.94 crore, without Factory Acceptance Trials led to its continued disuse since its installation in August 2009. The Plant continued to face a large number of defects and was yet to be commissioned, adversely affecting the habitability onboard (Paragraph 4.2). Delayed conclusion of contract for dredging of naval channels coupled with the fact

that the Maintenance Dredging was conducted during the peak monsoon of 2010 led to an unfruitful expenditure of ₹33.91 crore (Paragraph 4.6). Weak controls and falsification of official records at Indian Naval Diving Team (Delhi), equipped for undertaking practice diving by naval divers, led to an incorrect payment of ₹10.24 lakh on account of Dip Money to 196 naval divers which is now being recovered (Paragraph 4.9). Incorrect interpretation of the Government orders by the Navy, relating to regulation of payment of Island Special Duty Allowance by the Navy led to an excess payment of ₹3.29 crore (Paragraph 4.11). Lack of co-ordination between two Directorates at the Indian Coast Guard Headquarters led to undertaking of a Short Refit of an ageing ship ICGS Vikram eventhough it was marked for decommissioning. This in turn led to an avoidable expenditure of ₹5.66 crore on the Short Refit (Paragraph 5.1). Indian Coast Guard authorities also did not carefully exercise the option clause for an Advance Offshore Patrol Vessel which led to an avoidable extra expenditure of ₹1.75 crore (Paragraph 5.3).

The Report also highlights the need to strengthen work services. Instances of works being sanctioned, ignoring the laid down norms have been brought out. Audit scrutinized records pertaining to ten runway resurfacing projects valuing ₹693.39 crore and observed delays in sanctioning and execution of works for runway resurfacing and blast pens involving time and cost overrun. Runway at three Air Force Stations were not fit for operation of fighter aircraft (Paragraph 3.5). Air HQ accorded a sanction for re-routing of electrical lines without obtaining consent from the Revenue Authorities which led to the blocking of funds amounting to ₹6.14 crore (Paragraph 3.6). A Shopping Complex at Naval Station, Karanja was created at an estimated cost of ₹2.87 crore in contravention of the provisions of the Scales of Accommodation for Defence Services (SADS) 1983 (Paragraph 4.7). Improper selection of a contractor and faulty design of a hangar resulted in unfruitful expenditure of ₹6.72 crore besides impacting the operational preparedness of the aircrafts due to non-availability of the hangar (Paragraph 4.8). A recovery of ₹2.09 crore due to irregular payment of allowances made to IAF personnel and liquidated damages from firms was effected at our instance (Paragraphs 3.10 and 4.10).

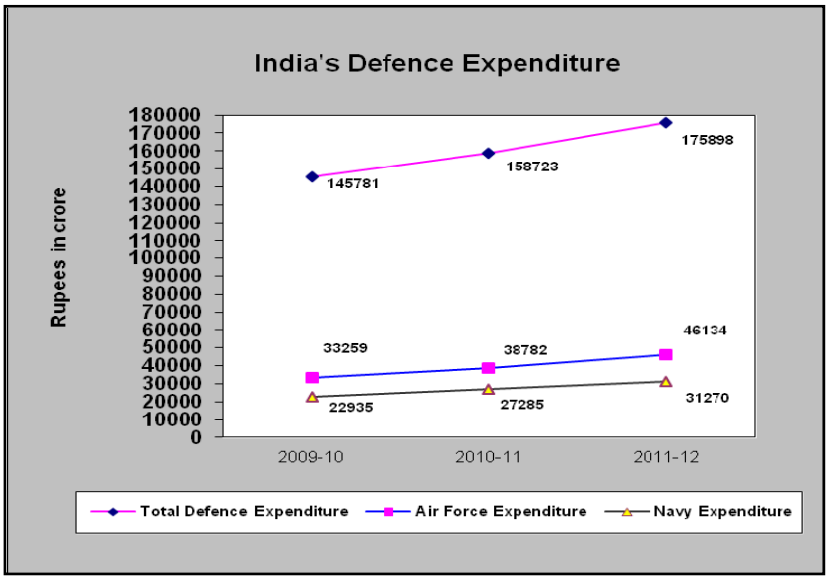
1.7 Financial aspects relating to Air Force and Navy

India's Defence Budget is broadly categorised under Revenue and Capital expenditure. While Revenue expenditure includes Pay and Allowances, Stores, Transportation and Work Services, etc. Capital expenditure covers expenditure on acquisition of new weapons and ammunition and replacement of obsolete stores.

The Defence expenditure increased by 10.82 *per cent* from ₹1,58,723 crore in 2010-11 to ₹1,75,898 crore in 2011-12. The share of the Indian Air Force and the Indian Navy in the total expenditure on Defence Services in 2011-12 was ₹46,134 crore and ₹31,270 crore respectively, which together constituted approximately 44 *per cent*.

1.7.1 Defence Expenditure

The Defence expenditure, as depicted above, does not include the expenditure on the pension paid to retired defence personnel and expenditure incurred on Defence Accounts Organisation, Defence Estates Organisation, Secretariat of the Ministry of Defence, Defence Canteens and the Coast Guard Organisation. As a percentage of GDP, the defence expenditure has shown a downward trend during this period from 2.12 *per cent* to 1.83 *per cent* as shown in the graph below.



Historically, Revenue expenditure accounts for the bulk of the defence budget. Out of the total Defence expenditure, the share of Revenue expenditure has gone down from 64.94 *per cent* in 2009-10 to 61.40 *per cent* in 2011-12, while the share of capital expenditure has gone up from 35.06 *per cent* to 38.60 *per cent* during the same period as shown in the following Table.

Defence Expenditure

(₹ in crore)

Year	Annual Expenditure			Percentage increase over previous year	Expenditure as percentage of CGE	Expend-iture as percentage of GDP
	REVENUE	CAPITAL	TOTAL			
2009-10	94,669	51,112	1,45,781	23.53	13.84	2.19
2010-11	96,667	62,056	1,58,723	08.87	12.87	1.98
2011-12	1,07,996	67,902	1,75,898	10.82*	13.10	1.90

CGE - Central Government Expenditure

1.7.2 Air Force and Navy Expenditure

The total expenditure incurred by the Indian Air Force and Navy during 2009-2012 ranged between 38.55 and 44 *per cent* of the total defence expenditure. In the year 2011-12, while the expenditure of the Indian Air Force increased by 18.96 *per cent* from ₹38,782 crore to ₹46,134 crore, the expenditure of the Indian Navy increased by 14.60 *per cent* from ₹27,285 crore to ₹31,270 crore, as compared to the previous year. The distribution of Defence expenditure is depicted in the following Table.

(₹ in crore)

Year	DISTRIBUTION OF DEFENCE EXPENDITURE						
	Army	Air Force	Navy	Ordnance Factories	R&D	Others	Total
2009-10	77,556	33,259	22,935	3,521	8,510	Nil	1,45,781
2010-11	80,830	38,782	27,285	1,532	10,197	97	1,58,723
2011-12	86,803	46,134	31,270	1,717	9,938	36	1,75,898

1.7.3 Air Force Expenditure

A broad summary of the expenditure of the Indian Air Force is given in the Table below.

Air Force Expenditure

(₹ in crore)

Year	Total	Percentage change over previous year	As a percentage of total Defence Expenditure	Revenue	Capital
2009-10	33,259	(+)11.45	22.81	14,708	18,551
2010-11	38,782	(+)16.60	24.43	15,179	23,603
2011-12	46,134	(+)18.96	26.23	17,322	28,812

1.7.3.1 Capital Expenditure

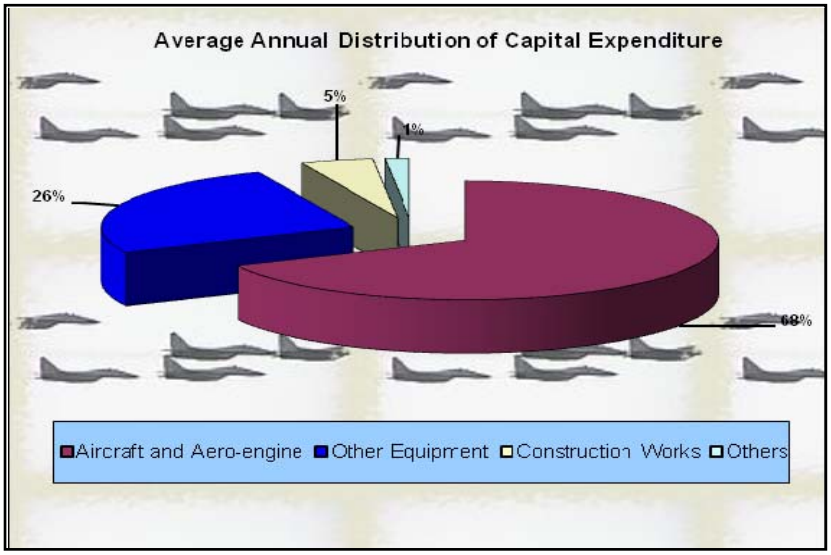
The Capital expenditure on the Indian Air Force rose by nearly 55.31 *per cent* during 2009-10 to 2011-12. In absolute terms, Capital expenditure increased from ₹18,551 crore in 2009–10 to ₹28,812 crore in 2011-12.

The Capital expenditure of the Indian Air Force was mainly incurred on acquisition of new aircraft and modernisation/upgradation of the existing aircraft. The average annual distribution of expenditure over the different categories for the last three years (2009-10 - 2011-12) for the Indian Air Force is depicted below in the table as well as in the graph given below.

Capital Expenditure

(₹ in crore)

Year	Aircraft and Aero-engine	Construction work	Other equipment	Others	Total
2009-10	12,097	905	5,317	232	18,551
2010-11	16,094	1,158	6,039	312	23,603
2011-12	20,274	1,153	6,788	597	28,812



1.7.3.2 Revenue Expenditure

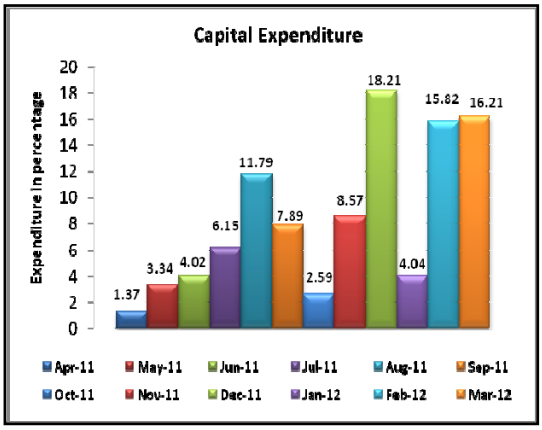
During 2009-10 to 2011-12, Revenue expenditure of the Indian Air Force increased by 17.77 *per cent* from ₹14,708 crore in 2009-10 to ₹17,322 crore in 2011-12. The Revenue expenditure of the Indian Air Force was mainly incurred on stores and special project, transport, works and pay and allowances. The average annual distribution of expenditure over different categories for the last three years is depicted below.

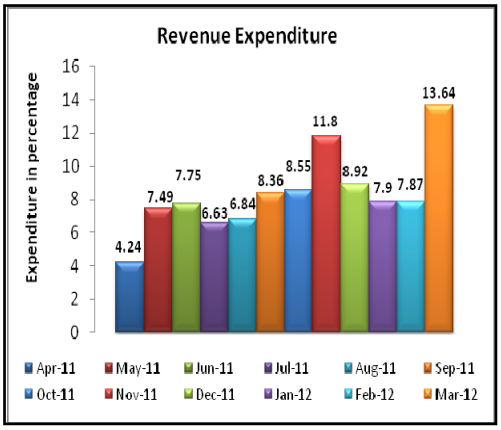
Revenue Expenditure

(₹ in crore)

Year	Pay and allowances	Stores and special project	Works	Transport	Others	Total
2009-10	6,971 (47%)	5,640 (38%)	1,560 (11%)	358 (3%)	179 (1%)	**14,708**
2010-11	6,856 (45%)	5,775 (38%)	1,692 (11%)	620 (4%)	236 (2%)	**15,179**
2011-12	7,532 (44%)	6,931 (40%)	1,800 (10%)	763 (4%)	296 (2%)	**17,322**

The flow of Capital and Revenue expenditure during the year 2011-12 is indicated below.





Scrutiny of expenditure revealed that there was a substantial increase in the Capital expenditure of the Indian Air Force in the month of December 2011. The Indian Air Force incurred about 18.21 *per cent* of the Capital expenditure in the month of December 2011 and 16.21 *per cent* in the March 2012 alone and 36.06 of the Capital expenditure in the last quarter of the financial year. This shows poor expenditure management by the Air Force which is in deviation from the guidance of the Ministry of Finance which states that expenditure during the month of March should be limited to 15 *per cent* of budget estimates, and the last quarter spending should not be more than one third of the budget. The flow of Revenue expenditure also fluctuated considerably over the months.

1.7.4 Indian Navy Expenditure

A broad summary of the expenditure of the Indian Navy is given in the Table below.

Navy Expenditure

(₹ in crore)

Year	Total	Percentage change over previous year	As a percentage of total Defence Expenditure	Revenue	Capital
2009-10	22,935	(+)31.76	15.73	9,587	13,348
2010-11	27,285	(+)18.96	17.19	10,145	17,140
2011-12	31,270	(+)14.60	17.78	12,059	19,211

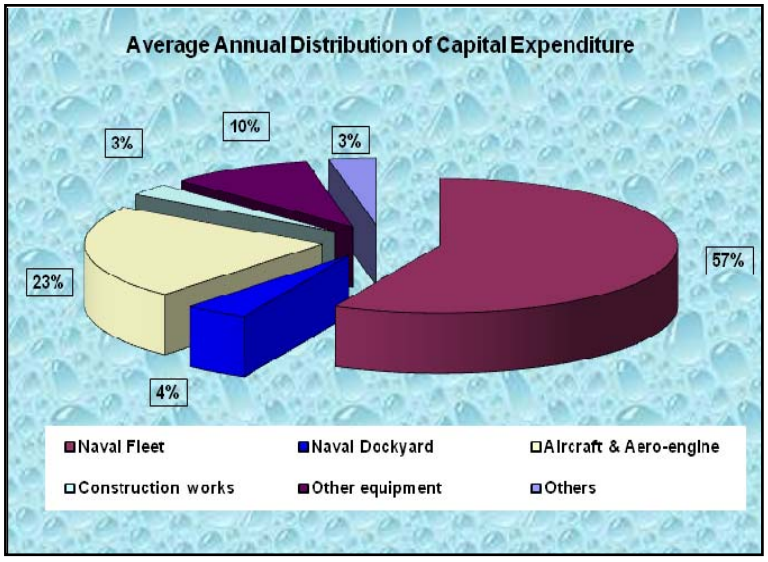
1.7.4.1 Capital Expenditure

The Capital expenditure of the Indian Navy increased by 12.08 *per cent* primarily on account of acquisition/construction/upgradation. The average annual distribution of expenditure over different categories for the last three years is depicted below in the Table as well as in the graph.

Capital Expenditure

(₹ in crore)

Year	Naval Fleet	Naval Dockyard	Aircraft and Aero-engine	Const-ruction Works	Other Equip-ments	Others	Total
2009-10	7,460	720	3,603	308	868	389	13,348
2010-11	10,620	720	3,187	637	1,578	398	17,140
2011-12	10,320	648	4,336	515	2,583	809	19,211



1.7.4.2 Revenue Expenditure

During 2009-10 to 2011-12, the Revenue expenditure of the Indian Navy increased by 25.78 *per cent* from ₹9,587 crore in 2009-10 to ₹12,059 crore in 2011-12. The Revenue expenditure of the Indian Navy was mainly incurred on

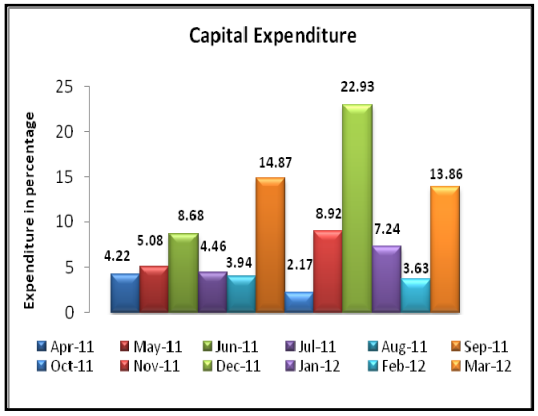
stores and special project, transport, works, repairs and refit of aircraft carriers/frigates/other warships and pay and allowances. The average annual distribution of expenditure over different categories for the last three years is depicted below.

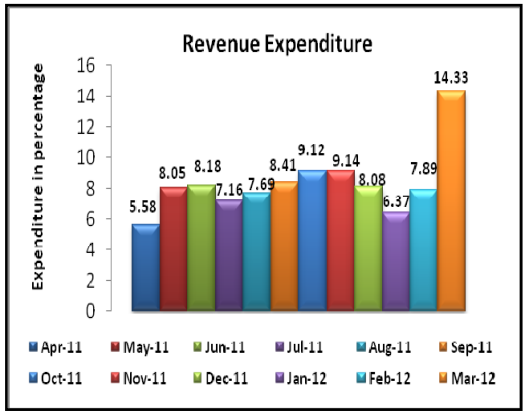
Revenue Expenditure

(₹ in crore)

Year	Pay and allow-ances	Stores	Works	Trans-port	Repair/ Refit	Others	Total
2009-10	3,971 (41%)	2,957 (31%)	645 (7%)	233 (2%)	572 (6%)	1,209 (13%)	**9,587**
2010-11	3,731 (37%)	3,437 (34%)	701 (7%)	288 (2%)	606 (6%)	1,382 (14%)	**10,145**
2011-12	4,508 (37%)	4,173 (35%)	763 (6%)	353 (3%)	768 (6%)	1,494 (12%)	**12,059**

The flow of capital and revenue expenditure during the year 2011-12 is indicated below.





Scrutiny of expenditure revealed that a substantial portion of capital expenditure was incurred by the Indian Navy in the month of December 2011. Navy incurred about 22.93 *per cent* of the capital expenditure in the month of December 2011 alone and 24.73 *per cent* of the capital expenditure in the last quarter of the financial year.

1.8 Coast Guard organisation

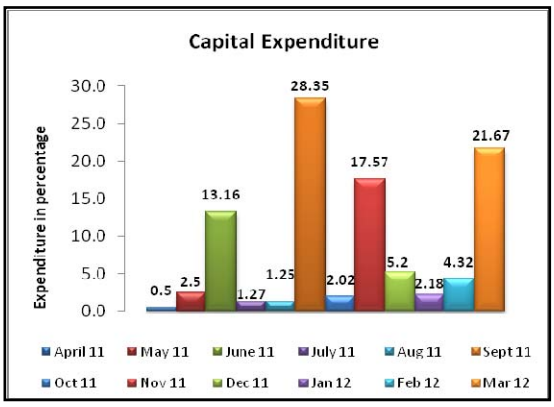
The budgetary allotments and expenditure incurred during 2009-10 to 2011-12 are tabulated below.

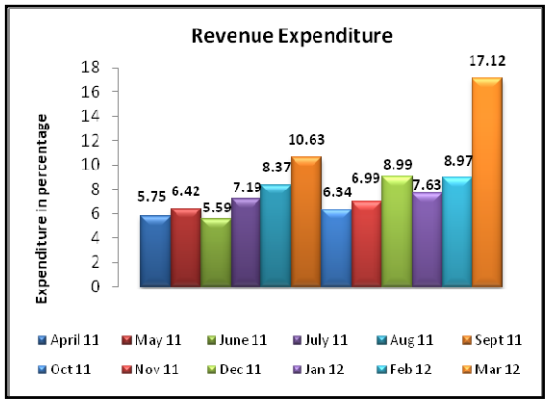
Coast Guard Expenditure

(₹ in crore)

Year	Budget Estimates			Final Grant/ Appro-priation	Expenditure			Percent-age of BE which could not be utilised
	Capital	Revenue	Total		Capital	Revenue	Total	
2009-10	1,300.42	604.37	1,904.79	1,525.72	908.05	621.10	1,529.15	19.72
2010-11	1,100.00	882.45	1,982.45	2,016.06	1200.78	813.57	2,014.36	(-) 01.61
2011-12	1,600.00	890.94	2,490.94	2,532.88	1,575.38	925.84	2,501.22	(+) 0.41

The flow of Capital and Revenue expenditure during the year 2011-12 is indicated below.





Scrutiny of expenditure revealed that a substantial portion of Capital expenditure was incurred by the Coast Guard in the month of March 2012. The Coast Guard incurred about 21.67 *per cent* of the Capital expenditure in the month of March 2012 alone and 28.17 *per cent* of the capital in the last quarter of the financial year. This reflected poor expenditure management by the Coast Guard. Revenue expenditure also fluctuated considerably over the months.

1.9 Receipts of the Air Force, Navy and Coast Guard

The details of receipts and recoveries pertaining to the Indian Air Force and the Indian Navy and the Coast Guard during the three years ending 2011-12 for the services that they provided to other organisations/departments are given in the Table below.

Revenue Receipt

(₹ in crore)

Year	Receipt and Recoveries in respect of Air Force	Receipt and Recoveries in respect of Navy	Receipt and Recoveries in respect of Coast Guard
2009-10	468.13	241.30	31.09
2010-11	592.92	175.00	13.33
2011-12	619.38	200.00	06.73

1.10 Appropriation and expenditure

The summarised position of appropriation and expenditure during 2009-10 to 2011-12 in respect of the Air Force and the Navy is reflected in the Table below.

Appropriation and Expenditure

(₹ in crore)

AIR FORCE									
	Final Grant	**Actual Expend-iture**	**Total Excess/ Savings (+) / (-)**	**Final Grant/**	**Actual Expend-iture**	**Total Excess/ Savings (+) / (-)**	**Final Grant/**	**Actual Expend-iture**	**Total Excess/ Savings (+) / (-)**
REVENUE	**2009-2010**			**2010-11**			**2011-12**		
Voted	15,271.84	14,707.05	(-)564.79	15,802.41	15,177.70	(-) 624.71	16,753.53	17,321.43	(+)567.90
Charged	2.91	1.170	(-)1.74	2.13	1.00	(-) 1.13	3.23	0.58	(-)2.65
CAPITAL									
Voted	18,624.97	18,542.76	(-)82.21	23537.99	23575.91	(+) 37.92	28,253.82	28,766.24	(+)512.42
Charged	11.10	8.01	(-)3.09	26.77	27.66	(+) 0.89	51.36	45.84	(-)5.52
Total	**33,910.82**	**33,258.99**	(-) **651.83**	**39,369.30**	**38,782.27**	**(-) 587.03**	**45,061.94**	**46,134.09**	(+)1,072.15

NAVY									
REVENUE	**2009-2010**			**2010-11**			**2011-12**		
Voted	9,435.70	9,586.21	(+)150.51	10002.52	10141.36	(+)138.84	12,335.02	12,057.82	(-)277.2
Charged	4.23	0.88	(-)3.35	7.45	3.33	(-)4.12	11.91	0.91	(-)11.00
CAPITAL									
Voted	13,284.33	13,272.36	(-)11.97	16898.32	17136.09	(+) 237.77	17,920.69	19,210.86	(+)1,290.17
Charged	74.87	75.45	(+) 0.58	6.95	4.08	(-)2.87	1.45	0.66	(-)0.79
Total	**22,799.13**	**22,934.90**	**(+) 135.77**	**26915.24**	**27284.86**	**(+)369.62**	**30,269.07**	**31,270.25**	**(+)1,001.18**

An analysis of the Appropriation Accounts, Defence Services for each of the three years has been included in the Report of the Comptroller and Auditor General of India for the relevant years, Union Government – Accounts of the Union Government.

1.11 Audit impact

1.11.1 Response of the Ministry to Draft Audit Paragraphs

On the recommendations of the Public Accounts Committee (PAC), the Ministry of Finance (Department of Expenditure) issued directions to all the Ministries in June 1960 to send their response to the Draft Audit Paragraphs proposed for inclusion in the Report of the Comptroller and Auditor General of India within six weeks.

The Draft Paragraphs proposed for inclusion in this Report were forwarded to the Secretary, Ministry of Defence between January 2013 and August 2013 through demi-official letters drawing attention to the audit findings and requesting a response within six weeks.

Despite the instructions of the Ministry of Finance issued at the instance of the PAC, the Ministry did not furnish replies to 18 Paragraphs out of 29[1] Paragraphs included in this Report. Thus, the response of the Ministry could not be included in respect of these Paragraphs.

[1] The introductory remarks included in Chapter I of this Report were not forwarded to the Ministry for their comments.

1.11.2 Action Taken Notes on Audit Paragraphs of earlier Reports

With a view to enforce accountability of the executive in respect of all issues dealt with in various Audit Reports, the Public Accounts Committee desired that Action Taken Notes (ATNs) on all Paragraphs pertaining to the Audit Reports for the year ended 31 March 1996 onwards be submitted to them, duly vetted by audit, within four months from the laying of the Report in Parliament.

Review of outstanding ATNs on Audit Paragraph relating to the Air Force, Navy and Coast Guard as on 31 December 2013 showed that the Ministry had submitted the initial ATNs in respect of all Paragraphs included in the Audit Reports up to and for the year ended March 2011.

1.11.3 Outcome

Findings of earlier Reports have resulted in various procedural changes in Defence Procurement Procedure as well as systemic changes in operations of the audited entities. In addition, each year's audit also results in savings and recoveries. During 2009-10 to 2011-12, recoveries to the extent of ₹62.43 crore (₹2.09 core in respect of current Audit Report) and savings to the extent of ₹2.64 crore were effected at the instance of Audit.

CHAPTER II: MINISTRY OF DEFENCE

2.1 Unfruitful expenditure on development of a system

Due to improper decision and delayed development of 'Takshak' system, the objective of enhancing the operational capability of a fighter aircraft could not be achieved. As a result, an expenditure of ₹155.79 crore incurred on the project was rendered unfruitful.

Ministry of Defence (Ministry) accorded a sanction (September 2005) for development of Electronic Warfare Suite for Fighter Aircraft (EWSFA) Suite for MiG-27 and TEJAS aircraft at a total cost of ₹311.71 crore[1] to be funded jointly by DRDO (₹279.62 crore) and IAF (₹32.09 crore[2]) with a timeframe of 66 months from the date of sanction. The sanctioned cost included an amount of ₹195.69 crore for development of EW suite for MiG-27 and MOD kit for 38 MiG-27 production aircraft. The objective of the programme was to enhance the operational capability of fighter aircraft and strengthen EW industry.

The EW suite for MiG-27 aircraft named 'Takshak' was to be jointly developed by Defence Avionics Research Establishment (DARE)[3] and M/s. ELTA, Israel. After user evaluation of the programme by September 2009, IAF had to sign a contract with M/s. BEL for production and procurement of 'Takshak' system and a separate contract was to be concluded with HAL for carrying out the integration work.

As per the development schedule of 'Takshak', the flight trials after successful ATP[4] were to commence in March 2009 and were to be completed by September 2009 which was subsequently extended to March 2011 due to delay in Lab Integration trials. During ATP conducted in December 2010, Air HQ found that despite considerable delay, the 'Takshak' system was not fully developed. The flight trials (D&D) were started after a delay of 21

1 ₹311.71 crore = ₹195.69 crore (MiG-27) and ₹116.02 crore for Tejas
2 IAF commitment of ₹ 32.09 crore was only for RWJ system for MiG-27 aircraft
3 DARE = a unit of Defence Research and Development Organisation (DRDO)
4 ATP = Acceptance Test Procedure *i.e* Lab integration testing before flight trials

months (January 2011) wherein Air HQ observed (January 2011) that the system still could not meet a large number of technical specifications. IAF also acknowledged (January 2011) that induction of the 'Takshak' system in MiG-27 fleet would take at least another three years and complete fleet modification would be over only by 2016 whereas the MiG-27 aircraft fleet was planned to be phased out of service from 2014 onwards. Therefore, Air HQ decided (January 2011) to foreclose the project since it was not possible to operationally exploit this system on the aircraft. An expenditure of ₹155.79 crore had already been incurred on the project till then (January 2013).

We observed (June 2013) that even before the sanction (September 2005) for development of 'Takshak' system, IAF was aware (June 2005) that it would be difficult to sustain the MiG-27 aircraft fleet beyond 2012-16 in view of the limited life of the aircraft. A mention was made in Paragraph 2.6 of the Report of the C&AG (No. CA 5 of 2008) on the limited life of the MiG-27 aircraft. Ministry had in their Action Taken Note (ATN) dated 09 June 2011, stated that EW Suite 'Takshak' would be available from mid-2012 onwards. Ministry's reply is, however, factually inconsistent given the decision by Air HQrs (January 2011) to foreclose the project.

IAF in its reply (October 2013) stated that 'Takshak' could not be fully exploited on MiG-27 aircraft due to delay in development of the system coupled with premature failure of airframe and aero-engine of the aircraft. Therefore, IAF had to foreclose (January2011) the project.

The reply, however, does not address the fact that the decision to develop the system was injudicious since it was known that MiG-27 aircraft had a residual life till 2016.

Thus, due to injudicious decision and delay in development of 'Takshak' system, the objective of enhancing the operational capability of a fighter aircraft could not be achieved. Besides, an expenditure of ₹155.79 crore incurred on the project was rendered unfruitful.

The draft paragraph was issued to the Ministry in June 2013; their reply was awaited (December 2013).

2.2 Delay in upgradation of an aircraft

Facilities for extending the Total Technical Life and overhaul of aircraft 'A' along with its re-equipment could not be set up in time, despite an investment of ₹272 crore for Transfer of Technology. As a result 61 aircraft were grounded as of March 2013.

Indian Air Force (IAF) inducted (1984-1991) Aircraft 'A' for transporting of troops and cargo, para trooping, supply dropping and casualty evacuation. The Total Technical Life (TTL) of the aircraft was 20,000 flying hours/ 25 years and 15000 landings. As on September 2006, there were 105 Aircraft 'A' held in the inventory of IAF. As these aircraft had residual service life, IAF initiated (2006) a case for extension of TTL of aircraft from 25 to 40 years. In order to expedite the procurement process, Ministry of Defence (Ministry) adopted the revenue procedure prescribed in Defence Procurement Manual (DPM) -2006 which stipulates a period of six months from initiation of the proposal till conclusion of the contract. Ministry concluded a contract (June 2009) at a total cost of MUSD 397.70 (₹1964.64 crore[5]) with a foreign firm[6] for extension of life of the entire fleet of 105 Aircraft 'A' from 25 to 40 years. Under the contract, TTLE[7], re-equipment[8] and overhauling of 40 aircraft was to be carried out abroad between August 2009 and October 2013 and for the balance 65 aircraft, the same was to be similarly carried out between August 2011 and July 2015 at Base Repair Depot 'X' (BRD) under the Transfer of Technology (ToT) arrangement with the Original Equipment Manufacturer (OEM) as part of the contract which included a cost of ₹272 crore for ToT.

Our examination of documents in audit (December 2011 and September 2012) relating to the contract (June 2009) revealed the following:

Air HQ had initially proposed (March 2006) re-equipment, TTLE and overhaul of 60 out of 105 aircraft and only life extension and overhaul of the

[5] 1USD = ₹49.50
[6] Foreign firm = M/s. SPETSTECHNOEXPORT, Ukraine (OEM)
[7] Total Technical Life Extension
[8] Installation/replacement of certain flight and avionics equipment for operating the aircraft

remaining 45 aircraft. Under this proposal, five out of 60 aircraft were to be sent to the vendor's premises as per the provision in the earlier contracts concluded for other aircraft. The implementation of TTLE/OH and re-equipment on balance 55 aircraft was to be done in India after obtaining technology for life extension. For the remaining 45 aircraft, only TTLE/OH was to be done in India at BRD 'X'. The proposal was accorded Acceptance of Necessity (AoN) in September 2006.

As the life of 75 (71 *per cent*) out of 105 aircraft was due to expire between 2009-2012, Air HQ changed its plan and decided (December 2006) to re-equip the entire fleet of 105 aircraft along with life-extension and overhaul in order to reduce accumulation of the life expired aircraft. Under the revised proposal, IAF proposed to send 40 aircraft abroad instead of the earlier proposal (March 2006) to send only five aircraft and extend the life of balance 65 aircraft in India after obtaining ToT from the OEM. Accordingly, the contract concluded in June 2009 provided for the first batch of five out of 40 aircraft to be positioned at the vendor's premises by November 2009, under the Design and Development (D&D) phase, which was scheduled to be completed by August 2010. However, the first batch of 5 aircraft was positioned at vendor's premises in March 2010 and D&D along with TTLE/OH and re-equipment was actually completed in May 2011. Based on the experience of D&D phase on the five aircraft, TTLE/OH and re-equipment of 20 out of the remaining 35 aircraft at the vendor's premises had been completed (December 2013).

For implementation of TTLE/OH and re-equipment of the remaining 65 aircraft, the activities relating to setting up of the facility at BRD 'X' were to be completed by June 2011. However, the facility at BRD 'X' for the purpose had not been completed (October 2013).

We observed (February 2013) that even though IAF knew that the existing TTL (*i.e*. 25 years) of aircraft would expire from February 2009 onwards and the process of D&D and TTL extension would take almost four to five years based on the past experience, the initiation of the proposal was *ab-initio* delayed by the IAF. As such, the constraints of time forced the Ministry to employ the revenue procedure to expedite the process on the grounds of urgency. However, the benefit of this measure was lost as 30 months were taken to conclude the contract against the prescribed period of 6 months as per the DPM-2006. This delay coupled with a delay of nine months in

completion of D&D phase delayed the setting up of the facility for TTLE/OH at BRD 'X'.

The draft paragraph was issued to the Ministry in February 2013. Ministry stated (October 2013) that the decision to upgrade 40 aircraft abroad has resulted in availability of 25 upgrade aircraft in the fleet (October 2013). The Ministry further added that ToT could not have been set before the D&D phase completion (August 2010) as during D&D majority of the equipment frozen earlier during the contract stage was replaced with better and modern Western origin equipment. As a result, TTLE project scheduled for completion in June 2011 also got delayed which was yet to be completed (October 2013). Ministry also stated that the project had got delayed due to non supply of certain spares for integration of re-equipment on Aircraft 'A'.

However, Ministry in its reply failed to justify the delay in conclusion of the contract despite adopting the revenue procedure based on the grounds of urgency.

Thus, the benefit from an investment of ₹272 crore on creation of ToT facilities could not be made available on time thereby resulting in grounding of 61 aircraft (*i.e.* more than 50 *per cent)* as of March 2013.

2.3 Avoidable expenditure in procurement of aero-engines

Failure of the IAF to project a long term requirement of aero-engines of a transport fleet resulted in an avoidable expenditure of ₹227 crore.

Aircraft 'A' is a medium tactical transport aircraft which is used primarily by the Indian Air Force (IAF) for transportation of the troops and cargo, para-trooping and casualty evacuation. Each aircraft is fitted with two aero-engines. The aircraft was inducted into IAF between 1984-91. Total technical life (TTL) of the aircraft was 20,000 flying hours/25 years whereas TTL of aero-engine was 6000 hours.

The Ministry of Defence (Ministry) concluded (December 2009) a contract with M/s Motor Sich (MSE), Ukraine *i.e*. Original Equipment Manufacturer of aero-engines (OEM) for procurement of 100 aero-engines at a total cost of MUSD 109 (₹543 crore) for sustaining the fleet upto 25 years (*i.e.* upto 2011).

Examination of documents in audit (June 2012) relating to procurement of 100 aero-engines revealed the following:

As of September 2005, there were 292 aero-engines held in the inventory of IAF. IAF carried out a census of aero-engines (September 2005) which were completing their life of 6000 hours upto August 2008 and worked out a net requirement of 17 aero-engines for procurement. Ministry, accordingly, concluded (June 2007) a contract with OEM for procurement of 17 aero-engines at a total cost of MUSD 12.27 (₹53.85 crore[9]). The contract provided for an option clause to procure 13 additional aero-engines by June 2008 at the same rate.

Immediately after conclusion of the contract (June 2007), a Special Review of entire assets of aero-engine was carried out by the IAF (August 2007) and a requirement of 130 aero-engines upto 2011 was worked out. After deducting 17 aero-engines (dues-in), for which contract was concluded in June 2007, net requirement had emerged as 113 aero-engines. Out of this requirement of 113 aero-engines, 13 aero-engines were procured under the option clause of the contract of June 2007. Contract for procurement of remaining 100 aero-engine was concluded in December 2009 with the OEM.

We observed (June 2012) that as procurement of aero-engines was an inescapable requirement, IAF should have placed the order for the entire long term requirement for sustaining the fleet upto 25 years (*i.e*. upto 2011), instead of placing the order for only 17 aero-engines in June 2007 with an option to procure 13 additional aero-engines by June 2008.

In response to an audit query (June 2012) about not entering into a contract for meeting the long term requirement, Air Headquarters (Air HQ) stated (September 2012) that IAF could not enter into a long term agreement in June 2007 for procurement of 130 aero-engines as the case for TTL[10] extension (from the existing 6000 hours to 9000 hours) of aero-engines was under deliberation with the OEM.

We do not agree with the view of Air HQ as the OEM had already intimated (July 2004) IAF that the TTL of aero-engines was 6000 engine hours only and the same could not be extended beyond 6000 hours. Further, within a

[9] 1USD= ₹43.90
[10] TTL – Total Technical Life

period of two months (August 2007) since conclusion of the contract (June 2007) for 17 aero-engines, IAF had worked out a net requirement of 130 aero-engines. Therefore, IAF should have reviewed the position for TTL extension of aero-engines in 2005 itself for meeting the long term requirement of 130 aero-engines upto 2011.

We further noticed (February 2013) that IAF had paid @ USD 719,500 (₹3.16 crore) per engine against the contract of June 2007, whereas, IAF had to pay @ USD 10,90,000 (₹5.43 crore) per engine against the contract of December 2009. Thus, IAF had to incur a total of ₹227 crore extra on procurement of 100 aero-engines.

The draft paragraph incorporating our observation on additional expenditure was issued to the Ministry in February 2013.

In their reply (October 2013), the Ministry stated that due to repeated change of stand (February-September 2006) taken by the OEM on extension of TTL of aero-engine, final decision on extension of TTL was kept pending/delayed till that time.

The reply of the Ministry is not acceptable as keeping in view the OEM's confirmation of July 2004 regarding non-extension of the TTL of aero-engine beyond 6000 hours and also that the procurement of aero-engines was an inescapable requirement, the IAF should have reviewed the requirement of aero-engines in 2005 for sustaining the fleet upto 25 years (i.e. upto 2011) and concluded the contract in 2007 for the entire requirement (130 aero-engines). This is particularly relevant as by the Ministry's own admission (October 2013), the contract of June 2007 itself was concluded after ruling out the possibility of extension of TTL of aero-engines from 6000 hour to 9000 hours.

The fact, thus, remains that if the review of entire assets of aero-engines had been carried out in 2005 instead of August 2007, the requirement would have remained the same i.e. 130 aero-engines.

Thus, despite being aware (July 2004) of the long term requirement of aero-engines for sustaining the fleet upto 25 years, in view of non-extension of TTL of aero-engine by the OEM beyond 6000 hours, IAF concluded a contract (June 2007) only for procurement of 17 with an option to procure 13 additional aero-engines by June 2008. As a result, an avoidable extra

expenditure of ₹227 crore was incurred on procurement of 100 aero-engines against the contract of December 2009.

2.4 Non-inclusion of variable percentage of profit in the contract for acquisition of Landing Craft Utility

Inclusion of the fixed profit percentage in the contract with M/s GRSE led to loss of ₹40.96 crore in acquisition of 'X' number of LCUs at a cost of ₹2169 crore. Besides, provision of ₹9 crore towards Project Management Cost in the contract was unjustified. In addition, availability of LCUs would be depleted due to lack of synchronisation in de-induction and replacement schedule.

Landing Craft Utility (LCU) Mk-IV are primarily deployed during amphibious operations for transportation, deployment and recovery of troops and equipment. Further, these crafts are also deployed in peacekeeping role and search and rescue missions. Indian Navy (IN) had a force level of 'X' LCUs inducted during the period 1980-1987. De-induction of the existing LCUs was scheduled between 2011 and 2016.

In order to replace the de-inducted ships, necessity for acquisition of 'X' number of LCUs at an estimated cost of ₹1104 crore was accorded by Defence Acquisition Council (DAC) in November 2008. In February 2009, the Ministry of Defence (MOD) approved nomination[11] of M/s Garden Reach Shipbuilders and Engineers Ltd. (GRSE) Kolkata for construction of these ships. Accordingly, M/s GRSE was requested (April 2009) to forward delivery schedule and commercial offer for 'X' number of ships and M/s GRSE's quotation was received in October 2009. The Contract Negotiation Committee (CNC) proceedings commenced in December 2009 which were finalised in October 2010 and proposal for construction of 'X' number of LCUs was forwarded to the Cabinet Committee on Security (CCS) in July 2011. Government sanction for the project was accorded in September 2011. Subsequently, contract for acquisition of 'X' number of LCUs Mk-IV from M/s GRSE was concluded in September 2011 at a negotiated cost of ₹2169 crore.

[11] Selection of Vendor without going through the competitive process after considering capacity and expertise of such vendor. As per DPP 2008, nomination is allowed for Defence Public Sector Shipyards for indigenous Naval Ship Building.

Our examination (October 2012) of the papers leading to the sanction of the project and conclusion of contract revealed that a higher percentage of profit was allowed besides other irregularities in the contract which are discussed in subsequent paragraphs.

I Higher percent of profit to the shipyard

The Department of Defence Production (DDP) through its order in September 2007 re-visited the applicability of profit payable to Defence Public Sector Undertakings (DPSUs) for construction of Naval and Indian Coast Guard (ICG) Ships. Hitherto, profit element at 7.5 *per cent* was payable to the DPSUs on the basic cost of a ship. The revised policy provided for the variable percentage of profit between 7.5 *per cent* and 12.5 *per cent* of the basic cost of the ship, subject to achievement of the laid down benchmarks by the Yards and certification of the same by internal audit / overseeing naval authorities and the Adviser (Cost) in the DDP. The policy further stipulated that though a base rate of 10 *per cent* profit on basic cost of ship was allowed, the same could vary between 7.5 to 12.5 *per cent* of the basic cost of ship. However, profit payable at the rate above 7.5 *per cent* of basic cost of ship was subject to achievement of identified benchmarks. Thus, the policy clearly aimed at allowing profit percentage higher than 7.5 *per cent* of the basic cost of the ship only on achieving better performance.

Our scrutiny (October 2012) showed that in the instant case of acquisition, *ab initio* 10 *per cent* profit on basic cost of ship amounting to ₹163.86 crore (@ 10 *per cent* of basic cost of ₹1638.62 crore) was provided for in the contract, without linking the profit percentage with the performance of the Shipyard. Inclusion of performance related profit in the contract would have given the Ministry a leverage of altering the profit element between ₹122.90 crore (@ 7.5 *per cent* of the basic cost) and ₹163.86 crore (@ 10 *per cent* of the basic cost) based on the performance of the shipyard. By allowing a flat 10 *per cent* profit element on the basic cost of ship, Ministry was denied a leverage of reducing the profit to an extent of ₹40.96 crore.

Our scrutiny (October 2012) further revealed that within six months of commencement of the project, M/s GRSE requested for extending the delivery schedule of the first two vessels by three months. However, the profit element of 10 *per cent* of the basic cost was assured to the Shipyard.

IHQ MoD (Navy) stated (December 2012) that the variable profit mentioned in the *ibid* policy is applicable to cost plus contracts and may be applied to contracts on nomination basis. It further stated that though M/s GRSE was nominated for the present contract, the base rate of 10 *per cent* profit on the basic cost was considered as it was a fixed price contract.

The contention of IHQ MoD (Navy) is incorrect as the policy merely states that the variable profit element is applicable to contracts awarded on nomination basis and does not differentiate between the cost plus contracts and fixed price contracts. Profit percentage in excess of 7.5 *per cent* on the basic cost of ship is linked to achievement of benchmarks. This, however, was not ensured.

II Project Monitoring Cost in the contract

The Contract Negotiation Committee (CNC) constituted to negotiate the terms and conditions of the contract including price, recommended inclusion of 'Project Monitoring Cost' at 0.5 *per cent* of the basic cost of 'X' number of LCUs at ₹9 crore. Project Monitoring was considered essential for ensuring timely delivery of ships to the Navy, by means of monitoring of the project at IN in real time. This required upgradation of the Project Monitoring software including Internet based Video Conferencing facility. Accordingly, the contract with M/s GRSE provided for Project Monitoring as requisitioned by the buyer (IN) limited to ₹9 crore, within six months of the date of contract. However, the contract did not specify the nature and contents of the Project Monitoring facilities.

Our scrutiny (December 2012) showed that the project monitoring consisted of server, secure video conferencing facility and leased line etc. for connectivity between the IHQ MoD (Navy), M/s GRSE, and the Warship Overseeing Team (WOT) at GRSE. These facilities, thus, were being created at the IHQ MoD (Navy) at New Delhi and the WOT (Kolkata), manned by the Navy personnel. However, instead of creation of these facilities directly by the Navy through its own budget, the Navy opted for creation of the facilities through M/s GRSE as part of the LCU acquisition contract. Setting up of such facilities at the Naval establishments by the shipyard was inappropriate. The actual items to be procured in the contract were also not specified.

IHQ MoD (Navy) stated (January 2013) that the Project Monitoring facilities were to be set-up at IHQ MoD (Navy), M/s GRSE and at WOT (Kolkata) and also stated that cost break-up of the system could be provided only after the items are procured.

The reply does not address the main issue that the expenditure on Project Management to be incurred at IHQ MoD (Navy) and the WOT should be through Navy's budget and not through the Shipyard to be paid for from the contract.

III Amphibious capability would be impacted in the intervening period

IN had a complement of 'X' number of LCUs, which were acquired during 1980 to 1987. The present contract was entered into to replace the ageing / de-inducted LCUs. As per the de-induction schedule, 'Y' number of ageing LCUs have already been de-inducted from service and 'Y' number more LCUs would be de-inducted in 2013. As compared to this, the first vessel from the present contract would be inducted only in August 2014 (35 months after the contract date of September 2011). Thus, the force levels of LCUs would be critically low before the arrival of the replacements and the gap would be filled only in year 2016 due to lack of synchronisation between the new procurement and the de-induction schedule of LCUs.

While agreeing to the gap between de-commissioning of the existing and the new induction of 'X' number LCUs, IHQ MoD (Navy) stated (December 2012) that the gap would be bridged by augmenting the force level in a particular Command by deployment of the naval assets based at other naval bases and extending the life of the existing platforms.

The reply only reinforces the audit observation that till the year 2016, the Navy would have to manage its requirement with the available and ageing LCUs.

The draft paragraph was issued to the Ministry (April 2013); their reply was awaited (December 2013).

CHAPTER III: AIR FORCE

Contract Management

3.1 Avoidable expenditure on procurement of test equipment

IAF incurred an avoidable expenditure of ₹11 crore on procurement of test equipment.

Missile System 'M' is a quick reaction surface-to-air missile system, required for providing an effective Air Defence.

Ministry of Defence (Ministry) concluded (September 2008) a contract with M/s Rafael, Israel (OEM[1]) for procurement of three squadrons of missile systems 'M' alongwith associated equipment at a total cost of MUSD 260.05 (₹1,161.77 crore[2]). The associated equipment included special test equipment (STE), ground support equipment (GSE) and tools costing USD 6,863,000 (₹32 crore) procured for Base Repair Depot (BRD) for setting up the base repair facilities. Under the contract, the initial training on the system was to be provided by the OEM for which the Indian Air Force (IAF) had paid MUSD 3.96 (₹17.69 crore). Of the three squadrons, two were to be installed in Air Command 'A' and one in Air Command 'B'. Although as per the terms of the contract, both the system and associated equipment were to be received by May 2012, it was observed in Audit that neither the system nor associated equipment had been received despite delay of 18 months (November 2013).

In addition to the above, the contract concluded in September 2008 provided for an option clause to procure additional squadron of missile system within three years at the same price, terms and conditions. Under the option clause, IAF initiated (October 2009) a case for procurement of additional five squadrons of missile system 'M' along with associated equipment. The

1 Original Equipment Manufacturer
2 1 USD = ₹44.675

Defence Acquisition Council, however, accorded (April 2010) approval for procurement of one squadron of missile system along with associated equipment. Accordingly, a supplementary contract was concluded (December 2010) with the OEM at a cost of MUSD 86.87 (₹407.86 crore[3]) for procurement of one additional squadron of missile system along with STE and GSE for base repair level costing USD 2,288,000 (₹11 crore). The additional squadron of missile system under option clause was scheduled to be delivered by October 2013 for installation at Air Command 'B'.

Our examination of the documents in Audit relating to the procurement of associated equipment under option clause revealed (December 2012) that the Air Headquarters (Air HQ) had projected the requirement of STE and GSE for the base repair level to cater to the increased work load of additional squadron. We observed (December 2012) that the procurement of associated equipments (GSE/STE for base repair level) in the supplementary contract (December 2010) was avoidable as the associated equipment for setting up the base repair level facility had already been provided in the initial contract of September 2008.

In reply to our Audit observation, Air HQ stated (January 2013) that the test equipment contracted in December 2010 under option clause would be utilized for providing on the job maintenance and operational training to IAF personnel.

We do not however, agree with the Air HQ's reply as the associated test equipment was procured for missile repair and testing at BRD and not for operational training.

The Ministry, in their reply stated (May 2013) that with the induction of additional squadron of missile system, there would be an increase in the work load of the BRD which would warrant additional testing, repair and calibration of equipment. The Ministry further added that the equipment procured under the initial contract did not cater for any dedicated equipment for training.

[3] 1 USD = ₹46.95

Ministry's reply is, however, not consistent as the Air HQ in its reply to an Audit query (April 2013) whether the procurement of test equipment for base repair level was governed by any scale, stated (April 2013) that the procurement of test equipment for base repair level was not governed by any scales in IAF. Further, in response to another audit query (December 2012) on the annual repair capacity of BRD, the IAF stated (January 2013) that the facility at BRD would cater to the base line repair for all the four squadrons.

Thus, the contract for procurement of additional test equipment for base repair level under option clause resulted in an avoidable expenditure of ₹11 crore.

3.2 Delay in commissioning of testers

Failure on the part of IAF to include commissioning clause in the contracts for procurement of testers worth ₹5.47 crore resulted in their non utilization for the last four years. Contract for repair and commissioning was yet to be concluded.

To ensure complete exploitation of the equipment for intended purpose, the procured equipment is required to be put into operational readiness (commissioned) at the IAF's premises. With the objective of safeguarding this requirement, Article 14.1(b) of Defence Procurement Procedure (DPP) 2006 (Standard Contract Document) provides for the complete functional check of the equipment as per specification in the contract. We observed (January and September 2012), however, that non inclusion of commissioning clause in the contracts concluded for procurement of testers worth ₹5.47 crore resulted in their non utilization for the last four years as discussed below:

Intermediate (I) level testers SIGMA-95 BM-II (BM-II) are used to check the serviceability and harmonization of Laser Internal Navigation System (LINS) which is the main navigation equipment of SU-30 aircraft. Flight Data Recorder (FDR) tester is used to carry out testing of components like Data Acquisition Unit (DAU) and Crash Survival Unit of FDR whenever their serviceability is suspected.

Air Headquarters (Air HQ) concluded (15 March 2007) a contract with M/s Hindustan Aeronautics Limited (HAL) for supply of one BM-II at a cost of ₹2.46 crore and one FDR at a cost of ₹0.53 crore along with certain additional equipment. HAL in turn procured these testers from Original Equipment Manufacturer (OEMs) *i.e*. M/s SAGEM, France and M/s SAAB, South Africa respectively. These testers, which had a warranty of 12 months from the date of delivery, were received at 25 Equipment Depots (ED) in February-March 2009. These were issued to 11 Wing, AF in September 2009 and brought on charge of 11 Wing AF in February 2010.

As on date (November 2013), these testers at 11 Wing, AF could not be commissioned due to absence of commissioning clause in the contract and had since been rendered unserviceable. In the meantime, as the warranty of these testers had expired (February-March 2010), the OEMs also declined to repair and maintain the testers free of cost.

Further, Air HQ concluded another contract (30 March 2007) with M/s HAL for supply of additional SU-30 aircraft and associated equipment which included one BM-II costing ₹2.48 crore. The equipment was received at 25 ED in March 2009 and issued to 11 Wing, AF in September 2009 and was subsequently issued to 14 Wing, AF in September 2011 on the directives (May 2011) of HQ Eastern Air Command. We noticed (September 2012) that again due to non inclusion of commissioning clause in the contract, the BM-II was lying unutilized at 14 Wing, AF since its receipt (September 2011) and had become unserviceable.

We observed (January and November 2012) that during the period 2010-12, there was a failure of 27 navigation equipment and 26 Data Acquisition Unit of SU-30 aircraft at 11 Wing and 14 Wing and these equipment had to be sent to HAL for testing and repair due to non-commissioning of procured BM-II and FDR testers at these units.

In response to an Audit query (January 2012) as to why these testers were not commissioned, 11 Wing, AF stated (January 2012) that these testers were supplied to them under SU-30 block-II contract which did not include commissioning of the test benches. To ascertain the reasons for non inclusion of commissioning clause, we took up (June 2012) the matter with Air HQ. Air HQ stated (July 2012) that these testers (i.e. BM-II and FDR) for SU-30 aircraft had been procured in four blocks. Block I/II were the first two contracts for procurement of aircraft and associated equipment. The commissioning of these testers was not foreseen at that point of time. Subsequently, by virtue of experience gained, the commissioning clause was included in Block III/IV contracts and the contract concluded for procurement of 40 additional SU-30 aircraft. Air HQ further stated (August 2012) that the contract for commissioning of FDR was yet to be signed and commercial proposal for repair of FDR and BM-II was under process.

The reason given by Air HQ for non inclusion of commissioning clause in the first two contracts (Block I and II) is, however, not acceptable as this was not the first contract entered into by Air HQ and the inclusion of a commissioning clause is a standard prescribed procedure to be adopted in any contract for procurement of aircraft and equipment.

Thus, by not including the commissioning clause in these contracts, IAF failed to comply with Article 14.1(b) of the DPP-2006 provision which provides for complete functional check of the equipment as per the specification in the contract. As a result, the equipment procured at a cost of ₹5.47 crore could not be commissioned for over four years of their procurement and were lying in an unserviceable condition. In addition, the defects in the equipment could neither be identified nor reported to the OEM during the warranty period.

The draft paragraph was issued to the Ministry in June 2013; their reply was awaited (December 2013).

Procurement

3.3 Directorate of Mechanical Transport, Air Headquarters

3.3.1 Role and Mandate of the Directorate

Directorate of Mechanical Transport (DMT) at Air Headquarters (Air HQ) is headed by Principal Director (PD) and is responsible for planning, forecasting, provisioning and budgeting in respect of ranges of vehicles[4] and their associated equipment. The range of vehicles broadly comprise Aircraft Support Vehicles (ASVs) and Common User Vehicles (CUVs) to meet administrative, technical and operational needs of Air Force. The DMT is also responsible for formulating policies and ensuring implementation in respect of operation, accounting and maintenance of vehicles. The DMT is further responsible for disposal of accident cases, obtaining sanctions for hiring of civil vehicles, payment of decretal amount and revision of mechanical transport establishment.

3.3.2 Organisational Structure

PD DMT at Air HQ reports to Air Officer Maintenance (AOM) through the Assistant Chief of Air Staff (Logistics) and is assisted by Director/Joint Director/Dy Director level officers posted in his Directorate. The DMT implements its plans through Air Commands under Air HQ. Mechanical Transport (MT) squadrons of operating units function under the Air Commands through the local commander. Aircraft operating units of Air Force are dependent on DMT for timely provisioning and release of ASVs and CUVs. Procurement action is, however, the responsibility of the Directorate of Procurement (DOP) and payment responsibility lies with the Controller of Defence Accounts (CDA) (AF) RK Puram, New Delhi. Organisational chart of the DMT is shown below:

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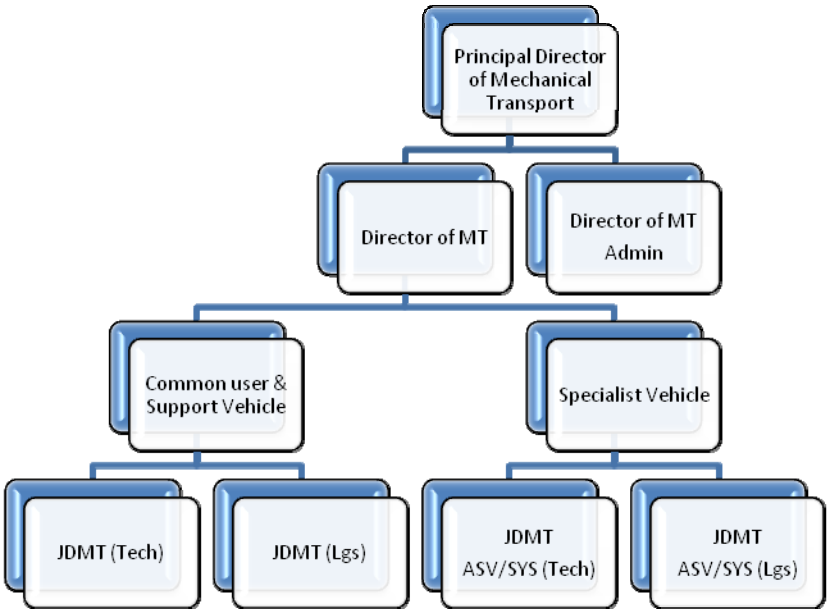
[4] Common User Vehicles - Lorry 3Ton/ 4Ton/ 6.5 Utility van (DCPT), Lorry RCC, Medium Recovery Vehicle, Water Tender, Car ¾ Seaters, Car 5CWT (Gypsy & MM Jeep) AL&SR, LMR, Station Wagon (TATA SUMO), Coach Passenger, Motor Cycle, Truck 1 Ton, Ambulance, Aircrew Van. Airfield Support Vehicles- CFT, DFT and FTPs, MRS Refuellers, Cranes, Tractors and Fork lifters Aircraft Specialist Vehicles- APPA/IGSA, UPEGA/EGU, AKS-8M, Nitrogen Air Charger, GPU, Ni-Cd, SAT-300, Air/N2/O2 Trollies, Oxygen Charger and Bheema Trollies System Specialist Vehicles- KRAZ, URAL, ZIL, GAZ, MAZ, YAZ, BTR and TATTRA etc.

ORGANISATIONAL CHART



3.3.3 Audit Objectives

The audit was conducted in order to ascertain:-

- Whether ASVs and CUVs were procured in accordance with the existing policy.
- Whether ASVs were made available to operational locations and other airbases as per authorization and in time.
- Whether Indian Air Force (IAF) was holding adequate number of ASVs and CUVs.
- Whether procurement and servicing of these vehicles was done with due care and economy and as per rules.

3.3.4 Audit Scope

A test check of the records for the period 2009-10 to 2011-12 was carried out at DMT Air HQ, Western Air Command (WAC), Wings under WAC and

CDA (AF) RK Puram, New Delhi during the period from April 2012 to September 2012.

3.3.5 Sources of Audit Criteria

The Audit Criteria used for benchmarking the audit findings were:

- General Financial Rules (2005), Defence Procurement Manuals, Public Procurement Bill 2012.
- Indian Air Force Equipment Regulations (IAP-1501), Air Force Instructions (AFIs), Air Force Orders (AFOs), Mechanical Transport Staff Instructions (MTSIs), Manual of Operations for Integrated Financial Advisors (IFAs) in Air Force.
- Government Rules, Orders, Guidelines and instructions issued from time to time by the Central Government and the Controller General of Defence Accounts (CGDA).

3.3.6 Audit Methodology

DMT, HQ WAC, IAF and Units under it and the CDA (AF) R.K Puram were selected for detailed audit. Audit findings as discussed in the succeeding paragraphs are based on an analysis of records, data, information and replies given to the questionnaire/audit memoranda issued to these units. Audit findings were issued (July 2013) in the form of draft paragraph to the Ministry of Defence (Ministry) /Air HQ. While Ministry's reply to the draft paragraph has not been received, the reply of Air HQ sent to the Ministry (September 2013) and copy endorsed to Audit has been appropriately incorporated in the report.

3.3.7 Audit findings

3.3.7.1 Financial Management

The DMT operates both Capital and Revenue Major Heads for procurement of vehicles. Year wise Allotment and Expenditure under these heads during the period from 2009-10 to 2011-12 are tabulated below:-

(₹ in lakh)

Major Head	Code Head	Particulars of charges compilable under the Head	Item	Year			Total Savings/Excess
				2009-10	2010-11	2011-12	
2078 (Revenue)	742/29	Special vehicle mounted aviation stores - sources other than HAL (Maintenance)	Allotment	799.76	1100.00	1369.44	
			Expenditure	680.79	989.73	1325.66	
			Saving	**118.97**	**110.27**	**43.78**	**273.02**
			Excess	0.00	0.00	0.00	Nil
2078 (Revenue)	743/02	All renewals/ replacements, maintenance/ upkeep irrespective of cost and life	Allotment	3820.31	1983.00	2510.00	
			Expenditure	3471.79	1891.00	1137.69	
			Saving	**348.52**	**92.00**	**1372.31**	**1812.83**
			Excess	0.00	0.00	0.00	Nil
4076 (Capital)	919/34	Procurement of heavy and medium vehicles of value ₹10 lakh or more and life 7 years or more	Allotment	0.00	0.00	0.00	
			Expenditure	2232.00	2292.00	3894.00	
			Saving	0.00	0.00	0.00	Nil
			Excess	**2232.00**	**2292.00**	**3894.00**	**8418**
4076 (Capital)	919/36	Procurement of items of equipment (other than heavy and medium vehicles) of value ₹10 lakh or more and life 7 years or more	Allotment	4257.00	2482.78	1545.00	
			Expenditure	4257.00	2482.78	1545.00	
			Saving	0.00	0.00	0.00	Nil
			Excess	0.00	0.00	0.00	Nil

We observed (February 2013) following irregularities in the booking of expenditure: -

(i) During the period 2009-2012 an expenditure of ₹84.18 crore was booked to Capital Code Head-919/34 (Heavy and Medium Vehicles) without any allotment. At the same time the DMT was unable to fully spend the appropriations under Revenue Code Heads 742/29 and 743/02 during all the three years.

The DMT stated (September 2013) that expenditure under Code Head 919/34 had been inccurred on confirmation of availability of fund against orders placed. However, their reply was silent on non-allotment of fund under this Code Head and DMT's inability to fully spend the appropriations under Revenue Code Head 742/29 and 743/02.

(ii) Capital Code Head- 919/34 (Heavy and Medium Vehicles) read with Sub Major-Head-01 – Army Minor Head 102 (a) provides for booking of expenditure on procurement of vehicles of all types irrespective of their cost and life.

However, we observed (February 2013) that expenditure on procurement of various ASVs was booked irregularly to Capital Code Head-919/36 (Other Equipment: Trade**)** and expenditure on procurement of other vehicles was booked to Revenue Code Head-743/02 (MT Stores) in all these years and not to the correct Code Head- 919/34 (Heavy and Medium Vehicles).

The DMT stated (September 2013) that expenditure on procurement of ASVs was booked to Code Head 919/36 considering that ASVs were not Heavy and Medium vehicles. As regards other vehicles, the DMT stated that earlier as per the Classification Hand Book, the procurement was being undertaken under Code Head 743/02 and now capital procurement following Revenue Procedure of heavy and medium vehicle is being undertaken from Code Head 919/34.

Their reply is not acceptable as even earlier the expenditure was required to be booked to Capital Code Head 919/34 (Heavy and Medium Vehicles) which also includes ASVs.

(iii) CGDA in June 2010 had recommended that expenditure on outsourcing be booked to the Contingent/Miscellaneous Expenditure Head of the respective Services till a final decision was taken on opening of a separate head for each outsourcing activity. Notwithstanding the above position, expenditure on Annual Maintenance Contracts (AMCs) of ASVs was booked to other Revenue Code Head 742/29 operated by DMT for maintenance stores.

The DMT stated (September 2013) that till now no separate Code Head had been earmarked for expenditure on outsourcing, and also that this expenditure was against AMC.

The reply is not acceptable as outsourcing includes AMC and, therefore, pending opening of a separate Code Head, expenditure on AMC should have been booked to contingent/miscellaneous expenditure head as recommended by the CGDA.

(iv) The powers to sanction indents, contracts and purchases in respect of central procurement of maintenance stores on Proprietary Article Certificate (PAC) basis have been laid down in Schedule XII (L1) to Delegation of Financial Powers 2006 (DFP) and under this schedule, AOM is empowered to approve purchase of proprietary indigenous items from PSUs up to ₹10 crore.

We, however, observed (February 2013) that for purchase of maintenance store (Nitrogen Generating Storage and Distribution Station) from Hindustan Aeronautical Limited (HAL) Nasik Division (ND) on PAC basis, the DMT had irregularly obtained Acceptance of Necessity (AoN) of AOM for ₹12.39 crore under Schedule XII (A) where AOM's powers are up to ₹30.00 crore.

In reply to the audit observation, the DMT stated (April 2013) that procurement was approved under Schedule XII (A) as purchases were made from Defence Public Sector Undertaking (PSU).

The reply is not acceptable since financial power of AOM for procurement of maintenance store under PAC is under Schedule XII (L1) (Powers to approve proprietary purchase from necessity and expenditure angle-Indigenous PSUs) and is for ₹10.00 crore only.

Thus, the above procurement of Nitrogen Generating Storage and Distribution Station at a cost of ₹12.39 crore in excess of AOM's powers of ₹10.00 crore is irregular.

3.3.7.2 Planning and Management

The DMT is a centralized agency for planning, provisioning, indenting and release of ASVs and CUVs for all the Directorates and Establishments of IAF. We observed (February 2013) that cases for procurement of vehicles were processed by different Directorates without involving the DMT. We further

observed cases of financial irregularity, besides irregular procurement of vehicles and post procurement management/maintenance problems, as discussed subsequently in the Report.

As per Annual Plan, the DMT had been following a system of Annual Motor Transport Procurement Plan (MTPP) both for ASVs and CUVs which was being forwarded to MOD for Acceptance of Necessity (AoN) approval. In October 2007, MOD dispensed with the requirement of obtaining AoN of MOD for procurement of ASVs in order to bring down the lead time so as to ensure timely procurement of ASVs which had a vital role in operational preparedness.

Despite the above, we, however, observed (February 2013) shortage in all types of ASVs ranging from 25 to 100 *per cent*. We also observed (February 2013) that the DMT did not procure 408 ASVs which were planned in the backdrop of Ops Parakaram with the approval (May 2004) of Ministry for permanent positioning at earmarked operational locations (Ops locations). As a result, IAF was forced to operate with the same limitations as existed at the time of Ops Parakaram. Details of these cases are discussed below:

(A) Aircraft Support Vehicles (ASVs)

I. Unit Establishment and Strength

ASVs are specific to type, specialist equipment that are utilized on various aircraft for starting and servicing activities and, therefore, play a direct and vital role in the operational preparedness. It is, therefore, imperative that not only are all ASVs maintained in the highest serviceable state but also the shortfalls against authorization/Unit Establishment (UE) are addressed at the earliest.

As on March 2012, IAF had an inventory of 18 types of ASVs. We observed (February 2013) that actual holding of all types of ASVs was far less than their authorization as per Annexure 'I' to this Report. Shortfalls in eight types of ASVs ranged between 47.83 *per cent* and 100 *per cent*, in respect of another seven types between 25 *per cent* and 36.92 *per cent* and for the balance three types below 25 *per cent*.

In response to the audit observation, the DMT stated (April 2013) that the deficiency pointed out by Audit was mainly with reference to the authorized reserves and as all ASVs had since been indigenized, maintaining depot reserve and maintenance reserve was not required. The DMT further stated (September 2013) that presently shortfall in respect of three types of ASVs ranged between 0.20 *per cent* and 11.68 *per cent* and in respect of another eight types there was no deficiency.

The reply is factually incorrect as MoD had not dispensed with the authorised reserves but had only reduced the maintenance reserve from 12.5 *per cent* to 10 *per cent* in view of indigenisation. Further, Air HQ had also been including Maintenance Reserve in their Annual Procurement Plans for arriving at 'Deficiency/Net Requirement'[5] of ASVs. Further, even though ASVs were indigenized they were not available off the shelf. The reply was also silent on shortfall of the remaining seven types of ASVs. The deficiency in holding of ASVs had a direct bearing on operational preparedness of IAF.

II. Gross inadequacy of ASVs at Operational locations

During Operation Parakaram[6], ASVs at Ops locations were found by IAF to be grossly inadequate and did not match with the requirement of the detachments[7]. Keeping this in view as also the bottlenecks in transportation/movement of the ASVs from the parent bases, it was felt that it would be essential to make permanent positioning of specialist vehicles at the Ops locations. Accordingly, Ministry agreed in May 2004 for procurement of additional ASVs for pre-positioning at Ops locations. After protracted deliberations at Air HQ and in consultation with all Commands HQs as to the requirement of ASVs at each Ops location, 'In Principle' approval for procurement of 408 additional ASVs costing ₹132.09 crore was accorded by the Chief of the Air Staff (CAS) in October 2007.

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5 Procurement are initiated annually only for deficiencies against authorized scales. Accordingly, the net requirements is calculated as Unit Establishment (UE) (i.e. authorization) plus Reserve minus Assets.

6 Operation Parakaram, the 11-month-long border stand-off, took place soon after the December 13,2001 terror attack on Parliament.

7 Detachment means deployment of Combat aircraft/Helicopters Units and supporting fleets of IAF to another air base/Ops location for special duty/missions.

We observed (February 2013) that procurement of these additional 408 ASVs was not processed beyond the 'In Principle' approval of the CAS in October 2007 despite the requirement of the ASVs in the wake of Ops Parakaram. We further observed (February 2013) that in order to tide over the deficiency, HQ WAC, IAF had made (February 2012) a temporary arrangement for pre-positioning of ASVs at Ops locations in a phased manner - Phase-I for WAC forces and Phase-II for 'Out of Command' forces by way of temporary allotment of these ASVs on loan from the units within the Command for duration not exceeding one year. The objective was to support quick mobilization of forces at designated Ops locations, which would reduce dependability on airlifts or civil hired trucks and take care of the bottlenecks in transportation/movement of the ASVs from the parent bases to Ops locations.

In Phase-I, 67 ASVs comprising nine types were to be positioned immediately at forward locations for Western Air Command forces but we observed (February 2013) that against 67, 46 ASVs (69 *per cent*) of Phase-I and entire quantity under Phase-II were yet (June 2012) to be placed at the Ops locations of WAC.

The DMT stated (April 2013) that it was decided at a later stage not to procure ASVs against reserve.

As no documentary evidence including the decision and the reasons for non procurement was furnished by the DMT in support of their reply, we specifically enquired (September 2013) the reasons for not processing the case further; when it was decided not to procure the additional 408 ASVs; who approved this proposal; and whether the Ministry was informed of the decision of not processing the case further.

The DMT did not furnish the requisite clarifications/evidence sought by us and only stated (September 2013) that it was decided not to procure ASVs against reserve due to austerity measures and limited availability of funds. Further, no reply was given to the position obtaining as on September 2013 with regard to prepositioning of remaining ASVs under Phase-I and Phase-II and extension of the loan period.

Thus, the reply of the DMT is not acceptable, as the fact remains that IAF was forced to operate with the same limitations with respect to the availability of ASVs as existed at the time of Ops Parakaram.

III. Overhaul backlog/un-serviceability

First overhaul of ASVs falls due after completion of *eight* years of induction and *second* overhaul after completion of *four* years from the *first* overhaul or after 12 years of induction.

We observed (February 2013) that as of June 2012 overhaul facility did not exist for indigenous ASVs except for one type of ASV at 8 BRD. As a result, out of 663 ASVs held by the various units under HQ WAC, 113 ASVs were due to be overhauled as of May 2012. These 113 ASVs were inducted between 1993 and 2003 and were due for first overhaul between 2001 and 2011 but were not overhauled as of May 2012 due to non-availability of the overhaul facility. We also observed (July 2013) that 52 ASVs held by the various units under HQ WAC had remained (April 2013) unserviceable for longer periods ranging from 11 months to 81 months.

In response, the DMT stated (April 2013) that the overhaul policy of ASVs was changed by Air HQ in July 2012 and instead a life cycle concept had been introduced. Accordingly, all the ASVs were being maintained for 15 years of life through Annual Maintenance Contract (AMC). The DMT also stated (April 2013) that out of the 52 ASVs pointed out by Audit, 40 ASVs were unserviceable as AMCs were not in place. While accepting the fact about prolonged unserviceability of 52 ASVs/non-availability of AMCs for all ASVs, the DMT further stated (September 2013) that earlier these 52 ASVs were being maintained through local resources, resulting in increased unserviceability and that as on date most of the ASVs were covered under AMC and the serviceability state was 95 *per cent*.

The reply of the DMT is not acceptable as neither any documentary evidence in support of their reply, nor position obtaining regarding serviceability status of the 113 ASVs due for overhaul as of May 2012 and 52 unserviceable ASVs has been furnished.

Thus, however, while overhaul facilities for ASVs were not created after the introduction of a life cycle concept which resulted in AMC for the ASVs for maintenance during their useful life, the AMC for all the ASVs were also not entered into by the DMT, resulting in non-overhaul of 113 ASVs and prolonged unserviceability of 52 ASVs.

IV. Procurement of unsuitable Bheema Trolleys

Priority Procurement Plan (PPP[8]) for ASVs (2007-08) approved in October 2007 included purchase of 37 self-propelled Bheema[9] Trolleys for three SU-30 aircraft operating Air Force units. Accordingly, Directorate of Procurement (DOP) placed (March 2009) a supply order on M/s TPS Infrastructure Ltd for supply of 37 trolleys at a cost of ₹6.63 crore, which was subsequently amended (December 2010) by earmarking 12 trolleys for three SU-30 aircraft operating Air Force units and the balance 25 trolleys for non SU-30 units.

In response to an audit query (June 2012) regarding change in the requirement of Bheema Trolleys for SU-30 units, the DMT stated (October 2012) that during field trials, it was observed that the Bheema trolleys procured were not suitable for SU-30 aircraft; the consignees were changed (December 2010); and further procurement of 32 trolleys against the procurement plans of subsequent years from the same supplier for SU-30 units was also not processed.

In reply to our further observation (February 2013) regarding diversion of trolleys to non SU-30 operating units, the DMT stated (April 2013) that these trolleys were found suitable and effective for use by units other than the SU-30 units and that a conscious decision was taken by Air HQ to divert the same to other units where it could be used. We also observed (July 2013) excess holding (April 2013) of 51 trolleys and made a specific query (September 2013) regarding the justification for allotting 12 trolleys to SU-30 units, despite the fact that these were not found suitable for these units. The DMT, however, did not offer (September 2013) any comments.

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[8] MoD's orders (2006) on delegation of financial powers (Revenue) prescribe drawing up of a Revenue Prioritised Procurement Plan for centralized procurement by Air HQ

[9] Self Propelled Aircraft Weapon Loader Trolley (AWL-1000)

Thus, the fact remains that the entire procurement of 37 trolleys valuing ₹6.63 crore did not serve the intended purpose as the same were found unsuitable for SU-30 units. More importantly, SU-30 units were deprived of a suitable ASV which has a vital role in the operational preparedness.

V. Irregular procurement of Ground Power Units of MiG Bison aircraft

Department of Defence Production & Supplies (DDP&S) had stipulated (October 1999) that indigenization of a defence store would not be complete until at least two sources were fully developed which would ensure not only competition but also reduce Government's dependence on any single source. The DDP&S had also issued (October 1999), *inter alia*, the following procedure for strict compliance with a view to speeding up the development of additional indigenous sources:

- Where there is only a single developed source or where there is a felt need for development of more than two sources, 20 *per cent* only of the first indent should be earmarked for placement as an educational order on the new source to be developed. The percentage could however be modified to ensure that the quantity covered is viable for economic production. This order should be placed by inviting tenders as per the normal procedure.

- The balance quantity of the indent is to be procured from the source(s) already developed as per the normal procedure.

Accordingly, while initiating (December 2005) the case for development and procurement of 70 Bison trailer-mounted Ground Power Units (GPUs) at a total cost of ₹12.95 crore as per approved Annual Procurement Plan for the year 2005-06, Air HQ proposed (December 2005) to procure 47 GPUs from M/s MAK Controls (M/s MAK), the only developed indigenous source at that time, at a total cost of ₹9.40 crore and decided that the remaining 23 GPUs should be procured from other sources. In case no other firm was able to develop a suitable prototype, the remaining 23 GPUs were also to be procured from M/s MAK under the 'Option Clause'. Integrated Financial Adviser

(IFA), however, advised (April 2006) that the other two firms i.e. M/s Statcon Power Controls and M/s Avish Aviation (through HAL Nasik) were also in line of development of subject GPUs, Air HQ could consider 50 *per cent* quantity from the already developed source and balance quantity could be covered under option/repeat order clause of M/s MAK in case of failure to develop the GPU by the two firms. Accepting the advice of the IFA, the proposal was revised (April 2006) by Air HQ for procurement of 35 GPUs i.e. 50 *per cent* from M/s MAK at a total cost of ₹7.00 crore and the same was approved (May 2006) by the AOM.

We, however, observed that Air HQ did not initiate the procurement process and instead initiated (December 2006) a fresh case for procurement of 70 self-propelled GPUs at an estimated cost of ₹17.62 crore. Directorate of Mechanical Transport, subsequently placed (December 2006) an indent on the Directorate of Procurement which placed (January 2008) the supply order on M/s HAL (ND) for supply of 70 GPUs (Self-propelled) at a cost of ₹14.92 crore. No AoN for this proposal was obtained from the CFA. The GPUs were delivered between December 2009 and April 2010.

We noticed (February 2013) the following irregularities in the above procurement:

- As against the approval of MoD for procurement of 70 Bison trailer-mounted GPUs at a cost of ₹12.95 crore, Air HQ procured 'self-propelled' GPUs from M/s HAL (ND) at a cost of ₹14.92 crore without apprising Ministry of the changed requirement/cost and without Ministry's approval.

- Concurrence of IFA and 'In Principal Approval' of AOM in May 2006 was for procurement of only 35 GPUs at a cost of ₹7.00 crore from M/s MAK, whereas an Indent for 70 GPUs at a cost of ₹17.62 crore was raised in December 2006 and Supply Order for the same at a cost of ₹14.92 crore was placed on M/s HAL (ND) in January 2008. We did not find the approval of IFA/CFA for the revised proposal.

In response to the above audit observation (February 2013), the DMT stated (April 2013 and September 2013) that subsequently (December 2006) Bison GPUs developed by the above two vendors were cleared and RFP was floated wherein M/s HAL emerged as L1; accordingly, supply order was placed on M/s HAL; and that the revised approval of the Ministry was not required since there was no change in the quantity and requirement.

The contention of DMT is incorrect since there were changes in the specification from trailer mounted to self-propelled as also total cost from ₹12.95 crore to ₹14.92 crore. Air HQ, also did not furnish the approval of the IFA/CFA for the revised proposal.

(B) Common User Vehicles (CUVs)

I. Irregular procurement of Critical Care Ambulances

The DMT is responsible for planning, forecasting, provisioning and budgeting in respect of Common User Vehicles (CUVs) which include Ambulances - both heavy and light. For this purpose, DMT forwards a consolidated Annual Motor Transport Procurement Plan (MTPP) to MOD for AoN approval.

We observed (February 2013) that contrary to the above procedure, 25 Critical Care Ambulances (CCAs) at a cost of ₹9.24 crore were procured (January 2010) by Directorate General Medical Services (DGMS) instead of the DMT, a designated and specialist Directorate for the purpose. Besides the procurement was made under Capital Code Head 919/36 meant for 'Other Equipment' from Trade instead of Capital Code Head 919/34 meant for 'Heavy and Medium Vehicles' including Specialized Medical Vehicles. We further observed (February 2013) that the procurement was made using powers of Vice-Chief of Air Staff (VCAS) in consultation with IFA under Schedule XII (J1A)[10] of the Delegation of Financial Powers stating that ambulances were neither scaled nor proposed to be scaled.

[10] Schedule-XII regarding 'Procurement of Maintenance Stores', Powers to sanction Indents, contracts and Purchases; (J1A) regarding 'Approval of expenditure for equipment not authorized/scaled; Powers of VCAS/DCAS/AOM there under are 'Nil' Without IFA consultation and ₹10.00 crore With IFA consultation.

We also observed (February 2013) that AOM had subsequently directed (January 2011) for scaling of these CCAs. Further, powers under this Schedule are limited/restricted towards procurement of "Maintenance" Stores and therefore, do not include procurement of non-scaled medical equipment.

The DMT stated (September 2013) that all the Directorates including Medical Directorate had been instructed (September 2013) by them to ensure procurement of vehicles through the DMT and that the purchase was undertaken under Code Head 919/36 (Capital Code) following the Revenue Procurement procedure as laid down in Defence Procurement Manual (2006), in terms of Ministry's orders (September 2007), and the same was in order.

Air HQ reply is not correct as the Revenue Procurement procedure adopted in terms of Ministry's orders (September 2007) was permissible only in respect of such items of Capital nature, where expenditure was earlier being booked to Revenue heads instead of Capital heads, and not for the items being procured for the first time.

II. Abnormal delay in outsourcing of Staff Cars

While examining the proposal regarding Annual Motor Transport Procurement Plan (MTPP) 2007-08 and according approval from necessity angle, Ministry had observed (October 2007) that 'as far as outsourcing is concerned very little effort has been made by IAF whereas Navy could outsource almost the entire requirement of staff cars in a place like Delhi. Ministry also directed that IAF should explore the possibility of outsourcing of Staff Cars[11] and Car 5 CWT[12] by Air Force Station New Delhi (AFS ND) for use by officers posted at Air HQ and its lodger units as was being done by Navy. Instructions were also issued by the Ministry in November 2007 regarding return of the vehicles on loan beyond a period of four years, along with their drivers to the respective units. In view of a large quantity of Staff cars held on loan by AFS ND over and above the authorization, Air HQ directed Station authorities in December 2007 to explore hiring of the light vehicles from the civil market, after carrying out cost benefit analysis, as was being done by Army and Navy.

[11] For transportation of entitled officers
[12] For transportation of personnel during peace and operations

Air HQ had also issued (January 2008) instructions that light vehicles should not be held on loan for more than four years as this period was considered to be adequate for the units to raise statement of cases and get their establishments (vehicles strength) revised through Air Force Staff Establishment Committee (AFSEC). Accordingly, AFS ND recommended (April 2008) outsourcing of 115 Staff cars by AFS ND for officers of the rank of Group Capt and below, envisaging an annual saving of ₹1.95 crore.

We observed (February 2013) that despite the recommendation (April 2008) of AFS ND, the Air HQ was yet to start outsourcing of staff cars. As a result, expected annual saving of expenditure of ₹1.95 crore could not be obtained all these years. We also noticed (February 2013) that against an authorisation of 156 vehicles, AFS ND had 475 vehicles as of March 2012. Out of these, 319 vehicles held on over and above the authorization were on loan from lower formations. In many cases maximum loan period of four years had also exceeded and the DMT had instead issued fresh release orders for further holding of these vehicles on loan to AFS ND. Thus, both the DMT and AFS ND had violated the orders of Ministry with respect to outsourcing of light vehicles, release of vehicles on loan and return of the loan vehicles along with the drivers.

While accepting the audit contention, the DMT attributed (September 2013) the violation of Ministry orders to non revision of the unit entitlement (UE) of vehicles of AFS ND and stated that these vehicles had to be given on loan to AFS ND as their UE could not be revised. As regards outsourcing, the DMT stated that the same was permissible against deficiency and since there was no deficiency of vehicles at AFS ND against the UE, outsourcing of vehicles was not resorted to.

The reply is not acceptable as it did not explain the reasons for non-revision of the UE. The fact remains that AFS ND continues to utilise the vehicles on loan over and above its authorisation by pooling the vehicles meant for lower formations. Besides, envisaged (April 2008) annual saving of ₹1.95 crore on outsourcing of vehicles remains to be achieved.

III. Introduction of new type of vehicles

As per relevant orders[13], replacement of the existing maintenance scaled item with an improved version will be considered with the prior concurrence of IFA, among other things, in the following circumstances:-

a) If existing item is out of production.

b) If existing scaled item is redundant.

c) If new version is cost effective.

Further, Defence Procurement Manuals (DPMs 2006 and 2009) provides that the specifications in terms of quality, type and quantity of goods to be procured, should be clearly spelt out keeping in view the specific needs of the procuring organizations. The specifications so worked out should meet the basic needs of the organisation without including superfluous and non-essential features, which may result in unwarranted expenditure.

Ministry had also issued (May 2010) instructions that like to like replacement of the basic model should be strictly done by a basic model unless upgraded models are necessary for operational and other reasons, while the station of deployment should be the same as that where the vehicle was being condemned.

We observed (February 2013) that in contravention of the extant orders, Air HQ had introduced between 2009 and 2011 two new types of vehicles - Mahindra Scorpio (Scorpio) in place of Maruti Gypsy and Toyota Innova (Innova) in place of Material Management (MM) Van, as discussed below:-

(i) Scorpio

During May 2009 to January 2012 Air HQ procured 100 Scorpios on PAC basis as per firm's specifications by placing supply orders at a total cost

[13] Schedule XII (J2) regarding 'Approval of purchase of Indigenous equipment:- Replacement against existing scaled item with an improved version (a) If existing item is out of production/obsolete or (b) If existing scaled item is redundant or (c) If new version is cost effective, read with relevant SOP.

of ₹7.78 crore under Schedule XII-L1[14]. We observed (February 2013) the following irregularities in the procurement of these Scorpios:

- Mahindra Scorpio was introduced (2009) under Schedule XII (J2) of the DFP in replacement of Maruti Gypsy which was neither out of production/obsolete nor redundant. By IAF's own admission (April 2007), Scorpio was costlier than the existing category of Car 5 CWT viewed from the operational and maintenance angle. We also observed (February 2013) that Scorpio did not fit into any of the above parameters and Schedule XII-J2 to the DFP was not relevant in this case as the range covered under this Schedule is 'all scaled AF stores required for Maintenance activities'.

- Procurement of Mahindra Scorpio on PAC basis was against the DPM provisions as specifications were not clearly spelt out keeping in view the specific needs of IAF but were based on firm's specification and similar vehicles offered by different firms were not evaluated either on specifications or on cost basis.

In response, the DMT stated (April 2013) that cost analysis by comparing the vehicles in the market was carried out in great detail and the vehicle was found to be cost effective in the long run but expensive initially. DMT further stated (September 2013) that the record of comparative study by technical expert was available in relevant file, which was circulated to all Senior Commanders and their recommendations obtained.

The reply is not acceptable as no documentary evidence was supplied to audit either in this regard, or in support of compliance of DPM provisions regarding spelling out the specification in terms of quality and type.

(ii) Innova

Field units are authorised to use MM Vans for safe transfer of costly assemblies/rotables, sensitive electronic equipment and efficient utilization of the existing inventory by faster material transfer between the stores houses and workplace. For 19 MM Vans approved by the Ministry for procurement, the make/model in use by IAF was Tata Sumo (without rear seats). However, Air

[14] Powers to approve proprietary purchase from necessity and expenditure angle

HQ initiated (September 2010) a case for procurement of 19 Toyota Innova as 'Multi-utility vehicle' under Schedule XII (J2) of the DFP and obtained (October 2010) Principal Integrated Financial Advisor's (PIFA) concurrence on the justification that the vehicle was required in place of MM Van for utilization by SU-30 squadrons (12 vehicles) and units situated at hilly-and harsh-terrain. A Supply Order (SO) was placed (November 2010) on M/s Toyota Kirloskar Motor Ltd Bangalore for 19 Toyota Innova at a total cost of ₹1.46 crore and the vehicles were delivered in February 2011.

We observed (February 2013) that there was no deficiency of MM Van in IAF and that there was an excess (February 2011) of 88 vehicles against the authorisation. We also observed (February 2013) that none of the 19 Innova vehicles was actually allotted to the units for whom these were stated (October 2010) to have been procured. These Innova vehicles were allotted (March 2012) on two years loan to other units in contravention of Ministry's orders ibid.

In response, the DMT stated (September 2013) that the procurement of vehicles was undertaken only against the deficiencies and that the specifications of Innova were compared with other vehicles, details of which were available in file.

The reply is not acceptable as Air HQ could not provide any document in support of either the deficiency of MM Vans or compliance of DPM provisions regarding spelling out the specifications in terms of quality, type etc., of MM Vans to be procured, keeping in view the specific needs of the IAF. The reply was also silent on surplus holding of 88 MM Vans and invoking of incorrect Schedule XII (J2) of the DFP.

3.3.8 Conclusion

The Audit brings out the shortcomings in the functioning of the DMT which is a centralized agency for planning, provisioning, indenting and release of all types of vehicles in IAF. The DMT was not able to achieve targets with regard to the procurement of ASVs which were essential for aircraft flying. There was deficiency of ASVs at operational locations necessitating continued dependency on civil trucks/airlifts for positioning ASVs from parent bases to Ops locations during hostilities/operations. This deficiency had a greater

impact as even temporary positioning from Command resources could not be achieved. The procurement of a specific ASV made for an aircraft was also found unsuitable for that aircraft.

There were several instances of incorrect booking of expenditure, irregular approval and concurrence by the CFAs and the IFA respectively. Some of the Directorates placed indents directly on the DOP instead of routing them through the DMT which is a specialized agency for the purpose. There were cases of the newly introduced CUVs being diverted to use for other than the intended purpose. Further due to delay in revision of the UE of vehicles at AFS ND, several vehicles continued to remain on loan with AFS ND for over 4 years and annual savings of ₹1.95 crore on outsourcing of staff cars could not be realized.

3.3.9 Recommendations

- Air HQ may issue directions to all the Directorates and lower formations to place indents for procurement of vehicles through the DMT only as per the approved Annual Motor Transport Procurement Plan.

- The DMT may consider preparing a database of the ASVs and CUVs and link the database with Annual Plan and achievements against the target.

- Since ASVs are not available off the shelf despite indigenization, catering for reserve and its actual utilization for procurement is necessary to obviate the deficiency in field formations. However, reserves against light vehicles under CUVs category may be considered to be discontinued since these vehicles are readily available in the market.

- The DMT needs to address the issue of outsourcing of staff cars at AFS ND in a time-bound manner which would result in achieving an expected saving of ₹1.95 crore *per annum* and it would also pave the way for early return of loan vehicles attached with AFS ND from field units.

- The control mechanism for financial bookings, expenditure out of designated heads, and sanction of appropriate CFA may be strengthened so as to avoid incorrect booking of expenditure and irregular sanctions.

The draft paragraph was issued to the Ministry in July 2013; their reply was awaited (December 2013).

3.4 Induction of Precision Approach Radar in Indian Air Force

Inordinate delay in issuing Request for Proposal for the second batch of PAR deprived IAF of important precision approach aid during inclement weather. Due to change in induction plan of one radar, infrastructure worth ₹2.23 crore created for housing of the radars at two stations could not be utilized for the intended purpose. HAL also continued to depend on OEM for repairs due to non- availability of repair facility at HAL for these Radars.

Precision Approach Radar (PAR) is used to facilitate landing of aircraft during poor visibility and bad weather conditions. Ministry of Defence (Ministry) concluded (March 2002) a contract with HAL, for the procurement of 17 PAR, inclusive of 13 static and four transportable radars, at a cost of ₹193.10 crore. HAL collaborated with M/s FIAR Italy (OEM) for supply of five static radars to IAF in fully furnished condition, between July 2003 and March 2004 and the remaining 12 radars were to be manufactured by HAL under transfer of technology (ToT). Out of 17 radars, 15 were meant to replace 12 existing obsolete radars and three decommissioned radars and the remaining two radars were to be used for new induction. Mention regarding the delay in replacement of obsolete and decommissioned radars was made in the Paragraph No. 2.2 of CAG's Audit Report No.CA 5 of 2008. In their Action Taken Note (August 2011), Ministry, while accepting the delays in acquisition of radars, stated that the existing decommissioned radars were being utilised to assist the aircraft for safe landing although this *adhoc* arrangement had limitations and was not as efficient as PAR. As a follow up to Ministry's response on delay in acquisition of radars, Audit scrutiny during the year 2012 revealed the following:

I. Non-availability of repair facilities at HAL

As part of the collaboration agreement entered into by HAL with the OEM, HAL was to avail of ToT from OEM for setting up of 'Depot'[15] level repair facility for repair of critical items of these radars. However, the repair facility could not be set up (September 2013) as no separate funds were allocated by Ministry for establishing the same at HAL. We further observed (August 2012) that HAL was dependent on OEM for repair of spares, causing inordinate delay in the repair of unserviceable items thereby adversely affecting operations.

II. Procurement of additional PAR

IAF had planned (August 2012) for procurement of additional 15 PAR as new induction as well as replacement for the radars which were being declared as obsolete. These additional radars were required to be supplied by HAL by 2015 in a phased manner. Even though, Acceptance of Necessity (AoN) for procurement of eight PAR was accorded by the Defence Acquisition Council (DAC) in January 2006, the Request for Proposal (RFP) to HAL had not been issued (March 2013). The reason for delay in finalising the RFP as stated by Air HQ, was due to their apprehension (August 2012) in procuring these radars again from HAL because of the problems encountered by IAF in implementation of the contract signed in 2002.

III. Change in induction plan

As per the approved induction plan, 17 PAR procured under contract of 2002 were to be inducted at AF bases. We observed (January 2013) that the induction plan of one PAR (static) was changed twice as discussed below:

- In January 2005, a PAR (static) meant for Air Force station 'A', was relocated to AFS 'B' due to induction of fighter aircraft at the station. With the induction (March 2006) of fighter aircraft at the base, the installation of PAR had become an urgent operational requirement as this base experiences adverse weather conditions for atleast six to seven months in a year. For installation of the radar, sanction for

[15] Depot level = Setting up of Repair/overhaul facilities at HAL

creation of infrastructure was accorded (March 2007) by the Central Air Command at an estimated cost of ₹1.86 crore. Contract for the work services was concluded (December 2007) at a cost of ₹1.74 crore. However, the work commenced in January 2008 with the PDC[16] as October 2008.

- While the work services were in progress, Air HQ decided (December 2008) to re-locate the radar to AFS 'C' due to operational reasons. Air HQ, however, decided (December 2008) that work services already commenced at AFS 'B' should continue till completion of the work. However subsequently, the work services was foreclosed in June 2011 without completion of the same due to the consideration that as and when the new PAR equipment is procured for AFS 'B', fresh work services may be initiated depending upon its type and make based on the instruction of the CFA. An expenditure of ₹1.62 crore had already been incurred on the work services. In place of the earlier PAR static version, IAF proposed a PAR transportable version for AFS 'B' to be procured under Phase-II. As a result, an expenditure of ₹1.62 crore incurred on work services, was rendered infructuous since the work services created could not be put to use because the static radar meant for AFS 'B', was shifted to AFS 'C'.

- For installation of radar at AFS 'C', Administrative Approval was accorded (October 2009) by HQ WAC at a cost of ₹0.49 crore, subsequently revised to ₹0.61 crore in October 2011 due to change in the scope of work. The radar and associated equipment were received at AFS 'C' between July 2011 and May 2012. Though the PDC for installation of radar was June 2011, the radar could be installed only in July 2012 due to late receipt of radar equipment/shelter and DG sets.

[16] PDC = Probable date of completion

We observed (July 2012) that even though there was no fighter squadron available at AFS 'C' (since December 2011), it was proposed (December 2009) by Air HQ to install a radar which involved creation of civil assets worth ₹0.61 crore. We further observed (August 2012) that due to non-availability of the fighter squadron at AFS 'C', the radar along with associated civil assets could not be put to use (August 2012).

On being pointed out by Audit (January 2013) regarding changes in induction plan, Air HQ stated (March 2013) that the induction plan was changed in view of the degraded serviceability status of the existing PAR at AFS 'C'. Air HQ further added that preference was given to replace the existing vintage radars at strategically important airfields rather than induction at *de-novo* locations. In response to further query (December 2013), Air HQ stated (December 2013) that fighter squadron has not been inducted at the AFS 'C' (November 2013).

The reply furnished by Air HQ is not acceptable as AFS 'B' was also considered (January 2005) strategically important at the time of re-locating the radar from AFS 'A' keeping in view the existence of fighter squadron at AFS "B' and adverse weather conditions at the station for at least six to seven months in a year. The absence of precision approach landing aid adversely affects the operational capability of the base during the inclement weather.

Thus, acquisition of critical Precision Approach Radar has been inordinately delayed. In addition, due to change in location of one PAR, infrastructure worth ₹2.23 crore (₹1.62 crore + ₹0.61 crore) created for housing the radar at two stations could not be utilised for the intended purpose. Besides, HAL continued to depend on OEM for repairs due to non availability of repair facility at HAL for these Radars.

The draft paragraph was issued to the Ministry in July 2013; their reply was awaited (December 2013).

Works Services

3.5 Availability of airfield infrastructure/runways in Indian Air Force

3.5.1 Introduction

Airfield is an area of land comprising runway, taxi-tracks, dispersals, blast pens and entire zone of safety surrounding the area which is used for the operation of the aircraft. Runways are paved surfaces intended for takeoff and landing of aircraft. The number and orientation of runways at an aerodrome will depend upon the volume of traffic, runway occupancy time and climatological data on surface winds. The runway surface should provide good braking action and co-efficient of friction under all surface conditions. The runway should be able to withstand the aero planes it is intended to serve. Blast pens are used for housing aircraft and protecting them against enemy attack.

3.5.2 Organisational set-up

Directorate of Air Force Works headed by Assistant Chief of Air Staff (Air Force Works) is responsible for co-ordination and formulation of all works services, related policy matters and to oversee planning, prioritization, processing, sanctioning and execution of work services in the Air Force. As regards runway resurfacing projects, the Directorate is required to obtain in-principle approval of Ministry of Defence (Ministry) as per the rolling plan. These works are sanctioned as special projects over and above Annual Maintenance Work Programme. Processing of individual runway resurfacing projects is to be done as per the provisions laid down in Defence Works Procedure (DWP). SEMT[17] Pune, is the specialized agency on recommendations for projects from technical angle for consideration by the

[17] Soil Engineering and Material Testing Wing under College of Military Engineering Pune

Board of Officers convened for assessing the requirement of work services for runway resurfacing.

3.5.3 Audit Objectives

Audit was conducted with a view to ascertain:-

1) Whether supporting infrastructure for smooth operations of runways had been made available at the right place and at the appropriate time.
2) Whether work done by MES authorities was properly planned, executed and made available to the user in time and as per the operational requirement.
3) Whether works executed by MES were without time and cost overruns.

3.5.4 Audit Criteria

Sources of audit criteria adopted were:

- Manual of Air Force Works, Land and Quartering.
- Engineer-in-Chief's (E-in-C) technical instructions for siting and lay out of new airfields.
- Provisions of the relevant Defence Work Procedure.
- Time schedule for post administrative planning and execution of works issued by Ministry in April 1986.

3.5.5 Scope and Methodology

Resurfacing of runways is being undertaken as a special project work since 2008 with at least five runways required to be taken up in each year for resurfacing with an aim to ensure availability of requisite standard of runway and associated surfaces for smooth operations. As of November 2011, resurfacing on ten runways was under progress. Audit scrutinized records pertaining to all the ten runway resurfacing projects (value ₹693.39 crore). In addition, records pertaining to one Airfield Lighting System (₹6.61 crore), one

Airfield Drainage System (₹4.45 crore) and two Blast Pen works (value ₹26.39 crore) were also scrutinised. A test check of the Statement of Case, Board of Officers (BOO) proceedings, Administrative Approval (AA) Registers, Contract files, Paid vouchers and Progress Report of the works as well as Expenditure for the period 2009 to 2012 was carried out in the selected Air Force Wings and MES units/formations in Western, Central, Southern, South Western and HQ Training Commands during the period from April 2012 to February 2013. Audit Methodology adopted involved issuing questionnaires, audit memos and scrutinizing cases at Command/Wing/MES formations, scrutiny of Statement of Case indicating the user requirements, scrutiny of AA issued by MoD/Air HQ for creation of infrastructure and scrutiny of quarterly/monthly progress reports of the works with regard to achieving the target date and cost of the project.

3.5.6 Audit Findings

We observed (April 2012 to February 2013) that there were delays in sanctioning of works for runway resurfacing and blast pens, changes in design after sanctioning of works involving time and cost overruns, poor or sub-standard quality of civil work executed by MES at many places, leading to rectification/ repair of defects at additional costs besides delay in availability of infrastructure to the users which ultimately had an impact on their operational preparedness. Details are discussed below:-

3.5.6.1 Runway resurfacing works

(A) Delay in sanction of works

After examination and approval of the Statement of Case put up by the users for demand for planning of new works the Competent Financial Authority (CFA) is required to convene a Board to examine the various features as given of the new works proposal and the need, if any, for compressing the normal timeframe of carrying out the works. Appendix ‘F’ read with Para 31 (e) of DWP, further lays down that any work should be sanctioned within 28 weeks from the date of completion of the Board Proceeding relating to the work.

We observed during audit scrutiny (February 2013) that MoD took 65 and 45 weeks in according AA (Administrative Approval) in two AF Stations (Nal and Leh) as against the laid down timeframe of 28 weeks from the date of completion of the Board Proceedings.

The delay with regard to the runway at AFS Leh which was last resurfaced in 1990, is noteworthy as this is the highest operational airfield in the world and the land routes to this region are blocked during winter months. Therefore, the runway forms the backbone for the entire region for operations, winter stocking and air maintenance. The runway is also used by civil aircrafts.

The issue regarding delay in work sanctions was referred (February 2013) to Air HQ. However, no reply was received (December 2013).

(B) Delay in Execution

AFS Leh

Leh is a notified operational area and as per operational works procedure[18] read with the Directive on management of operational works issued by the Air Headquarters in June 1999, the Commander in the operational area is competent to order execution of operational work warranted by military situation. As the existing runway at Leh was prone to flash floods due to melting of snow during the summer months, the runway was not fit for fighter operations. Accordingly, in July 2006 a Board of Officers (BOO) recommended provision of an airfield drainage system at the earliest for prevention of flash floods in view of the operational and strategic importance of this airfield. Air Officer Commanding-in-Chief (AOC-in-C), Western Air Command therefore, invoked operational works procedure (September 2006) and sanctioned ₹4.45 crore, for a drainage system to arrest this problem. Chief Engineer (AF) Udhampur concluded a contract in April 2007 at a total cost of

[18] Operational Works procedure authorizes sanctioning of works actually required for execution of operations in areas declared "Op Work Area" by the Government of India and are restricted to: Construction and improvement of Airfields, ALGs, Helipad roads and bridges, Field water supply, Ancillary buildings to tented camps and hospitals, Shelters (but not huts) as substitute for tentage, Operational and technical accommodation and Field Defences whereas Defence Works Procedure is applicable to all other works not covered under operational works procedure.

₹3.27 crore with PDC[19] as April 2008. However, the contractor did not undertake the work with due diligence and despite extension of the PDC up to September 2010, the work had progressed up to 43 *per cent* only till July 2010. Due to cloud burst and flash floods on the night of 5/6 August 2010, the runway was covered with mud and stones and the under construction portion of Airfield drainage was also partially damaged. An amount of ₹1.43 crore had been paid to the contractor till then and the department initiated a case for foreclosing the work as the contractor was reluctant to proceed with the work.

We observed (February 2013) that the non-completion of the operational work even after a lapse of six years of sanction had defeated the very purpose of sanctioning the work.

CE (AF) Udhampur stated (March 2013) that due to flash floods the work already executed was partly damaged and, therefore, it required a change in design under the original contract. Hence the work could not be completed within the original PDC.

The fact, however, remains that the air field drainage system which was conceived as an operational necessity in September 2006 was yet (March 2013) to come up at the Station.

AFS Nal

The main runway at the Station was last resurfaced in 1991. SEMT Pune, had recommended resurfacing of runway in March 2009 stating that all the facilities in the airfield were structurally inadequate. The findings of SEMT were also confirmed by a BOO assembled at AFS Nal in April 2009, which recommended resurfacing of the entire aircraft movement area and other associated/additional works. Ministry sanctioned the work for resurfacing of runway and aircraft operating areas at AFS Nal in May 2011 for ₹110.96 crore. Thereafter, CE (AF) WAC concluded a contract in October 2011 for ₹99.43 crore with PDC as February 2013.

We noticed (February 2013) that despite bad condition of the runway as well as other aircraft operating areas brought out by SEMT in March 2009 and

[19] PDC= Probable date of completion

confirmed by the BOO assembled in April 2009, the execution of the resurfacing work was delayed by over two years due to delay in finalization of Board proceedings at the Station level, issue of AA by the sanctioning authorities and slow execution of work. This resulted in non availability of the infrastructure for smooth operation of aircraft.

The issue regarding delay in execution of the work was referred (February 2013) to Air HQ. However, no reply was received (December 2013). In response to follow up (November 2013) by audit, CE (AF) WAC, however, stated (December 2013) that the work was completed in April 2013.

The runway and associated structures at the base thus, continued to remain (up to April 2013) unfit and structurally inadequate thereby impacting operational preparedness.

(C) Non compliance of technical requirement in works

Directorate of Pavement at E-in-C's Branch is responsible to advise the Station and Zonal Chief Engineer (CE) with regard to the scope of work and proposed design. PCN Evaluation[20] report from SEMT is mandatory before taking up any work pertaining to resurfacing of runway. Responsibility for PCN[21] evaluation rests with SEMT. PCN helps to ensure that the airport/ runway ramp is not subjected to excessive wear and tear, thus prolonging its life.

At two AF Stations (Tambaram and Pune), Audit found that compliance of technical parameters viz. soil testing, pre-technical check by the pavement specialist agency and adherence to other prescribed procedures had not been made. This led to laying of premature resurfacing, and execution of additional works for repair. Details are given below:

AFS Tambaram

[20] PCN evaluation - Evaluation of the bearing strength of the pavement and soil with reference to load of the aircraft.

[21] PCN - Pavement Classification Number (A number expressing the bearing strength of a pavement for unrestricted operations)

To cope with variations in daily and seasonal temperature of the runway pavements, which tend to become soft in summers and brittle in winters, Indian Road Congress (IRC) in their special publication of 2002 had issued extensive guidelines for use of modified bitumen to enhance the road life. Accordingly Directorate of Works (Design) E-in-C's branch issued guidelines (August 2002) for use of Crumb Rubber Modified Bitumen (CRMB) in place of Polymer Modified Bitumen. While using CRMB it was also essential to provide a good and efficient surface and subsurface drainage for a long lasting and strong pavement.

Runway resurfacing work at AFS Tambaram was sanctioned by Ministry in March 2002 at an estimated cost of ₹7.75 crore later reduced to ₹6.63crore (January 2003) as the cost of accepted contract was below 15 *per cent* of AA amount due to use of CRMB in lieu of Polymer Modified Bitumen. The work was completed in 2003 at a cost of ₹5.72 crore. Although the work was executed by using CRMB as per E-in-C's guidelines, yet a good sub-surface drainage system was not provided as observed in the study reports by the College of Military Engineering in 2007 and 2008. In order to rectify the defective work, Ministry sanctioned work services in July 2010 for ₹81.43 crore which *inter alia* included ₹28.90 crore for resurfacing work and ₹21.23 crore for area drainage. The work was due for completion in July 2013.

We observed (December 2010) that the full stretch of runway would not be available for operations and training purpose, till completion of the resurfacing work and the issue of non provision of sub-surface drainage system despite extant instructions, had also not been investigated.

In response to audit query (December 2010) on non-adherence to the E-in-Cs instructions of providing a good and efficient surface and sub-surface drainage, GE (AF) Tambaram stated (December 2010) that as the runway had a one sided transverse slope, drainage was considered on one side of one end of the runway and that there was no observations to infer presence of subsoil water. GE (AF) further stated (December 2010) that during later years water

from beneath the runway had surfaced through the cracks, thus establishing presence of sub-soil water.

Thus, had the guidelines for providing good sub-surface drainage, issued in August 2002, been adhered to during the currency of the contract, presence of sub-soil water could have been avoided.

AFS Pune

Re-surfacing of certain manoeuvering area[22] at AFS Pune at an estimated cost of ₹9 crore was recommended (October 2010) by the BOO with the justification of induction of third squadron, change in role of the existing squadron (Conversion Training) and phenomenal growth of civil aviation with adequate connectivity only through this area.

We observed (January 2013) that without first getting the runway evaluated for PCN from SEMT, Air HQ accepted the necessity and accorded AA in February 2011 for the work at an estimated cost of ₹7.47 crore with a PDC of 56 weeks. For execution of work, CE (AF) Gandhinagar concluded (February 2011) a contract with M/s Mohanlal Mathrani Constructions Private Limited at a cost of ₹5.94 crore. The work was completed by the contractor in August 2012 at a cost of ₹6.53 crore.

In response to the Audit observation (January 2013) on PCN evaluation, GE (P) Lohegaon stated (January 2013) that no PCN evaluation was carried out before undertaking work for execution and PCN value was designed by the E-in-C's branch.

The reply is, however, not justifiable as the mandatory requirement of PCN evaluation was not fulfilled prior to sanction and execution of the additional work.

(D) Poor quality of work

[22] The part of an aerodrome to be used for the take-off and landing of aircraft and for the movement of aircraft associated with take-off and landing.

As per the Airfield Pavement Management system issued by Engineer-in-Chief's Branch, Army Headquarters, the existing design analysis caters for a structural usability pavement life of 20 years.

Out of ten runway resurfacing projects examined in audit (April 2012 to February 2013) the runway resurfacing work at four stations had prematurely failed, which led to additional expenditure on repairs besides non-availability of runways for operational and training purposes as discussed in subsequent paragraphs.

AFS Leh

The work on runway resurfacing was sanctioned by Ministry in March 2009 at an estimated cost of ₹29.39 crore with PDC of three working seasons[23]. Subsequently change in design was sought by GE (I) AF/CE (AF) from E-in-C's Branch and a contract for execution of the work was accepted (March 2010) by CE at a cost of ₹33.59 crore after obtaining revised sanction in March 2010 for ₹34.45 crore. The work was completed in October 2011 at a cost of ₹36.12 crore. After completion of the work; it was noticed by the users (AFS Leh) that the runway suffered continuous degradation due to surface wear and tear. Temporary repairs were carried out in March 2012 by the contractor at no extra cost. On completion of the repair work, the runway surface was checked by the users in April 2012 after landings of a few fixed wing aircraft. It was found that the runway had suffered abrasions to surface due to tyre friction and the runway was adjudged unfit for fighter operations by the users. The affected portion of the runway was repaired by the contractor in September 2012 within the defect liability period.

We observed (February 2013) that degradations were noticed again in December 2012. Joint inspection at Station level carried out in January 2013 in association with General Reserve Engineer Force (GREF) revealed that to enhance the life of runway, additional cost of ₹3.22 crore would be required for temporary restoration and ₹10.21 crore for permanent measures.

In response to the audit query (February 2013) regarding reasons for the defective work, CE stated (March 2013) that the surface was damaged due to

[23] Leh is an extreme cold climate area and the working season remains there for six months (April- May to September-October) in a year.

unconventional method under which salt and other chemicals were used by General Reserve Engineer Force (GREF) for removal of accumulated snow from the surface. Final decision on whether temporary restoration or permanent measure to repair the runway to be adopted was pending (March 2013) with AFS authorities.

The reply given by the CE is not acceptable since the resurfaced runway at the station had shown degradation of surface immediately after completion of the resurfacing work. The subsequent change in the design involving an additional expenditure of ₹5.06 crore also did not prove effective and the degraded runway was yet (March 2013) to be made good.

AFS Bareilly

Resurfacing of the runway at AFS Bareilly was carried out in March 2007 under Para 11 of DWP-1986[24] at a cost of ₹35.94 crore. Two squadrons of 'X' aircraft existed at the station but the deteriorating runway surface was a risk for operating these Foreign Object Damage (FOD)[25] aircraft. The runway surface started showing deterioration within three years of resurfacing. This was observed (April 2010) by the Staff authorities as indicative of deviation from the design gradation at the time of execution of the work. A BOO, recommended (September 2011) work services for provision of Dense Asphalt Concrete (DAC) on existing surface at a cost of ₹8 crore.

We observed (May 2012) from the report on runway at AFS Bareilly submitted (August 2011) by CE (AF) Allahabad that the resurfaced runway surface had deteriorated prematurely and the runway surface was a risk for operating the aircraft of the two squadrons.

In reply to our audit observation (May 2012) regarding premature deterioration of the runway, AFS Bareilly stated (July 2012) that the Bareilly

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[24] Para 11 of DWP – 1986 – Any local Commander may order the commencement of works in unexpected circumstances arising from unforeseen operational necessity or urgent medical grounds, natural disasters which make it imperative to short-circuit normal procedure and when reference to appropriate CFA would entail dangerous delay.

[25] Foreign object damage (FOD) is any damage attributed to a foreign object. FOD is an acronym often used in aviation to describe the damage done to aircraft by foreign objects.

Station is situated at the foot hills of the Himalayas in Western UP and the climatic condition like heavy rainfall and hot weather condition could have resulted in deterioration of runway before its prescribed life.

The reply is, however, not acceptable as the runway had shown degradation within three years of resurfacing executed at site as was observed by the staff/engineer authorities. Further in view of the stated climatic condition, adequate safeguards should have been provided in the contract with regard to quality of work and maintenance thereof.

In response to further audit follow up (September 2013), the AFS Bareilly stated (November 2013) that work services for provision of DAC layer over the existing runway sanctioned (October 2012) at a cost of ₹14.88 crore was released by Air HQ and the work had commenced in October 2013.

Thus, the runway would also be unavailable for the normal sorties during the period of repair.

AFS Halwara

Based on the recommendations of a BOO (September 2008), Ministry accorded (March 2010) AA for extension of runway at an estimated cost of ₹98.78 crore. The work was due for completion in March 2012. The CE (AF) concluded two contracts (August 2010 and September 2011) for Runway resurfacing and construction of underground Air Traffic Controller and Runway Controller huts at a cost of ₹89.72 crore and ₹1.96 crore respectively. While the work was in progress, the resurfacing work failed prematurely (March 2011) due to deviations from the design prescribed by the E-in-C's branch in May 2009. The defective work was inspected in July 2011 by E-in-C's branch who directed the CE to adopt either the revised design of July 2011 or the original design of May 2009. Garrison Engineer (GE), however, recommended (August 2011) adoption of design of May 2009 with additional financial implication of ₹1.02 crore.

We observed (October 2012) from the observations made after inspection of the runway resurfacing work by GE (I) P (AF) Halwara (14th September 2011), that the average thickness of flexible portion was 168 mm as against the desired thickness of 205 mm and that of Dry Lean Concrete (DLC) was

120 mm against the desirable 150 mm resulting in loss of ₹3.74 crore. The report, however, was withdrawn on 26th September 2011 at the behest of CE (AF) Palam (16th September 2011) stating that the inspecting officer's role was advisory in nature and no executive powers were vested under CE orders (August 2011). Thereafter, CE, Western Command, Chandimandir ordered (March 2012) to convene a Technical Board to investigate all matters related to quality of work, thickness of various portions of runway. Complete checking of the runway work was also carried out by SEMT in September 2012.

In reply to the audit observation (October 2012), Chief Engineer (WAC) Palam stated (November 2012) that most of the defects have been rectified by the contractor and the rectification was being done at contractor's cost. CE further stated that the reports of the Technical Board as well as SEMT were awaited (November 2012).

The reply is, however, not acceptable as it is silent on our observation relating to poor workmanship and on the recommendation of investigations carried out by SEMT and Technical Board and action taken thereof.

The fact remains that the required thickness of runway resurfacing was deficient and the design prescribed by E-in-C's Branch in May 2009 was not adopted immediately on commencement of work in December 2010 and was adopted only in August 2011 by the GE, which not only resulted in loss of ₹3.74 crore but also rendered the runway unavailable for flying.

AFS Bamrauli

The necessity for resurfacing of runway and aircraft operating surface/pavement at AF Station Bamrauli was accepted by Ministry and work was sanctioned (March 2010) for ₹61.12 crore to be completed in 24 months. CE (AF) Allahabad concluded a contract (September 2010) for execution of the work at a cost of ₹48.01 crore with PDC as October 2011.

We observed (August 2012) from the Tour Notes (February 2012) of visit by the Additional Director General Technical Examination (ADGTE) (Engineer-in-Chief's Branch) to AFS Bamrauli that the work was sublet by the contractor and the quality of the resurfacing work on the runway and taxi tracks was

found to be defective since the Pavement Quality Concrete (PQC) was not as per the contract specifications.

In reply to the audit observation (August 2012), CE (AF) Allahabad stated (June 2013) that the matter regarding subletting of the contract was under examination and that the defect rectification work was in progress.

The reply is however not acceptable as the stated corrective action in itself is indicative of the fact that there was negligence in supervision of the work by the MES in view of deviations from the contract specifications and subletting of the contract.

3.5.6.2 Construction of Blast pens

Blast Pens are required for housing aircraft and protecting them against enemy attack. We observed (September 2012) that while the suitable blast pens for 'X' aircraft were not available at AFS Bareilly, the blast pens were constructed at AFS Nal under Para 11 of DWP to meet the operational requirement. The blast pens so constructed at Nal could not be operationalised due to defects in construction. Details are given below:-

AFS Nal

Four Standard Size 'X' aircraft Blast pens and connecting loop Taxi Track[26] at AF Station Nal were sanctioned by the Station Commander, AFS Nal under Para 11 of DWP-1986 in February 2003 for ₹24 crore. The work was completed (September 2005) at a cost of ₹16.55 crore, by Military Engineer Authorities but immediately thereafter defects were noticed by the BOO in the connecting dragon loop[27] and lance tarmac[28] constructed simultaneously under this contract. The matter was taken up by AFS Nal with MES in October 2005 following which the CE Palam (CE) directed the GE (AF) Nal for early rectification of the defects. In response, 55 slabs were recast/ repaired in December 2005. CE deputed (November 2005) an inspecting officer to carry out inspection of the newly constructed blast pens and connecting services.

[26] Taxi track (taxi way) is a path on an airport connecting runways with ramps, hangars, terminals and other facilities.
[27] Connecting the Aircraft Parking Area with the Blast Pens
[28] Parking Area of Aircraft

Based on the report (December 2005) of the inspecting officer, CE had opined (December 2005) that the cracks were limited to relatively small number of slabs and rectification work was already being attended to by the concerned executives and would be completed by January 2006. The pavement was accordingly declared (December 2005) fit for use and the surface was taken over for operational use then.

We observed (September 2012) that in August 2008, HQ Western Air Command (WAC) had ordered a Court of Inquiry (COI) at AFS Nal to inquire into the circumstances under which deterioration of recently constructed dragon loop and lance tarmac took place. COI assembled in February 2009, had confirmed the faults. Subsequently, COI reassembled in April 2010 and opined that the inspecting officer be questioned with regard to the basis on which the inspecting officer had declared (December 2005) the pavement fit for use. Even though COI was yet (September 2012) to be finalized, HQ WAC directed (April 2011) CE (AF) WAC Palam to take suitable action against Military Engineering Services (MES) personnel and rectify the defective work at the cost of the defaulting contractor. However, we observed (September 2012) from the proceedings of BOO (April 2009) that the resurfacing of dragon loop and lance tarmac was projected in the work subsequently sanctioned (May 2011) for resurfacing of runway and aircraft operating areas at AFS Nal.

In response to our audit observation (September 2012) regarding deterioration of dragon loop and lance tarmac, AFS Nal stated (September 2012) that the deteriorated portion as observed during handing/ taking over stage (December 2005) were rectified by the contractor at his own cost.

The reply is, however, not correct as subsequent to handing and taking over (December 2005) of assets between MES and AFS Nal, based on the investigations carried out (February 2009 and April 2010) by COI, HQ WAC had ordered (April 2011) rectification of defects at risk and cost of the defaulting contractor.

In response to further follow up (November 2013) by audit, CE (AF) WAC Palam stated (December 2013) that work relating to provision of resurfacing

of runway and aircraft operating areas at AF station Nal had been completed (April 2013).

The fact remains that blast pens constructed in 2005 at a cost of ₹16.55 crore could not be operationalised as the connecting dragon loop to these blast pens constructed simultaneously were not functional due to being defective till the repair work got completed in April 2013.

AFS Bareilly

The existing 35 blast pens at AF Station Bareilly were smaller in size and were thus unsuitable for undertaking special operations of 'X' aircraft. Therefore, it was proposed by AFS Bareilly to construct two RCC double entry blast pens with allied facilities and external services at the station. Accordingly, Air HQ accorded (October 2008) AA for construction of double entry blast pens at an estimated cost of ₹9.84 crore with PDC as October 2010. The work was not taken up for execution as the rates adopted in the AEs by MES were on lower side which were prepared keeping in view the basic plinth area rate for the blast pen which could not adequately cover the realistic cost of pens. CE AF Allahabad submitted (October 2010) a Statement of Case for revision of the sanction to ₹18.53 crore due to anticipated upward revision of cost estimate beyond tolerance limit without change in the scope of work.

We observed (July 2011) that MES had failed to prepare the estimates for construction of two double entry blast pens correctly which resulted in delay in execution of the work and non-availability of blast pens for parking of the aircraft.

In response to our audit observation (July 2011) regarding non-execution of the work services against the sanction of October 2008 and as to where the aircraft were being parked, AFS Bareilly stated (July 2011) that the blast pens were being constructed for safety of aircraft during war and emergency and the aircraft of both the squadrons were being parked in hangers.

During further follow up by audit (November 2012) AFS Bareilly stated (November 2012) that the work services for New Generation Hardened Aircraft Shelter (NGHAS) had been finalised and directions had been issued to Command HQ to project their requirement for the NGHAS and hence issue of administrative approval for the work relating to the two double entry blast pens was not required. AFS Bareilly also intimated that the work with respect to double entry blast pens was foreclosed (May 2012) on the instructions of Air HQ. In response to further audit query (September 2013) on the status of work services for NGHAS, AFS Bareilly stated (November 2013) that the work had been approved by Air HQ in the Annual Major Works Plan (AMWP) 2013-14.

The reply in itself is indicative of the fact that due to non availability of blast pens at the base, aircraft continued to be parked in hangars with less protection (November 2013).

3.5.6.3 Airfield Lighting System

Airfield Lighting System (AFLS) is an important operational and flight safety requirement for any aerodrome where flying is imperative at night as well as during poor visibility conditions. AFS Leh undertakes dawn to dusk air maintenance operations by medium and heavy transport aircraft apart from helicopters. Night operations were being carried out by 'Z' and 'W' aircraft in this airfield during moon phase and fighter aircraft were also used from Leh Airfield during activations. In absence of the AFLS, the runway lighting was being achieved by using solar goose neck flares which was time consuming and involved great effort. In view of the continuous requirement of night flying at the base, installation of AFLS was conceived (December 1999) as an operational and flight safety necessity.

Our scrutiny (June 2010) and further follow up (August 2012) at AFS Leh revealed that the BOO for the AFLS was initiated in December 1999 and finalized in June 2003 at a cost of ₹4.39 crore but the sanction for the work was issued only in January 2008 at a cost of ₹6.61 crore. The work was not released (upto August 2012) for execution though AFLS stores worth ₹0.89 crore required for the project were allotted in 2003 and received at AFS Leh in May 2006.

AFS Leh stated (June 2010) that the work was not released for execution and the issuance of fresh AA for the work was pending with Air HQ. It further stated (August 2012) that the project had been closed and included in the project for Modern Air Field Infrastructure (MAFI)[29] Phase II which would be taken up for sanction after work on 30 airfields in Phase-I was completed. The stores costing ₹0.89 crore received for the project were therefore allotted (September 2009 to January 2010) to other Air Force units and no expenditure had been incurred on the project.

However, the fact remains that despite a lapse of 13 years since initiation of requirement for the work, AFS Leh was yet (August 2012) to be equipped with a proper lighting system which had imposed limitations on night flying thereby impacting operational preparedness of the base.

3.5.6.4 Conclusion

We observed that there were delays in sanctioning of works at two stations. Runways at three stations were not fit for operation of fighter aircrafts. Runway at one Station was also prone to damage due to floods during summer for which a proper drainage system although sanctioned as an operational work has not come up at the station despite delay of seven years. At another station, operation of aircraft was risky due to FOD problems and non-availability of Blast Pens for parking of aircrafts. There were cases of delays in sanction and execution of works especially due to change of design sought after sanction for works. In most of the cases, the work executed by the contractors was of substandard quality while supervision done by MES was also poor. The Blast pens constructed in 2005 at a station could not be operationalised due to defective construction of connecting dragon loop.

3.5.6.5 Recommendations

- In order to avoid time and cost overruns, user requirements should be spelt out clearly prior to convening of BOO to avoid frequent changes in design after sanction and during execution of works.

[29] MAFI is a project under which various facilities including new generation Air field Lighting System are to be installed at the various airfields.

- Effective and technical supervision and onsite monitoring of runway resurfacing projects may be ensured by E-in-C's branch for timely completion and execution of quality work.

- E-in-C's Branch should ensure that the designs for runway resurfacing are varied as per the geographical location of the Station. The designs made by them should contain a certificate to this effect.

- Sanctioning authority should ensure that time frame prescribed in rules/manuals is observed for effective planning, co-ordination and execution of the projects.

- IAF may also carry out timely impact evaluation of the existing airfield infrastructure to ensure that operational preparedness is not adversely affected.

The draft paragraph was issued to the Ministry in July 2013; their reply was awaited (December 2013).

3.6 Blocking of funds due to improper planning and execution of work

Deficient planning and execution of work delayed the re-routing of electrical lines. As a result, the work was no longer required by Air Force which led to blocking of funds of ₹6.14 crore.

Military Engineer Services (MES) Regulation stipulates that when the necessity for a project has been accepted, a siting board will be convened to draw up a detailed lay out plan and prepare an approximate estimate of the cost. If the proposed site encroaches or in any way affects the civil department roads, lands or interests, the sanctioning authority should obtain the consent of the authority concerned. The concurrence of all departments will be obtained during all stages of the proposal and will be eventually recorded in writing upon the final layout plan. In contravention of these provisions, Air Headquarters (Air HQ) sanctioned (April 2005) a work without obtaining

necessary consent from other entities[30] that led to blocking of funds amounting to ₹6.14 crore with a State Electricity Board as discussed below:

Air Force Station, Thanjavur started functioning from March 1990. Two concrete runways of 1942 vintage exist at this airfield. A survey was carried out around the airfield in 2003 with an objective to stage combat aircraft squadron operations at the station and to improve aerial connectivity of this area. The survey indicated that three EHT/HT/LT[31] lines were passing through the approach of runway which were considered as an obstruction to the safe operations of the aircraft. In September 2003, a Board of Officers (Board) recommended re-routing the overhead EHT/HT/LT lines on priority at an estimated cost of ₹3.67 crore as furnished by the Tamilnadu Electricity Board (TNEB).

The Board proceedings were sent to Air HQ by HQ Southern Air Command (SAC) in November 2003. As per the Board proceedings, the RDO[32] and the Tahsildar, Thanjavur had committed to the TNEB authorities that they would obtain a No Objection Certificate (NOC) from the land owners and would also ensure that the villagers would not take legal option and that as and when required, TNEB would apply its conditions and file required caveats. Assurance was also given as per the stated Board Proceedings by Tahsildar, Thanjavur to the TNEB that the Tahsildar and the RDO would sort out disputes, if any.

We observed (July 2009) in Audit that Air Headquarters (Air HQ) accorded an Administrative Approval (AA) in April 2005 at a total cost of ₹3.67 crore after a lapse of 17 months. IAF authorities attributed the delay in according AA to various agencies who were involved in finalizing the work. As a result of delay in according AA, TNEB revised (August 2005) the estimates to ₹4.37 crore based on 2005-06 rates. Accordingly, the revised AA of ₹4.37 crore was issued (June 2006) by Air HQ and the work was released for execution (June 2006) to TNEB as a Deposit Work. Although an advance payment of ₹0.43 crore to TNEB was released (January 2006), TNEB,

[30] Other entities : TNEB, State Government (RDO and Tahsildar)
[31] High Tension Poles and Cables
[32] RDO – Revenue Divisional Officer

however, did not commence the work and insisted for release of the full amount and accordingly full amount of ₹4.37 crore was deposited by MES in October 2006. Subsequently, the AA was further revised (February 2008) by Air HQ to ₹6.14 crore based on 2007-08 rates (May 2007) and the balance amount was paid by the MES to TNEB (March 2008). TNEB commenced the work in March 2008. However, it was noticed that the work did not progress due to litigation between land owners and the TNEB as the local villagers resisted laying of the pilons on their land and thereafter obtained a stay order from the court.

On the matter regarding inordinate delay in completion of the project being pointed out in Audit (March 2013), HQ SAC stated (June 2013) that Command Works Officer, HQ SAC had requested (November 2012) Chief Engineer (AF) Bangalore to study the contract agreement with the TNEB for the cancellation of work on the ground of inordinate delay and intimate the legal action for taking up the refund of the deposited amount. HQ SAC further added that the CE AF had asked (January 2013) the GE Thanjavur to forward the details of work executed by the TNEB along with details of expenditure incurred item wise.

We further observed (May 2013) that the final decision on closure of work had not been taken (May 2013) resulting in blocking of funds amounting to ₹6.14 crore with TNEB since March 2008.

HQ SAC in its reply stated (June 2013) that the TNEB had not filed any appeal to get the stay vacated despite instructions by the District Collector to pursue the case for early vacation of the stay order.

The reply lacks justification as it is silent on compliance of terms of the MES Regulation, whereby IAF/MES being the sanctioning authority are required to obtain the consent of the District Revenue Authorities in respect of obtaining the NOC by them from the land owners and record the same in writing on the final layout plan. Further, IAF/MES also failed to ascertain before release of funds to the TNEB whether the requisite NOC had been obtained by the District Revenue Authorities from the land owners.

We also noticed (June 2013) that as per the conditions stipulated in the AA of April 2005, an agreement was to be signed between the TNEB and MES besides signing of an "Indemnity Bond" by the TNEB. However, the TNEB had refused (December 2006) to sign either the Indemnity Bond or the agreement on the ground that normally only an undertaking is obtained from all the Government organizations/Private/Public Sectors whenever works are carried out on DCW[33] basis. The reasons given by the TNEB were accepted by the IAF/MES even though non-signing of the agreement/non-execution of Indemnity Bond was in contravention of the provisions in the AA.

Thus, deficient planning and execution of work on the part of IAF/MES resulted in blocking of funds amounting to ₹6.14 crore from the year 2008.

The draft paragraph was issued to the Ministry in June 2013; their reply was awaited (December 2013).

Miscellaneous

3.7 Avoidable payment of Income Tax

Failure to obtain income tax exemption certificate/notification resulted in avoidable payment of income tax of ₹69.40 crore.

Ministry concluded (July 2010) a contract with HAL for manufacture and supply of 40 additional AJT aircraft for Indian Air Force (IAF) under licence agreement at a cost of ₹6460 crore with a delivery schedule of 72 months (i.e. up to July 2016). The contract with M/s Hindustan Aeronautics Limited (HAL) stipulated that all statutory taxes, duties or levies, if payable, shall be paid as per actual by the buyer. However, the buyer can produce necessary exemption certificate to avail concessional duties.

[33] Deposit Contribution Works

During scrutiny of contract, we observed (December 2012) that non compliance of the provision of the contract resulted in avoidable payment of income tax of ₹69.40 crore as discussed below:

For the manufacture of the additional aircraft, the respective OEMs[34] of aircraft and aero-engine charged licence fee and royalty amounting to ₹231.30 crore. HAL in turn charged licence fee and royalty from IAF amounting to ₹300.70 crore which was inclusive of 30 *per cent* (₹69.40 crore) towards income tax liability. Out of ₹69.40 crore paid to HAL towards income tax liability of OEMs, HAL charged ₹55 crore and ₹14.4 crore as income tax on account of licence fee and royalty respectively.

We observed (December 2012) that the IAF/ Ministry had deliberated the aspect of waiving off the income tax on licence fee and royalty for manufacture of additional aircraft in its internal CNC[35] meeting held in November 2008. However, the issue of availing of income tax exemption was neither raised by the Ministry/IAF during negotiation with HAL held on 30 April 2009 nor was such income tax exemption sought by IAF from the Ministry of Finance (MoF) despite existence of such a provision in the contract specifying that the buyer could produce exemption certificate to avail concessional duties on statutory taxes.

On the issue of non-availing of income tax concessional duties being pointed out by Audit (December 2012), Air HQ stated (January 2013) that since HAL had intimated that the contract price of licence fee and royalty was inclusive of income tax, the exemption of income tax was not sought by HAL.

Reply furnished by Air HQ is not acceptable as the responsibility for obtaining income tax exemption certificate rests with the IAF/Ministry as per the provision of the contract of 2010 and not with HAL. Reply given by Air HQ is not acceptable since IAF had obtained on earlier occasion (October 2009) income tax exemption certificates in similar cases from the MoF Central

[34] Original Equipment Manufacturers (OEMs) = M/s. British Aerospace (aircraft) and M/s Rolls Royce(aero-engine)

[35] Contract Negotiation Committee

Board of Direct Taxes (CBDT) for payment of licence fee and royalty towards direct supplies contracts concluded in March 2004 and in a contract (February 2005) dealing with the licence production of 42 AJT and 51 aero-engines in September 2005.

Thus, failure to avail of income tax exemption notification/certificate by Ministry/IAF resulted in avoidable payment of ₹69.40 crore to HAL on account of income tax on payment of licence fee and royalty to the OEM.

The draft paragraph was issued to the Ministry in June 2013; their reply was awaited (December 2013).

3.8 Allotment of office space to a private organisation

Allotment of office space to a private organization in DRDO premises without charging licence fee led to a revenue loss of ₹5.67 crore to the state.

Centre for Study of Science, Technology and Policy (CSTEP) is a private organization recognized by DSIR[36] as Scientific & Industrial Research Organization. CSTEP made a request to the Defence Research and Development Organization (DRDO) HQ for allotment of office space at CAIR Old Tech building of DRDO at Bangalore. Based on their request, Estate Management Unit (EMU), DRDO Bangalore recommended (July 2009) to DRDO HQ for allotment of ground floor office space (10,825 sq. feet) to CSTEP for a period of three years *w.e.f.* 01 September 2009 without charging licence fee as the CSTEP had worked with the DRDO laboratories on several projects of strategic nature. DRDO HQ accepted the recommendation and accorded sanction (July 2009) for allotment of office space to CSTEP for a period of three years (i.e. up to August 2012) without charging any licence fee for carrying out scientific and industrial research activities in association with DRDO. Even though the allotment was till August 2012, CSTEP has not vacated the office space so far (November 2013).

[36] DSIR= Department of Scientific and Industrial Research

We observed that CSTEP had been occupying the office space from October 2007 even before the formal request was made. We further observed that there was no extant rule which permitted allotment of Government accommodation to a private organization without levy of any licence fee and we worked out an amount of ₹3.56 crore as rental value based on the rate prevailing in the area on account of licence fee (i.e. from October 2007 to December 2011). On being pointed out (June 2012) by Audit, DRDO HQ initially approached (July 2012) CSTEP for payment of licence fee of ₹3.56 crore as worked out by audit. However, DRDO HQ subsequently defended (February 2013) their action on the ground that the CSTEP had worked with the DRDO laboratories on several projects of strategic nature and of national importance for the benefit of DRDO.

The reply of DRDO (HQ) is, however, not acceptable as DRDO itself had approached (July 2012) the CSTEP for payment of licence fee. We also noticed (November 2013) that the action initiated by the DRDO in January/August 2013 for vacation of the office space and clearance of outstanding dues from the CSTEP itself indicated that the allotment without charging of licence fee was not in order.

We referred (June 2013) the matter to the Ministry, *inter alia*, updating the revenue loss to the State due to irregular occupation to ₹5 crore since occupation of the premises by the CSTEP till May 2013.

Accepting the facts, the Ministry stated (November 2013) that CSTEP had represented to the Raksha Mantri (RM) for allowing the licence fee free accommodation and exemption/waiver from the payment of licence fee on the ground that it is a wholly charitable institution and working in research activities in close liaison with the DRDO. The Ministry further added that the RM had called for a report/comments from the DRDO HQ on the representation given by the CSTEP and the same is yet to be finalized as information is being ascertained by the DRDO from the DGDE for such other Societies having their offices on defence land and paying lease rent/licence fee.

Ministry's reply is however silent on the regularity of allotment of licence fee free premises. Further an amount of ₹5.67 crore was still to be recovered from CSTEP due to irregular occupation till date (December 2013).

3.9 Loss due to less recovery of interest

Lapse on the part of CDA, Air Force resulted in loss of interest to the Government of ₹0.95 crore.

The Controller of Defence Accounts, Air Force (CDA AF), New Delhi is responsible for the release of 'on account payments' on time to different organizations and is required to watch their utilization and remittance of unspent balances and interest earned thereon by the latter.

Ministry of Defence (Ministry) accorded (31 March 2008) a sanction for 'on account payment' of ₹104.44 crore to M/s. Bharat Electronics Limited (BEL), Ghaziabad against committed liabilities of ongoing schemes for 2008-09, which was to be adjusted against stage payments due, as per physically achieved milestones, against contracts signed till March 2008. Thereafter, BEL was to submit a statement of interest due to the Government at the actual rate of interest earned by them on the investment for the year 2008-09 to CDA AF for rendition of Audit Report of CDA AF New Delhi. On approval of the Audit Report, the amount was to be deposited as Government receipt.

The entire payment of ₹104.44 crore made to BEL in March 2008 was adjusted against stage payments by 18 September 2008. BEL submitted the interest calculation statement to CDA AF in September 2009 after a delay of one year for vetting and confirmation which showed interest earned @9.55 *per cent* amounting to ₹3.55 crore on the investment from 31 March 2008 to 18 September 2008. However, no confirmation regarding interest so calculated, was received from CDA AF despite reminders by BEL. Pending confirmation, BEL deposited (26 May 2011) the sum of ₹3.55 crore into Government account, which was encashed by the CDA AF on 28 June 2011.

We pointed out during Audit scrutiny (December 2011) the delay in depositing of interest due upto May 2011 to CDA AF, as also the recovery due

amounting to ₹0.95 crore from BEL on account of delayed payment of interest. CDA AF stated in reply (February 2012) that BEL had been requested to calculate the interest upto June 2011 and recovery thereof would be intimated to Audit.

Thereafter, CDA AF requested (July 2012) the Air HQ to take up the matter with BEL for depositing ₹0.95 crore on account of delayed payment of interest. However, the Air HQ intimated (August 2012) the CDA AF that the delay in the remittance of interest by BEL was because the CDA AF did not provide timely confirmation and that during the intervening period, BEL had kept the amount in its current account, earning no interest thereon. Hence, it would not be in order to impose further interest on BEL.

The matter was referred to the Ministry in February 2013. In their reply (August 2013), the Ministry acknowledged the loss of interest to the Government of ₹0.95 crore and attributed the loss to lack of communication between the agencies involved which according to the Ministry should necessarily be avoided. The Ministry thus added that to avoid any recurrence of such communication gap in future, necessary directions would be issued to CDAs.

Ministry's reply is however silent on fixing of responsibility for the lapse. Further, relevant instructions from Ministry were awaited (December 2013).

3.10 Recoveries at the instance of Audit

Recoveries to the tune of ₹0.70 crore were effected at the instance of Audit.

During the course of audit, instances of financial irregularities were noticed in different units and establishment. Acting upon the advice of audit, the auditee initiated necessary action resulting in recovery of ₹0.70 crore in three cases. Each case is discussed below:

Case I: Recovery of irregular payment of Compensatory Field Area Allowance

Ministry of Defence (Ministry) Orders of January 1994 stipulate that personnel serving in field area and modified field area are eligible for the grant of Compensatory Field Area Allowance (CFAA) and Compensatory Modified Field Area Allowance (CMFAA) respectively on the conditions specified in the Order. As per the Orders, personnel of Defence Security Corps (DSC) employed with Air Force units, are entitled for these allowances only if the Air Force personnel of these units are eligible for grant of these allowances.

We, however, noticed (September 2010) that DSC personnel employed with 46 Wing, Air Force had been authorized payment of CMFAA since 1 August 2007 although Air Force personnel posted at the Wing were not eligible for grant of these concessions. This resulted in irregular payment of ₹33 lakh between August 2007 and March 2011. On being pointed out in Audit, the PAO DSC recovered an amount of ₹29.50 lakh (October 2013) and informed (November 2013) us that the remaining amount would also be recovered.

Case II: Recovery on account of irregular grant of City Compensatory Allowance

In accordance with the rules prescribed for the grant of City Compensatory Allowance (CCA), the Government of India, Ministry of Defence in May 2005 authorised payment of CCA to Defence Civilians posted at 24 Equipment Depot (ED), Manauri located within 8 Kms. from the periphery of Municipal limits of Allahabad at the rates applicable to those working at Allahabad, for a period of three years with effect from 1 January, 2005. As per the CCA rules, the staff concerned have to reside within the qualified city out of necessity, that is, for want of accommodation nearer to their place of duty.

We, however, noticed (November 2007) that IAF sanctioned the payment of CCA to Air Force officers/Personnel Below Officer Ranks (PBORs) posted at 24 ED on the authority of above Government sanction applicable to Defence Civilians even though these officers and PBORs did not reside in the city and were provided accommodation at the ED.

On being pointed out in Audit (August 2008) about the irregular payment of ₹18.85 lakh to Air Force officers /PBORs during the period from 2005 to 2008, Ministry, while accepting the irregularity stated (April 2010) that the instructions were being issued to Air Headquarters (Air HQ) for recovery of irregularly paid amount. However, Air HQ took up the case with the Ministry (Pay/Service) in April 2011 for consideration of the case and impressed upon the Ministry of Finance (MoF), Department of Expenditure to admit the irregular payments and drop the draft para. The MoF and the Ministry had ruled (March 2012) the admissibility of CCA to Air Warrior of 24 ED as unauthorized and insisted for immediate recovery. Accordingly, Air Force Central Account Office (AFCAO) informed (July 2012) Audit that an amount of ₹1.02 lakh was recovered from the serving officers in June 2012 and an amount of ₹0.21 lakh was noted for recovery from NE[37] Officers to whom the same had been paid irregularly between January 2005 and August 2008. The AFCAO further added that recovery of an amount of ₹28.27 lakh paid during the same period to the airmen would be initiated on receipt of the authority from Air HQ.

In consultation with the MoF (Department of Expenditure), the Ministry, in August 2013, again instructed Air HQ to recover the irregular payment of CCA made to Air Warrior.

Thus, the total recovery of ₹29.50 lakh has been admitted by AF authorities for recovery at the instance of audit.

Case III: Recovery of liquidated damages

Headquarters Western Air Command (HQ WAC) placed (April 2008) a Supply Order (SO) for the development of an Air Operation System (AOS) on M/s NIIT Technologies Ltd, New Delhi (NIIT) at a cost of ₹1.48 crore. As per terms and conditions of supply order if the supplier fails to complete the AOS development and implementation within 10 months, the supplier shall pay to the customer Liquidated Damages (LD) at the rate of 0.5 *per cent* of the value of SO for each complete week or part thereof for delay upto a maximum of 10 p*er cent* of the value of the supply order.

[37] NE = Non effective personnel

Development of AOS software could not be completed in time despite extension of time granted thrice upto October 2010. Thus, an amount of ₹14.83 lakh (10 per cent of ₹1.48 crore) was to be recovered from NIIT on account of LD at the time of release of payment by the HQ WAC. However, IFA WAC recommended (August 2010) to HQ WAC for recovery of LD upto a maximum of 5 *per cent (*₹7.41 lakh) instead of 10 *per cent* while concurring release of second phase payment on the plea that the DPM 2006 was in force at the time of placement of SO in April 2008. Accordingly, while releasing payment against Phase II and III, an amount of ₹3.71 lakh (i.e. 5 *per cent*) was recovered by HQ WAC.

On being pointed out in audit (September 2011) that SO stipulated LD upto a maximum of 10 *per cent,* HQ WAC intimated audit (December 2011) that the development of AOS had been completed and deduction of LD upto a maximum of 10 *per cent* was concurred by the IFA and approved by the CFA. Finally, the balance amount of LD amounting to ₹11.12 lakh[38] was recovered from the payment made to the firm in March 2012. Thus, out of a total amount of ₹14.83 lakh recovered from the firm on account of LD, ₹7.41 lakh was recovered at the instance of Audit.

The draft paragraph was issued to the Ministry in May 2013; their reply was awaited (December 2013).

[38] ₹11.12 lakh = (₹14.83 Lakh - ₹3.71 lakh)

CHAPTER IV: NAVY

Procurement/Contract Management

4.1 Inadequacies in the refit of a submarine

Failure on the part of IHQ MoD (Navy) to synchronise the procurement of spares with the refit of a submarine coupled with delay on the decision to procure 204 types of spares in 2006 affected the quality and completeness of the refit of the submarine. Besides, procurement of 89 spares at a later date led to an extra expenditure of ₹18 crore.

Availability of spares and yard material[1] in time is a critical factor for timely refit of naval platforms. As per provisions of a Relevant Order, all spares necessary for the refit are required to be made available, on the day the refit of the platform commences at the dockyard. However, scrutiny (May 2011 and September 2012) of procurement of Weapon and Equipment spares, necessary for refit of a submarine of the Indian Navy, revealed that spares were not procured in time which in turn had a fall out on the refit of the submarine. The details are discussed below:

The Medium Refit (MR) of a submarine commenced at Naval Dockyard, Visakhapatnam on 01 September 2004 to be completed in 36 months. Notwithstanding the fact that, as per provisions of a Relevant Order, the spares should be made available on the day the refit commences at the dockyard, the quantum of requirement of Weapon and Equipment spares for refit of the submarine was finalised and firmed up by the Directorate of Weapon Equipment (DWE) as late as February 2006 i.e. 17 months after the commencement of the refit in September 2004. This delay was also commented (February 2006) upon adversely by the Chief of Material (COM), Indian Navy.

[1] Yard material is the basic material used in the refit of a ship viz. steel plates, timber etc.

As part of the firming up of the requirement of spares, DWE, IHQ MoD (Navy) confirmed in February 2006, the requirement of 223 types of spares (later revised to 221 items) for satisfactory refit of the submarine. These spares were meant for mission critical equipment fitted onboard the submarine. The DWE, IHQ MoD (Navy) issued (March 2006), the Request for Proposal (RFP) on Limited Tender basis (LTE) to which only two firms responded (June 2006). M/s Admiralty Shipyards, Russia was found L-1 for 178 items and M/s Rosoboron Services (India) Ltd. [ROS(I)], was L-1 for 26 items. The total L-1 quotes for 204 items worked out to ₹56.76 crore. The quote of M/s Admiralty Shipyard was valid for six months, whereas, the quote of M/s ROS (I) was valid for four months. The proposal was forwarded (September 2006) to the Ministry of Defence for approval.

As the Ministry of Defence (Finance) found the quoted prices unreasonably high, it recommended, in January 2007, that the spares should be retendered. DWE, however, in February 2007 held that all the prospective suppliers for Russian items had been issued the RFP in March 2006 and that the re-tendering would only entail inordinate delay and increase in prices, which would adversely affect the MR of the submarine. The proposed procurement did not progress further till March 2007.

Thereafter, DWE in March 2007 projected a requirement of spares for four types of highly critical items. These spares, which were a part of the earlier recommended complete procurement, were identified as a bare minimum inescapable quantity for satisfactory completion of MR of the submarine. The requirement of these critical spares was projected separately owing to their urgency, as these were Sonar items which could be fitted on the submarine only during MR and when the submarine is in a dry dock condition. Accordingly, to avoid further delay, the Ministry of Defence agreed (June 2007) to constitute a Contract Negotiation Committee (CNC).

The CNC held in June 2007, accepted the rates quoted by M/s ROS (I) in June 2006, for the spares for four highly critical items. The case was, thereafter, forwarded to the Ministry of Defence (Finance) in the same month for concurrence. Meanwhile, the firm on the request of IHQ MoD (Navy) extended the validity of their quote till 31 July 2008. The Ministry further

sought clarifications on several issues pertaining to the procurement. Finally, in July 2008, more than a year after receiving the proposal for procurement of spares, the Ministry decided to go in for re-tendering for all the 221 types of spares. Clearly, neither did the DWE heed the Ministry's advice of January 2007 to go for re-tender, nor did the Ministry reiterate their earlier decision to re-tender for about two years.

DWE, in February 2009, after more than six months of advice of the Ministry to go in for re-tender, issued an RFP to five firms on LTE basis. Only M/s ROS (I) quoted. However, M/s ROS (I) quoted for only 89 types of spares at a cost of ₹62.83 crore. In January 2010, the Ministry of Defence concluded a contract for supply of 89 types of spares for delivery by June 2011.

Meanwhile, the MR of the submarine was completed in January 2009 by using Minimum Stock Level (MSL) stocks; by resorting to cannibalisation of spares from old units and by carrying out repairs on unserviceable critical spares. Owing to this, the submarine experienced repeated failure of mission critical systems. The Weapon Equipment Depot (WED), Visakhapatnam intimated, in October 2012, that the Naval Dockyard, Visakhapatnam / Weapon Equipment Calibration Overhaul Repair Shop (WECORS) were of the opinion that the availability of new spares is a mandatory requirement for ensuring reliability of the mission critical systems onboard the submarine.

We observed (May 2011) that failure on the part of the Ministry of Defence and IHQ MoD (Navy) to sort out procurement related issues and avail the opportunity to procure 178 items of spares from M/s Admiralty Shipyards, Russia and 26 items of spares from M/s ROS (I), in June 2006, at a total cost of ₹56.76 crore, and subsequent procurement of only 89 items of spares at a cost of ₹54.67 crore from M/s ROS(I) in January 2010 i.e. one year after completion of the refit, also entailed an extra expenditure of ₹18 crore *vis a vis* the quoted rates for these 89 items in June 2006. These spares were being used to replenish MSL stocks at WED, Visakhapatnam.

The matter was referred (March 2013) to the Ministry. While accepting the facts, the Ministry of Defence attributed (October 2013) the delay in determination of requirement of spares for refit to the fact that the MR of the

submarines was being undertaken in India for the first time. The Ministry further stated that although they had advised the DWE, IHQ MoD (Navy) in January 2007 to go in for retendering, however, keeping in view the criticality of spares especially those for dry dock phase, they accepted the proposal of the DWE, IHQ MoD (Navy) for conclusion of contract for these critical spares. However, the contract could not be concluded due to impasse on the status of M/s ROS (I). Subsequently, they had finally directed the DWE to retender the entire requirement of spares in February 2009. The Ministry added that the belated procurement of spares led to an extra expenditure of ₹18 crore, however, it was attributed to inflation / cost escalation in the intervening period of three years. The Ministry further stated that the mission critical systems onboard the submarine had performed satisfactorily after completion of MR.

The contention of the Ministry is, however, not acceptable as availability of spares is required to be ensured at the start of the refit and in the instant case the requirement of spares was firmed up by the Indian Navy two years after commencement of the refit. The Ministry's statement that there was no impasse between them and the Indian Navy on the former's advice to retender is not borne out by facts as the Indian Navy ultimately agreed to retender its requirement only in 2009 i.e. almost two years after the advice by the Ministry in 2007. The Ministry's further contention that the mission critical systems onboard did not experience repeated failure post refit is also at variance with the contention of the WECORS, Visakhapatnam, who attributed the repeated failures to usage of approximately 80 *per cent* repaired / refurbished spares in the MR of the submarine. Similarly, the argument of the Ministry that the extra expenditure of ₹18 crore is attributable to inflation / cost escalation is not acceptable as the procurement of the spares was necessarily required to be made in 2006 to meet the requirement of spares for the MR.

Thus, failure on the part of IHQ MoD (Navy) and the Ministry of Defence to synchronise the procurement of spares with the execution of refit of the submarine had an effect on the quality of refit undertaken as the Indian Navy was constrained to use refurbished and cannibalised items of spares. The forced usage of refurbished items in the refit also led to under performance of mission critical equipment fitted onboard the submarine. Besides, though

spares were available at a cheaper price, in 2006, these were contracted for only in January 2010 resulting in an extra expenditure of ₹18 crore.

4.2 Non-functional Air-Conditioning Plant on a vital Naval asset

Acceptance of an Air Conditioning Plant for the only aircraft carrier of the Indian Navy without Factory Acceptance Trials led to its continued disuse since its installation in August 2009. The Plant continues to face a large number of defects and is yet to be commissioned, adversely affecting the habitability onboard. Besides, an expenditure of ₹1.94 crore incurred on procurement and installation of the AC Plant had proved unfruitful.

The Defence Procurement Manual (DPM) stipulates that the relevant technical parameters, as applicable, be specified in the Request for Proposal (RFP). These, *inter alia,* include the requirement of Factory Acceptance Trials (FATs), Harbour Acceptance Trials (HATs) and Sea Acceptance Trials (SATs). In contravention of the DPM provisions, an Air Conditioning (AC) Plant for the only aircraft carrier of the Indian Navy was accepted without FATs and has been non-functional since its installation in August 2009. The details are discussed below:

The AC Plants originally fitted onboard INS Viraat were facing problems of supportability due to their obsolescence. Based on a feasibility study undertaken in 2006, by Headquarters Western Naval Command (HQWNC) and INS Viraat, the replacement of installed AC Plants with M/s Kirolskar Pneumatic Company Limited (KPCL), Pune manufactured AC Plant (Model XRV-127) was recommended by HQWNC, in 2006, because of their indigenous availability and a possibility to achieve a standard fit as similar AC Plants were being fitted onboard the SNF class of ships.

Subsequently, based on the indent raised in July 2007 by Directorate of Logistics Support (DLS), IHQ MoD (Navy), the Directorate of Procurement (DPRO), IHQ MoD (Navy) in February 2008 placed a Supply Order on Proprietary Article Certificate (PAC) basis on M/s KPCL, Pune at a total cost of ₹ 5.71 crore for supply of two AC Plants including their installation and

commissioning together with supply of Onboard Spares (OBS) and Base/Depot (B&D) spares.

The firm delivered (July-August 2008) both the AC Plants, OBS and installation spares. The installation of both these plants was undertaken by the firm during the Normal Refit (NR) of INS Viraat at Cochin Shipyard Limited (CSL), Kochi and the installation of both the AC Plants was completed in August 2009. The performance of one of the installed AC Plants i.e. 7F AC Plant (Forward Plant) was found to be satisfactory and it was successfully commissioned in September 2009. The performance of the first installed AC Plant i.e. 7N AC Plant (AFT Plant) was not found satisfactory in the initial trials undertaken in September-October 2009 and has not been commissioned so far i.e. about five years from its receipt in July 2008.

We observed (February 2013) that the tender enquiry floated by DPRO, in August 2007, did not provide for conduct of FATs, HATs and SATs on the AC Plants, even though as per provisions of DPM, they should be an integral part of any Request for Proposal (RFP) floated by any procuring authority for procurement of equipments. This issue was flagged only in Naval Logistics Committee (NLC)-I meetings held in December 2007 and January 2008 by the Professional Directorate i.e. Directorate of Marine Engineering, when the reasonability of the quotes was being discussed. The representative of the firm held that the FATs could not be carried out as special arrangements would have to be made. This would cost additional money and time, which had not been catered for or indicated in the tender enquiry. However, the representative of Principal Director Quality Assurance (Warship Production) expressed (January 2008) his reservations on acceptance of the plant without FATs as a new equipment was being inducted.

It was finally decided (February 2008) that

- No FATs would be undertaken by the firm for the first AC Plant and FATs will be conducted on the second AC Plant by the firm at their premises;

- Any discrepancy observed in the second AC Plant during FATs would be made good by the firm on the first AC plant as well. There will, however, be no change in delivery period for both the plants.

Subsequently, DPRO in February 2008 placed a supply order on M/s KPCL, Pune for procurement of two AC Plants together with their installation and commissioning etc. at a total cost of ₹5.71 crore (unit cost of AC Plant ₹1.67 crore). The supply order placed, *inter alia*, carried the clause regarding non-conduct of FATs on first AC Plant and conducting of FATs on second AC Plant etc. Though the firm did not initially agree to FATs, it ultimately agreed for FATs on the second plant.

We further noticed (February 2013) that the first AC Plant received, in July 2008 without FATs, was installed as 7N AC Plant (AFT Plant) onboard INS Viraat in August 2009 and was yet to be commissioned because of persistent defects. The representatives of the firm, after installation of the AC Plant, visited INS Viraat, at sea and while in subsequent refits [Normal Refit (NR) in 2008-09; Short Refit (SR) in 2010-11; and Normal Refit (NR) in 2012-13], to rectify the defects. However the defects could not be rectified till date. The problems with the AC Plant continue to persist, which adversely affected the habitability onboard INS Viraat. The second AC Plant installed, after conducting FATs, in August 2009 onboard INS Viraat is, however, working smoothly.

Meanwhile, the firm was paid the entire amount of ₹5.71 crore between July 2008 and January 2010 which included ₹1.67 crore towards cost of defective AC Plant and ₹0.27 crore towards its installation etc. We also noticed (March 2013) that the Work Completion Certificate in respect of AC Plant 7N AFT Plant), however, has not been issued so far to the firm as successful commissioning of the AC Plant has not taken place.

Thus, the performance of 7N AC Plant (AFT Plant), which was accepted and installed without FATs, continues to be unsatisfactory and has also not been exploited for about five years since its receipt. The AC Plant is yet to be proven; its non-availability has also affected the habitability onboard the only aircraft carrier of the Indian Navy. These problems have persisted despite the fact that INS Viraat has undergone three different refits during the intervening

period and the firm has made a number of attempts to rectify these defects. Additionally, no tangible benefits have accrued from an investment of ₹1.94 crore made on the procurement and installation of the AC Plant and has proved unfruitful.

The draft paragraph was issued to the Ministry in June 2013; their reply was awaited (December 2013).

4.3 Extra expenditure in transportation of Arming Devices

Acceptance of change in delivery of 59 Arming Devices from CIP Mumbai airport basis to FOB ex-Italian port basis by CNC proved to be an injudicious decision and ultimately led to an extra expenditure of ₹73 lakh on the transportation of these devices.

The mode of delivery / transportation of armaments like other Defence Stores can either be Carriage and Insurance paid (CIP) or Cost, Insurance and Freight (CIF) or Free on Board (FOB) basis. The mode of delivery / transportation is decided in keeping with the essence of the contract i.e. the urgency of the requirement of stores. The mode of delivery is required to be decided before floating the Request for Proposal (RFP) and clearly indicated therein. The mode of transportation is also required to be indicated in the RFP.

Based on the requirement projected, in January 2008, by the Naval Armament Depot (NAD) Mumbai, Director General of Naval Armaments (DGONA) in November 2008, accorded "Acceptance in Principle" for procurement of 59 Arming Devices (Devices) for torpedoes "X" from M/s WASS, Italy at a total cost of Euro 677,145.36 FOB ex-Italian port. The unit cost of these devices at Euro 11,477.04 was based on the budgetary offer of the firm made in November 2007. DGONA, IHQ MoD (Navy), in January 2009, issued the Request for Proposal (RFP) on Proprietary Article Certificate (PAC) basis to M/s WASS, Italy. The firm, in February 2009, quoted Euro 797,459.72 for supply of 59 devices (unit price Euro 13,516.27) for delivery on Carriage and Insurance paid (CIP) ex-Mumbai airport basis.

The Contract Negotiation Committee (CNC), in April 2009, found the price to be very high. However, the representative of the firm clarified that the per unit quote of Euro 11,477.04 of the firm made in 2007 was for delivery on Free on Board (FOB) ex-Italian port basis. The representative of the firm requested the CNC to consider delivery of devices FOB ex-Italian port instead of CIP ex-Mumbai airport, for which the firm *suo moto* offered to revise their quote. The CNC agreed to the proposal of the firm for supply of devices FOB ex-Italian port, eventhough, the RFP floated catered for supply of devices on CIP ex-Mumbai airport basis. On acceptance of their proposal, the firm offered to supply the devices FOB ex-Italian port at a unit price of Euro 11,477.04 (November 2007 quoted price). Thereafter, the quote offered by the firm was negotiated by the CNC and ultimately the firm agreed to supply devices at a unit price of Euro 10,000 FOB ex-Italian port. Subsequently, DGONA IHQ MoD (Navy), in June 2009, concluded a contract with M/s WASS, Italy for supply of 59 Arming Devices at a total cost of Euro 590,000 (₹3.79 crore[2]) for delivery on FOB ex-Italian port basis.

The shipping of these devices from the Italian port was entrusted to the Shipping Corporation of India Ltd. The devices were shipped on 30 October 2010 and reached Embarkation Headquarters, Mumbai in mid-November 2010. A payment of USD 320,000 (₹1.51 crore[3]) was made to the Shipping Corporation of India Ltd. in December 2010 towards freight charges of the devices.

Our scrutiny (February 2012) revealed that acceptance of change in deliveries of the devices from CIP Mumbai airport basis to FOB Italian port basis by the CNC proved to be an injudicious decision which ultimately led to an additional expenditure of ₹73 lakh. The details are discussed below:

The quote of the firm of February 2009 at Euro 797,459.93[4] for supply of 59 devices was on CIP Mumbai airport basis and the firm during CNC

[2] 1 Euro = ₹ 64.25
[3] 1 USD = ₹/ 47.19
[4] Unit Cost of Arming Devices = Euro 13516.27

meeting, in April 2009, *suo moto* offered the revised cost of Euro 677,145.36[5] for supply of the devices provided the deliveries are affected on FOB Italian port basis. The cost differential of Euro 120,314.57 (Euro 797,459.93 *minus* Euro 677,145.36) equivalent to ₹77.30 lakh[6] was, therefore, for freight and insurance. This is further borne out from the fact that the subsequent reduction in unit cost of devices to Euro 10,000 was achieved by the CNC after the port of delivery had been decided. Therefore, the reduction in per unit cost from Euro 11,477.04 to Euro 10,000 related to the cost of devices only and not to the freight.

Against an available option from the firm to transport the devices under insurance cover at ₹77.30 lakh, DGONA IHQ MoD (Navy) ultimately paid ₹1.51 crore to Shipping Corporation of India Ltd. towards the freight of 59 devices. This led to an additional expenditure of ₹73 lakh, Further, the arming devices were ferried without insurance cover.

Accepting the Audit observation (February 2012), Principal Director of Naval Armaments (PDONA) stated (March 2012) that due to change of delivery Port, Indian Navy incurred an additional amount. The PDONA further stated that the procurement of such explosives was being made for the first time and CNC accepted the change in delivery to FOB basis without having any idea of implications of arranging transportation through the Ministry of Shipping viz. Shipping Corporation of India Ltd.

Thus, lack of due diligence in determining the transportation cost of devices from Italy to India ultimately led to an extra expenditure of ₹73 lakh in procurement of 59 Arming Devices.

The draft paragraph was issued to the Ministry in February 2013; their reply was awaited (December 2013).

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5 Unit Cost of Arming Devices = Euro 11477.04

6 1 Euro = ₹ 64.25

4.4 Avoidable extra expenditure due to procurement of coffee at a higher rate

Lack of communication regarding price of coffee/vendor details, between Commands prior to issuance of tender notice by Headquarters Eastern Naval Command, Visakhapatnam was in contravention of rules/ instructions laid down by Integrated Headquarters, Ministry of Defence (Navy). This coupled with delay in conclusion of contract resulted in extra expenditure of ₹53.40 lakh.

One of the conditions stipulated in the Guidelines issued by Integrated Headquarters, Ministry of Defence (Navy) [IHQ MoD (Navy)] of November 2006, for decentralization for purchase of victualling stores was that information on brands chosen and pricing be exchanged between the Command Headquarters / Base Victualling Officers of all Stations. These Guidelines were however not followed by Headquarters Eastern Naval Command, Vishakapatnam [HQ ENC (V)] thereby resulting in extra expenditure of ₹53.40 lakh as given below:

In January 2010 HQ ENC (V) floated an Open Tender Enquiry (OTE) for the supply of 10,000 Kgs of Coffee (100 %) at the Base Victualling Yard, Visakhapatnam [BVY (V)] for the period from 01 April 2010 to 31 March 2011. Eight firms collected the tenders, of which four firms did not quote. Of the remaining four firms, who participated in the tender procedure, the quote of M/s Kendriya Bhandar was rejected as the samples contained coffee-chicory mix which was not as per specifications laid down in the tender document. M/s Nestle, Chennai emerged L1 at ₹880 per Kg coffee (Brand-Nescafe Classic) and accordingly Rate Contract (RC) was concluded (March 2010) by HQ ENC (V) with M/s Nestle India Ltd., Chennai for ₹88 lakh for 10,000 Kgs of Coffee (100%).

We noticed in Audit (August 2012) that for the same period i.e. 01 April 2010 to 31 March 2011, Headquarters Western Naval Command, Mumbai [HQ WNC (MB)] had concluded (April 2010) a contract with M/s CCL Products (India) Pvt. Ltd., Hyderabad for the Continental brand of Coffee

(100%) at 435 per Kg i.e. at half the rate as compared to HQ ENC (V). Our scrutiny showed that HQ ENC (V) did not call for rates and the brand name from HQ WNC (MB) though this was required to have been done as per the IHQ Guidelines of November 2006.

Further scrutiny revealed that in November 2010, in view of the impending expiry of the said RC, a fresh OTE was floated by HQ ENC (V) for the next year i.e. from 01 April 2011 to 30 March 2012, inviting bids for supply of Coffee in two types of packs viz 500 gms and 50 gms, for an estimated quantity of 12,000 Kgs and 2,000 Kgs respectively.

The Technical Board approved 'Nestle Classic' brand quoted by both: M/s Nestle who was the L1 for 500 gm pack at ₹880 per Kg and M/s Indian Naval Canteen Services for 50 gm pack at ₹1150 per Kg. However these rates were considered to be very high and this time, HQ ENC (V) made enquiries with HQ WNC (MB) and Headquarters Southern Naval Command, Kochi [HQ SNC (K)] to compare the rates. It was only then did HQ ENC (V) become aware of M/s CCL Products Pvt. Ltd., Hyderabad who was registered with HQ WNC (MB).

Accordingly when in July 2011, ENC (V) re-tendered on OTE basis for supply of Coffee for 2011-2012, M/s CCL Products Pvt. Ltd., Hyderabad also participated in the TE and emerged as L1 at ₹516 per Kg for 500 gm pack and ₹525 per Kg for 50 gm pack. Had there been a similar exchange of information between Commands during the previous year (2010-2011), the conclusion of contract by HQ ENC (V) at double the rate as compared to HQ WNC (MB) could have been avoided.

Meanwhile, in anticipation of delay in conclusion of this RC, BVY (V) resorted to local purchase and procured 2,000 Kgs of Coffee at ₹880 per Kg from M/s Nestle India Ltd., Chennai at a total cost of ₹17.60 lakh between the period April 2011 and September 2011.

The matter was referred (April 2013) to the Ministry of Defence. In its reply Ministry stated (November 2013) that HQ ENC (V) had concluded the contract with M/s CCL Products Pvt. Ltd., Hyderabad, for the period 2010-11

on 08 March 2010, while HQ WNC concluded contract for the same period on 27 April 2010, and thus HQ ENC concluded the contract well before HQ WNC and therefore price information could not be exchanged. Ministry also stated that though HQ ENC resorted to open tender for procurement of coffee; M/s CCL Products Pvt. Ltd., Hyderabad did not respond. Ministry contended that procurement of coffee from M/s Nestle in 2010-11 was as per existing regulations and DPM provisions, at competitive prices.

The reply of the Ministry is however not acceptable. The Ministry's contention that HQ WNC had concluded a contract after HQ ENC is incorrect as M/s CCL Products Pvt. Ltd., Hyderabad was registered with HQ WNC since the year 2009 and a contract for 2009-10 was also concluded by HQ WNC with them in May 2009. However, exchange of information between the Command Headquarters on brands/prices did not take place, though it was a requirement. Further, Ministry's reply that M/s CCL Products Pvt. Ltd., Hyderabad did not participate in tender for procurement of coffee in 2010-11, has to be seen in the light of the fact that OTE for this procurement restricted the response only to specified brands of Nescafe, Sunrise, Nestle and Tata Cafe. In such scenario, M/s CCL Products Pvt. Ltd., Hyderabad could not have bid. Ministry's contention that procurement of coffee from M/s Nestle in 2010-11 was as per the existing regulations and DPM provisions, at competitive prices, is also incorrect, as DPM precludes references to brand names in the RFP. This resulted in an extra expenditure of ₹53.40 lakh.

Thus lack of timely communication between the Commands and ensuring the price reasonability before conclusion of the contract for local purchase led to an extra expenditure of ₹53.40 lakh which could have been avoided.

4.5 Irregular refund of liquidated damages of ₹37.98 crore

In contravention of contractual conditions, IHQ, MoD (Navy) did not revise the delivery dates in a contract and instead advised the PCDA (Navy) to release the liquidated damages of ₹37.98 crore which was not in order.

Government of India, Ministry of Defence accorded (December 2006) sanction for acquisition of Six Survey Vessels to be constructed at Alcock

Ashdown (Gujarat) Limited (M/s AAGL), at a total cost of ₹797.81 crore. Accordingly, a contract for construction and delivery of these survey vessels was concluded (December 2006). As per the contract conditions, the first vessel was to be delivered within 24 months from the date of receipt of first stage payment in March 2007 and subsequent vessels were to be delivered at an interval of three months each (i.e. March 2009 and at an interval of three months thereafter).

The contract, *inter alia*, provided imposition of liquidated damages (LD) in the event of delayed deliveries of the vessels. Our scrutiny (February 2012) revealed that even though LD was recovered by Principal Controller of Defence Accounts (Navy) [PCDA(N)] on the basis of the contractual provisions, this was subsequently refunded on the direction of the Navy. Details are given in the subsequent paragraphs.

Article 10.6.1 of the contract specified that M/s AAGL shall submit a consolidated case to the Navy through the Warship Overseeing Team, Bhavnagar (WOT, Bhavnagar) showing the effect of delays due to the causes specified such as delays in approval of drawings, delay in issue of ordering instructions by the Navy and delay in placement of orders by M/s AAGL etc. Article 10.6.8 stipulated that the Navy shall undertake the review and analysis of these delays promptly and record the decisions taken, including with regard to the revised cardinal dates[7] (revised dates of delivery). All such revised cardinal dates shall be compiled at IHQ, MoD (Navy) and a consolidated amendment to the contract to be issued at least three months before the delivery indicated in the contract.

The contract also specified under Article 13.2 that, in the event of the failure of M/s AAGL to deliver the vessels by the date/ dates specified in the contract, the Navy could impose LD subject to a maximum of five *per cent* of the value of the delayed vessels.

Our scrutiny (February 2012) revealed that delivery of vessels was delayed and the Shipyard proposed revision of delivery schedule as many as five times as given below:

[7] Cardinal dates : delivery dates of the vessels as per Contract

Sl. No.	Yard	Contractual Delivery	Revised delivery May 2010	Revised delivery September 2010	Revised delivery March 2011	Revised delivery December 2011	Revised delivery March 2012
(a)	257	Mar 09	Jun 10	Mar 11	Sep 11	Apr 11	Jun 12
(b)	258	Jun 09	Sep 10	May 11	Dec 11	Oct 12	Mar 13
(c)	259	Sep 09	Dec 10	Nov 11	Jun 12	Oct 13	Dec 13
(d)	260	Dec 09	Mar 11	Feb 12	Sep 12	Jan 14	Jun 14
(e)	261	Mar 10	Jun 11	May 12	Dec 12	Apr 14	Sep 14
(f)	262	Jun 10	Sep 11	Aug 12	Mar 12	Jul 14	Dec 14

Thus, as can be seen from the Table that even after a number of revisions and delays in delivery of vessels ranging from over three to four and a half years, there was no formal amendment to the contract. On the contrary, Navy's stand led to refund of already imposed LD amounting to ₹37.98 crore as narrated below:

i. Since the survey vessel was not delivered within the stipulated date (March 2009) and in the absence of any extension, the PCDA (N) deducted an amount of ₹27 crore in April 2010 by way of LD from the stage payments.

ii. However, in June 2010 IHQ MoD (Navy) requested PCDA (N) to refund the LD, stating that the shipyard had been facing financial difficulties and was dependent on the stage payments to fund the project. It was further stated (June 2010) that the case for delivery period extension was parallely being taken up with Ministry of Defence and requested that LD be imposed after successful completion of the project. PCDA (N), thereafter released the LD payment of ₹27 crore in June 2010.

iii. PCDA (N) again deducted an amount of ₹10.98 crore as LD in February 2011 as the vessels have not been delivered and delivery schedule was not extended. IHQ MoD (Navy) in March 2011 in a letter to PCDA (N) again requested that the imposition of LD prior to completion of project would hamper the completion of the construction

and further delay the delivery. The basis for the request of release of LD was stated to be that formulation of quantum of LD to be imposed would be taken up on completion of the project.

iv. Based on IHQ, MoD (Navy) assurance that two vessels were likely to be delivered by January 2012 and April 2012, PCDA (N) refunded ₹10.98 crore to M/s AAGL in November 2011.

We observed (February 2012) that IHQ, MoD (Navy) did not amend the contract to bring about contractual changes to the delivery period after working out quantum of responsibility to either Navy or M/s AAGL. The refund of LD not only lacked justification but also resulted in undue favour to the Shipbuilder as M/s AAGL had continued to default even on the revised delivery dates proposed by them.

As of October 2013, out of six vessels only one had been delivered and the remaining five were in various stages of completion. We also observed that in view of the poor performance of the contractor and delays, a proposal for foreclosure of the contract had been moved by the shipyard (September 2013) and was under consideration of the Ministry of Defence (November 2013).

In reply to our observations (March 2012) WOT, Bhavnagar, stated (May 2012) that it was considered prudent to determine the exact quantum of delay, post delivery of vessel as only then the exact attributability of delays could be determined. Navy also justified their stand (May 2012) by stating that the last two stage payments i.e. stage XI and stage XII are linked to delivery and warranty (10% and 15 % of price) on which five *per cent* LD could be imposed.

The reply given is not acceptable as imposition of LD after delivery is not as per the Contract provisions. Further as per Clause 5.2.1.2 of the contract the Last Stage payment may be claimed with Stage XI only against Bank Guarantee. However the Bank Guarantees had also expired as of July 2011. Since termination of the contract was under consideration with most vessels not reaching Stage XI and XII, the possibility of recovery of LD was remote.

Thus, inability to enforce contractual terms and conditions by the Navy led to irregular refund of ₹37.98 crore with corresponding financial benefit to the defaulting shipyard.

The draft paragraph was issued to the Ministry (June 2013), their reply was awaited (December 2013).

4.6 Unfruitful expenditure of ₹33.91 crore on Maintenance Dredging

Headquarters, Western Naval Command concluded a contract for dredging of naval channels at an exorbitantly high cost. Tendering and the conclusion of the contract was delayed leading to dredging during monsoon, which led to incurring of an unfruitful expenditure of ₹33.91 crore.

Maintenance Dredging is an annual activity undertaken to maintain a minimum depth in Naval channels and areas for the safe navigation of ships, submarines and other crafts and was being offloaded[8] to the trade every year, by Navy. As the dredged area fills back, dredging during monsoon was not a viable activity. Every year after the monsoon, the harbour at Mumbai required dredging to maintain its depth.

Our scrutiny (July 2012) of the dredging contract concluded between Headquarters, Western Naval Command, Mumbai (HQWNC) and M/s Dharti Dredging and Infrastructure Limited for the year 2010 showed that not only were the rates accepted for dredging very high, there were also delays in tendering and conclusion of contract which led to non-dredging for a year in 2009-10. In the following year (2010-11) dredging was resorted to during peak monsoon, rendering the exercise unfruitful. Details are given below:

After the dredging in Mumbai Naval Areas were conducted in March 2009; HQWNC initiated action for Maintenance Dredging for the years 2009-10 and 2010-11 through open tender. Tenders were called for on 24 August 2009. The tender notice of August 2009 categorically stated that Companies capable of undertaking Annual Maintenance Dredging, should commence dredging in

[8] Offloading : work handed over to trade when in-house facilities are not available .

the first week of October but not later than 01 November each year for the years 2009-10 and 2010-11. Thus, for both the years, dredging was to commence post monsoon only. Since the dredging was to commence latest by November 2009, calling for tenders in August 2009 was belated as it provided a timeline of less than three months for the process of receipt, technical and commercial evaluation of bids; award of contract, positioning of the dredger and start of dredging by the selected contractor.

Since no bids were received within the due date, three extensions for the tender closing date were approved which were 14 October, 4 November and 16 December 2009. One bid was received during second extension and in the third extension (December 2009) one more bid was received. However, it was observed (July 2012) that the extension of time for submission of bids itself was beyond the RFP stipulated period of start of the dredging. Thus, from the second extension onwards, any offer received would have been in deviation of the RFP conditions for the start and completion of dredging.

During technical evaluation (December 2009) the bid of M/s Meka Dredging was found to be non-compliant and was rejected. This made the offer of M/s Dharti Dredging a resultant single tender and Technical Evaluation Committee (TEC) report was forwarded to IHQ, MoD (Navy) in December 2009. While approving the TEC Report the Ministry returned the case to HQWNC for further necessary action (March 2010) as it had delegated (February 2010) full powers to C-in-C of the Command Headquarters for sanctioning Maintenance Dredging.

Subsequently, the commercial quote of the resultant single bidder was opened at HQWNC (March 2010). However, the rates were exorbitantly high as the rates of the firm worked out to ₹345 per cubic meter (cu.m.) as against the rates for years 2008-09 which were ₹66 per cu.m. Therefore, extensive price negotiations were conducted in April 2010 and May 2010. During negotiations, the firm reduced the quoted rate from ₹345 per cu.m. to ₹250 per cu.m. Even this rate was considerably higher than the rates accepted by Navy at Visakhapatnam and Kochi at ₹161 per cu.m. and ₹135 per cu.m. respectively.

After negotiations, the PNC recommended to HQWNC (May 2010) the finally accepted rate of ₹250 per cu.m at a total contract value of ₹80.24 crore solely on the condition that despite two extensions, only one technically acceptable bidder had emerged and that option of re-tendering was not considered due to the critical requirement of completing dredging before monsoon.

We observed that the PNC was held in May 2010, when monsoon was barely weeks away from its onset, and after the period mentioned in the RFP for completing the dredging was already over. Thus, Mumbai Naval area went without dredging during year 2009.

Letter of intent for maintenance dredging at Naval tidal basin Mumbai for the years 2010-2011 and 2011-2012 was placed (May 2010) on M/s Dharti Dredging for a contract value of ₹80.24 crore. As per letter of intent the work was to commence in May 2010 and completed by July 2010. The firm, however, actually carried out the dredging from May till 20 August 2010 i.e. during the monsoon. Payment of ₹33.91 crore was made for the dredged area of 10 lakh cu.m. However, since the dredging took place during monsoon, it did not serve the intended purpose.

Thus, belated issue of limited response to RFP, delays in contract negotiations and operational necessity for dredging to maintain operational depths, led to a situation wherein the resultant single bid with very high rates had to be accepted. More importantly, the dredging had to be carried out during peak monsoon, rendering the expenditure unfruitful.

HQWNC, Mumbai accepted (April 2013) that dredging took place during monsoon and that it could not be undertaken in 2009-10. HQWNC attributed it to inordinate delays in protracted financial procedures. It was also stated that HQWNC was left with no choice but to undertake dredging after the onset of monsoon due to reduced depths. Further, HQWNC stated (August 2013) that RFP for the year 2009-10 was delayed due to the time lost in taking up the matter for undertaking dredging under the option clause and the case for Maintenance Dredging for three years was already resting with MoD /IHQ which caused further delay.

The reply of the HQWNC with regard to option clause and pendency of the case with the Ministry are factually incorrect as there is no option clause in the previous dredging contract and no case for Maintenance Dredging was pending with the Ministry at the time of issue of RFP for dredging during 2009-10.

Our further scrutiny (March 2013) revealed that dredging for the next year had to commence immediately in February 2011 i.e. within six months of the previous dredging, which clearly indicated that dredging in monsoon had not served its purpose and the expenditure incurred was sub-optimal.

In sum, due to delays, the dredging in Naval areas of Mumbai could not be conducted during the year 2009. Thereafter, the dredging was conducted during the peak monsoon of year 2010 which led to an unfruitful expenditure of ₹33.91 crore.

The draft paragraph was issued to the Ministry (May 2013), their reply was awaited (December 2013).

Works Services

4.7 Unauthorised sanction of a Shopping Complex at Naval Station Karanja

A Shopping Complex at Naval Station, Karanja was created at an estimated cost of ₹2.87 crore in contravention to the provisions of Scales of Accommodation for Defence Services (SADS) 1983.

Works services in Defence Services are to be sanctioned and executed as per provisions contained in the Scales of Accommodation for Defences Services 1983 (SOA). Audit however observed (March 2012) that construction of a shopping complex at Naval Station, Karanja, sanctioned at a cost of ₹2.87 crore by Headquarters Western Naval Command (HQWNC) was not in consonance with the prescribed rules.

In October 2007 HQWNC, Mumbai gave directives for convening a meeting of the Board of Officers (Board) to examine the requirement of a Station Shopping Complex at Naval Station, Karanja. Accordingly in February 2008 the Board assembled and recommended construction of a two storey building with an area of 1438.96 sq.mt. The aim of the construction was to meet the deficient requirement of Shopping Area at Karanja. The Board noted that existing population of Naval Station at Karanja was 19,000 consisting of service and defence civilian population, which was likely to be increased to 28,000 in future due to anticipated shifting of Naval Units/Establishments to Karanja. The Board opined that existing shopping complex was deficient in meeting the needs of increased population. The Board assessed the troop strength of Karanja at 4,586 troops.

In March 2009 HQWNC accepted the necessity for the work and accorded Administrative Approval for the 'Provision of Shopping Complex at Naval Station, Karanja' at an estimated cost of ₹2.82 crore. In February 2010, Chief Engineer (Navy) Mumbai concluded a contract with M/s Hem Construction Co. Mumbai for ₹2.76 crore. Construction was completed in May 2011 at a total cost of ₹2.87 crore. Navy took over the building in July 2011.

Under the provisions of SOA 1983, a shopping centre may be provided at military stations wherein the opinion of General Officer Commanding or equivalent, no civil shopping facility existed within a reasonable distance. The scales of accommodation were to be based on troops strength of the station.

SOA 1983 authorised that a shopping centre may be provided with an area of 552 sq.mt only for 4,586 troops. As against this HQWNC sanctioned a shopping complex with an area of 1438.96 sq.mt. which was beyond their delegated powers. HQWNC sanctioned a new shopping complex by projecting total population arrived at by multiplying the troops strength by five. The number of troops of 4,586 itself was also doubtful as this included ex-servicemen (253) and other defence civilians also.

With a 'troop strength' of 4,586 as projected in the Board, the authorised area worked out to 552 sqr.mt against which, Audit scrutiny revealed that 654 sq.mt. shopping complex were already existing at NAD Bazar and Chunabhatti Bazar. Thus the construction of a new shopping complex was not warranted.

Further Audit scrutiny (January 2013) also revealed that allotment of shops in the shopping complex was in contravention of SOA 1983. It was noticed that two store rooms (68 sq.mt.) were used as liquor section of Station Canteen, the first floor (284 sq.mt.) was used as Grocery Section of Station Canteen and the vacant Second floor was used as stores of Station Canteen since August 2011. This was notwithstanding the fact that the liquor and the Grocery Canteens already existed in the building next to the new shopping complex. Use of shopping complex for station canteen was unauthorized.

HQWNC in its reply (November 2012) did not accept the Audit observation and stated that the requirement for the new shopping complex was based on the station strength including families which would have required a new shopping complex of 2082.90 sq.mt. against which a new shopping centre of 1428.96 sq.mt. only was constructed since Karanja already had a shopping complex of 654 sq.mt. They further added that total strength was obtained by multiplying the troop strength by five in the spirit of Ministry of Defence guidelines dated 4 January 2001. HQWNC also stated that re-appropriation of shops for station canteen was a temporary measure.

The contention is, however, not acceptable as construction of new shopping complex by HQWNC was unwarranted in terms of the scales provided in SOA 1983. Further, the contention that use of shopping complex for stations canteen was temporary is unacceptable, as the same is not permissible. Further, the contention that total strength of the station derived was based on Ministry's guidelines is incorrect as the said guidelines refer to continuation of the existing shopping complexes/ new complex created on Defence land out of Non-public funds and not to either the troop strength or strength of the station as stated by HQWNC.

The draft paragraph was issued to the Ministry (January 2013); their reply was awaited (December 2013).

4.8 Unfruitful expenditure on construction of a Hangar

Even after a lapse of more than a decade, the operational requirement at INS Rajali for an additional hangar since the year 2000, could not be met due to improper selection of the contractor and faulty design of the structure which resulted in an unfruitful expenditure of ₹6.72 crore. Besides, the aircraft and aircraft maintenance continued to suffer due to non-availability of the hangar.

Base Support Facilities (BSF), Arakkonam at Naval Air Station, INS Rajali is a maintenance establishment (IInd/IIIrd line support) of the aviation arm of the Indian Navy. TU-142M, a Russian make aircraft is the largest propeller aircraft in South Asia and operates from this Air Station. The entire fleet of the TU-142M consists of 'X' number of aircraft for which only one hangar was available for carrying out maintenance activities. This was considered to be grossly inadequate by the BSF, INS Rajali.

Accordingly, HQ Eastern Naval Command, Vishakapatnam convened (April 2000) a Board of Officers (Board) to examine and recommend an additional hangar and the Board recommended (March 2001) construction of an additional hangar to meet additional servicing requirements of TU-142 M. Accordingly, the Government of India sanctioned the work of construction of an additional hangar in March 2003 at an estimated cost of ₹7.60 crore. However it was observed that despite more than a decade from the projection of the requirement, the work was still not complete (October 2013). We noticed (January 2012) substantial delays, improper selection of firm, poor contract management including design deficiencies relating to the work, leading to collapse of incomplete hangar, as a consequence of which the operational requirement was still unmet. The details are given below:

I. Delay in completion of the work

Though the item of work i.e. provision of an additional hangar at NAS, INS Rajali was considered an operational requirement, the work could not be tendered successfully. As brought out in the table below, the work was put to tender as many as seven times before it could be awarded successfully.

Sanction date	**Sanction amount ₹ in crore**	**No. of tenders issued**	**Tender receipt date**	**No. of quotes received**	**L1 firm**	**L1 quote ₹ in crore**	**Reasons for re-tendering**
1	2	3	4	5	6	7	8
March 2003	7.60	10	December 2004	2	M/s VTC Engg	11.98	Not accepted due to high rate in 1st call
March 2003	7.60	6	March 2005	5	M/s VTC Engg	10.28	Refusal to extend validity
The Administrative Approval had to be revised in March 2006 to ₹ 10.78 crore							
March 2006	10.78	7	July 2006	3	M/s VTC Engg	13.80	Unjustifiable rate
March 2006	10.78	10	December 2006	2	M/s VTC Engg	13.37	Lack of competition
March 2006	10.78	10	April 2007	1	M/s VTC Engg	14.63	Rates not reasonable
The Administrative Approval had to be revised in November 2007 to ₹ 11.87 crore and also to reflect the change in design to Pre Engineered Building (PEB) to ensure speedy work.							
November 2007	11.87	8	April 2008	4	M/s VTC Engg	13.10	Quote was more than A/A amount
November 2007	11.87	12	August 2008	5	M/s Vardhman Precision	11.80	Contract awarded

As seen from the Table above, the tender process for this work commenced in December 2004 and continued for almost four years till August 2008. The work was inordinately delayed due to various reasons indicating, *inter alia*, high rates, non-extension of validity by L1 firm, lack of competition,

unjustified rate or the quote being more than the Administrative Approval. In the process, it took four years to finalise the firm and award work besides the increase in sanctioned cost from ₹7.60 crore to ₹11.87 crore.

II. Incorrect selection of contractor and poor contract management

The revised Administrative Approval (November 2007) for ₹11.87 crore was necessitated as the Chief Engineer (Navy), Vishakhapatnam [(CE) (N) (V)] in April 2007 had projected that Pre Engineered Building (PEB) structure instead of conventional RCC framed structure would be desirable and would lead to better competition, early execution leading to avoiding of cost and time overruns, better finishing and modern specification in line with the latest technology. It was also stated that as PEB structure was time tested, simple and of the latest technology, and would lead to execution of work in a faster time frame and avoid further delays because the hangar was an urgent operational requirement.

Finally, in May - June 2008, 12 tenders were issued for the provision of an additional hangar and the PEB system, against which five offers were received, with M/s Vardhman Precision Profiles and Tubes Pvt. Ltd., New Delhi (M/s VPPT) emerging as L1 at ₹11.80 crore. The contract was concluded in August 2008 with M/s VPPT for a sum of ₹11.61 crore, with dates of commencement and completion of work as 01 September 2008 and 30 November 2009 respectively.

Our examination (January/February 2012) showed that selection of M/s. VPPT was done without proper scrutiny as is given in the subsequent paragraphs.

(a) Improper and irregular selection of a firm

M/s VPPT was not an enlisted Contractor with the MES. To generate more competition the CE (N) (V) in February 2008 recommended to HQ Chief Engineer, Southern Command, Pune (HQ, CE SC) to issue tender documents to an un-enlisted firm M/s VPPT to get better competition. The CE (N) (V) was confident that should this firm be the lowest bidder for the work, it could be ensured that the firm completed the work with quality and speed.

Accordingly, in February 2008, HQ CE SC, Pune permitted issue of tender documents to two un-enlisted firms namely M/s VPPT, New Delhi and M/s Surface Tech (India) Pvt. Ltd. as well. Audit scrutiny (January - February 2012) showed that:

- ✓ As per the MES Manual on Contracts, the criteria for enlisting a fresh contractor for a project with an upper tendering limit of ₹12 crore i.e. Class 'S'**,** was that the contractor should have completed two works each costing not less than ₹4.5 crore or one work costing not less than ₹6 crore for Government Department. Our scrutiny of documents (January/February 2012) furnished by M/s VPPT to MES authorities showed that the firm had not completed works of requisite value for the Government as stipulated in the MES manual. Thus issue of tenders to such a firm in contravention of the MES Manual was irregular**.** We further observed, that while M/s. VPPT was a PEB structure manufacturing firm from whom the PEB steel structure could be procured for construction of PEB, this in itself was not enough to ensure that the firm was experienced to design and construct PEBs.
- ✓ As per the MES regulations, tenders that are based on the contractors' design should be first scrutinised to assess the acceptability of the design as a tender which is numerically the lowest may not be most economical. Our scrutiny (January/February 2012) revealed that the design submitted by the firm was not scrutinised**,** and instead the selection was made only on the basis of the lowest tender. Selection of the firm without safeguards on acceptability of design was thus incorrect.

(b) Poor contract management

Our scrutiny also showed instances of poor contract management:

The RFP provided that the contractor should submit one complete set of design/drawings alongwith tender in a separate sealed cover. The design calculation/drawing should fulfil the departmental requirement and the same should be got vetted by any one of the IITs.

Our scrutiny showed that even though the contract was concluded in August 2008, it was only after persuasion from the CE (N) (V) in September 2008 that the firm submitted the designs / drawings / calculations. Further, as per the firm's proposal the CE (N) (V) in October 2008 forwarded these designs/ drawings for vetting, to IIT Delhi. IIT, Delhi submitted the 'Consultancy Report on vetting of structural design/drawings' – a one page undated Fax to the CE (N) (V) on 19 December 2008, which stated that the structure/foundation was as per IS-Code of practice and found to be safe and adequate.

CE(N) (V) in January 2009 forwarded the drawings as vetted by the IIT, Delhi, to the Commander Works Engineers (Navy), Chennai [CWE (N)] instructing that the Garrison Engineer (Maint), NAS, Arakkonam [GE (M)] be directed to execute the work as per the drawings.

In November 2008 the CE (N) (V), raised several observations about lack of details in the drawings, which also included an observation that the weld type/length and connection details for portals both gable and main portals (which eventually got damaged/collapsed) had not been indicated. In response the firm in December 2008 stated that detailed drawings for these were in progress. This shows that complete details of the drawings were not submitted to IIT, Delhi for initial approval, though required as per RFP. Thus, in the absence of detailed drawings, Audit could not obtain reasonable assurance regarding the safety and adequacy of the structure confirmed by IIT Delhi.

Meanwhile the GE (M) also in December 2008 brought out that the preliminary activities were not commenced by the firm at the work site. In addition, the CWE (N) in January 2010 i.e. more than one and half years after commencement of work, brought to notice of the CE (N) (V) certain shortcomings especially regarding the drawings, safety issues**,** poor contract and resource management by the Contractor and GE (M).

Even though the shortcomings /adverse observations by the CE (N), CWE (N) and GE (M), were pointed out, the contractor was allowed to continue work. Further, CWE (N) Chennai also recommended extension up to 25 June 2010, accepting the reasons for delay as brought out by the contractor.

During the course of work (27th August 2010) when the hangar column of beams at gable end were being erected, the entire beam portion sagged resulting in PEB structure getting deformed/de-shaped. The GE (M) in August 2010 attributed the damage to failure of the 40 Ton hydraulic crane of the contractor.

However, in September 2010 the CWE (N) attributed the failure to the in-competence, attitude of the contractor and also to design failure/ inadequate method of erection / quality assurance. The failure due to design deficiency was accepted by the contractor. However the contract was still not cancelled and the firm allowed to continue.

The firm submitted (March 2011) a 'revised design', CE (N) (V) (April 2011) observed certain discrepancies in this 'revised design', which was not technically acceptable and the firm was asked to remove the entire structure and re-submit a 'fresh design'. As mutually agreed, the fresh design was forwarded to IIT Madras in February 2012 for vetting. However even after a lapse of 5 months (as on July 2012), the design had not been vetted, which IIT, Madras attributed to non-co-operation by the contractor. The contract was cancelled by CE (N) (V) (26 September 2012) after incurring an expenditure of ₹6.72 crore on the project.

(c) Impact of delay in construction of hangars

Additional hangar at INS Rajali was an operational necessity which had been projected in year 2001. In the absence of the same, the Navy had continued to face problems in aircraft maintenance. We also observed that out of the available aircrafts, 'Y' number of TU-142M aircraft had completed service life and were awaiting disposal / write off. Remaining 'Z' number of aircraft was expected to be available only till 2017-18. Thus, the benefit of the additional hangar, as and when ready, would be available only for a limited time.

In reply to the audit observation on non-availability of hangar due to deficiency in drawing/ design (January 2012), the CE(N) stated (March 2012) that the design section of MES has a limited role to play as the contract

is based on the contractor's design duly vetted by an IIT. The reply was not acceptable as the MES standing order of March 2006 clearly stated that the design of a building carried out by an outside consultant should be checked by the design officer of the Zone.

Thus, due to improper selection of a firm for the work of construction of a hangar, and subsequent poor contract management, a project recommended as an inescapable requirement at INS Rajali**,** in 2000, was still incomplete, leading to operational deficiency, besides incurring an avoidable expenditure of ₹6.72 crore.

The draft paragraph was issued to the Ministry (April 2013); their reply was awaited (December 2013).

Miscellaneous

4.9 False claim of Dip Money

Weak controls and falsification of official records at INDT (Delhi) led to an incorrect payment of ₹10.24 lakh as Dip Money to 196 naval divers.

All qualified divers of the Indian Navy, belong to a specialised cadre, and are entitled to "Diving Allowance" and "Dip Money". While the Diving Allowance is a fixed monthly remuneration, divers are eligible for Dip Money based on actual duration of diving (including practice diving) at actual depth achieved in the water. All divers are required to remain current in diving as long as they are in the diving cadre.

The Indian Navy divers posted in Delhi Area are attached with Indian Naval Diving Team (Delhi) {INDT (D)} for diving practice. INDT (D) has one Re-Compressed Chamber (RCC) to facilitate practice diving under control conditions for work up of divers, as also for conduct of deeper dives. The capacity of this RCC is 8 divers only at a time.

Our scrutiny, in April-July 2012, of the documents relating to claim of Dip Money maintained at INDT (D) revealed weak internal controls, improper document maintenance and falsification of official records, to facilitate the disbursement of Dip Money to 196 divers against fictitious dives performed by them between 01 September 2008 and 25 July 2011. The details are discussed below:

INDT (D) has one RCC, with a capacity of 8 divers, to cater to the present strength of about 90-100 divers posted in Delhi Area. Master Log Books indicate that between September 2008 and July 2011, on more than one occasion, more than 8 divers (ranging from 9 to 65), simultaneously dived in this RCC. Based on these dives performed as recorded in the Log Books (time spent in RCC), the divers claimed and were reimbursed Dip Money.

Extant instructions, *inter alia*, stipulate that only one Master Log Book be maintained at a time, which should indicate the details of all types of dives performed in the unit. However, we observed (July 2012) that INDT (D), in contravention of extant orders, maintained/operated three Master Log Books simultaneously between September 2008 and July 2011. Besides, the Master Log Books were neither signed by diving officers every week nor were the entries countersigned by the Officer-in-Charge INDT (D) every month, even though, the extant orders make it mandatory to do so. Based on these unauthenticated entries, the Dip Money was being claimed and reimbursed.

On this being pointed out by Audit, Principal Director Special Operations and Diving (PDSOP), in October 2012, constituted a Board of Officers to, *inter alia,* identify names of divers for recovery of Dip Money who had dived in excess to the capacity of the RCC at INDT (D) and calculate the correct amount recoverable, in accordance to the Dip Money rates promulgated, from each diver. The Board of Officers, in November 2012, examined the details of fictitious dives indicated by Audit and indentified 196 divers for recovery of ₹10.24 lakh on account of Dip Money paid to them. We also observed that these divers had performed 2513 fictitious dives between 01 September 2008 and 25 July 2011.

In response to Audit observation, (August 2013) Directorate of Special Operations & Diving IHQ MoD (Navy) replied (August 2013) that the competent authority had accorded approval for recovery of money from the concerned divers and, accordingly, letters directing personnel to deposit amounts with the units imprest or by Military Receivable Order(MRO) were under despatch. Replying further to a specific Audit query (August 2013) relating to administrative/disciplinary action taken/contemplated, it was stated (August 2013) that the aforesaid administrative action of recovery was considered adequate by the competent authority and no disciplinary action was contemplated.

The above case was based on our test check of records at one location. IHQ MoD (Navy) needs to review the functioning of the entire system at the remaining locations to ensure that administrative controls are properly maintained.

In sum, weak controls and falsification of official records at INDT (D) led to facilitating disbursement of Dip Money totalling ₹10.24 lakh to 196 divers.

The draft paragraph was issued to the Ministry in June 2013; their reply was awaited (December 2013).

4.10 Recovery at the instance of Audit

Principal Controller of Defence Accounts (Navy) recovered ₹1.39 crore from a private firm as liquidated damage for late delivery of fuel barges, after being pointed out by Audit.

The Ministry of Defence (MoD) in October 2007 accorded sanction for acquisition of two 500 ton fuel barges at a total cost of ₹27.90 crore. Accordingly the contract for construction and delivery of these barges was concluded between the MoD and M/s Shalimar Works Limited (M/s SWL), Kolkata in November 2007. The contractual date of delivery of the first and second vessel was February 2009 and May 2009 respectively.

As per Article 5.1.2 of the contract no Liquidated Damages (LD) was to be levied for the first one month of delay and the delivery of the vessel was delayed by more than one month 0.5 *per cent* LD at the rate of, subject to a ceiling of 5 *per cent* of the basic cost was to be levied. If the delay in delivery was in excess of ten months, the parties to the contract were to mutually decide upon the action to be taken. Further Article 4.6.3 of the contract provided that 'All such delivery extensions were to be compiled and issued with the approval of MoD, as a consolidated amendment to the contract'. Integrated Headquarters (IHQ), MoD (Navy) however failed to take up the matter with MoD to evolve a comprehensive case for delay and thus could not affect any amendment to the contract.

The fuel barges (yard 766 and 767) were not delivered by the stipulated date i.e February 2009 and May 2009 respectively, and in the absence of any extension, the Principal Controller of Defence Accounts (Navy) [PCDA (N)] recovered 5 *per cent* LD totaling ₹1.39 crore (@ ₹69,74,999 each) from the 5th stage payment for both the yards 766 and 767 in February 2010 as per terms of the contract.

The IHQ, MoD (Navy) in February 2010 requested the PCDA (N) to refund the LD on the grounds that the entire delay could not be attributed to the contractor as the delay was also due to delinquent vendors who failed to supply the equipments to be fitted on board. IHQ also stated (February 2010) that the LD issue would be taken up on delivery of the vessels and that the attributability of delay would be taken up with the CFA thereafter. The shipyard preferred the bill for refund of LD (March 2010) which was returned by the PCDA (N) stating that refund of LD could be considered only after extension of delivery period was approved by the CFA.

Thereafter, the bill was again preferred in June 2010 and the Warship Overseeing Team, Kolkata (WOT) of the Navy requested the PCDA (N) that the LD deducted be refunded back to M/s SWL, Kolkata. In July 2010 the PCDA (N) refused the refund on the ground that the delivery period was not

extended by the CFA. However the LD amount of ₹1.39 crore was refunded to the firm in July 2010 itself.

Audit observed (08 July 2011) that the refund was without extension of the delivery period by the CFA and was despite clear orders to the contrary of the PCDA (N). Thereafter at the instance of Audit, the PCDA (N) effected the recovery on 26 July 2011.

Office of the PCDA (N) accepted (September 2011 and August 2013) that the refund was made due to misinterpretation and miscommunication of orders of the PCDA (N).

The matter was referred to the Ministry (January 2013). While accepting the facts, the Ministry of Defence (Finance) stated in their reply (October 2013), that the lapse was noticed by Office of the PCDA (N) before Audit could point out the same and that it was a coincidence that initial audit objection was received on the same day of 21 July 2011, on which the PCDA (N) had approved the recovery of LD. The Ministry also stated that there were no lacunae in internal monitoring system and that LD could not be recovered earlier due to insufficiency of payables to the shipyard against which the full quantum of LD could be recovered. The Ministry however, added that the PCDA (N) has now proposed to accord a warning to the concerned officials for the lapse.

This contention of the Ministry is however not acceptable as the initial audit observation was issued on 11 July 2011, while LD was recovered only on 26 July 2011. Moreover, the Office of the PCDA (N) should have recovered the LD immediately from all available payables.

Thus failure of IHQ, MoD (Navy), in amending the contract on time for extension of delivery schedule coupled with weak internal control in the Office of PCDA (N) thereby resulted in incorrect refund of LD, which was recovered at the instance of Audit.

4.11 Excess payment of Island Special Duty Allowance in Navy

Incorrect interpretation of the Government Orders relating to regulation of payment of Island Special Duty Allowance by the IHQ MoD (Navy) led to an overpayment of ₹3.29 crore.

The Government of India, Ministry of Finance introduced (May 1989) an Island Special Duty Allowance (ISDA) *in lieu* of the Special (Duty) Allowance to civilian employees, who had an all India transfer liability posted in the Andaman, Nicobar and Lakshadweep Islands. ISDA was to be restricted in the same manner as Special Duty Allowance and therefore not admissible during leave / training beyond 15 days at a time and beyond 30 days in a year and during suspension and joining time.

Based on the recommendations of Vth Pay Commission, ISDA was extended (February 2000) to Defence Service Personnel (DSP) as well. The terms and conditions and the rates of ISDA applicable to civilian employees was applicable mutatis mutandis, to the DSP also. The rate of ISDA ranged between 12.5% and 25% of the basic pay depending on the area of posting within the Islands.

Audit scrutiny conducted (March 2012) at Headquarters, Andaman and Nicobar Command (HQ, ANC), Port Blair and Naval Pay Office (NPO)[9], Mumbai revealed that the ISDA paid to Naval Personnel posted at Andaman & Nicobar Islands was not being regulated as per the Government orders regarding reduction in ISDA during leave / training etc.

The matter was referred (March 2012) to the HQ ANC, who stated (March 2012) that all genforms[10] pertaining to leave/ temporary duty/ training in

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[9] Naval Pay Office (NPO) functions under Indian Navy and is manned by Naval Officers, Sailors and Civilian staff. The charter of NPO is to ensure correct authorisation and disbursement of various Pay and Allowances to Naval service personnel as per rules.

[10] Genform in Indian Navy is intended to communicate occurrences such as transfer, leave, punishment, changes in rank, engagement etc., affecting pay and allowances and other entitlements of an officer or a sailor. Original copy of the genform is sent to the Naval Pay Office and one copy is maintained by the concerned unit.

respect of Naval personnel were regularly being sent to NPO. However, HQ ANC subsequently stated (July 2012) that the payment was based on the IHQ MoD (Navy) Order of October 2007, which had stipulated that only reporting / transfer to and from Andaman, Nicobar and Lakshadweep Islands should form the basis for regulating the ISDA. In other words, the Order of October 2007 of the IHQ MoD (Navy) did not specify regulation of ISDA during periods of leave/ temporary duty / training etc. as required by the Government Orders on regulation of ISDA. Our scrutiny (August 2012) also revealed that the practice of non-regulation of ISDA as envisaged in the Government Orders had been continuing in Navy since the year 2000 after the issue of an incorrect interpretation of the Government Orders by the IHQ MoD (Navy) in August 2000.

We called for (May 2012) from the HQ ANC/NPO the details of leave, training etc. availed of by the Naval Personnel to assess the quantum of overpayment of ISDA paid. The requisite details were not furnished by the NPO. However, based on the details made available by the HQ ANC, of leave/ training availed of by the Naval Personnel since the implementation of VIth Pay Commission i.e. w.e.f. 01 September 2008, we computed the overpayment restricting to just one aspect i.e. the period of absence on leave and training period exceeding 15 days at a time, in respect of officers and sailors posted at 14 Naval Units at A & N Islands. The pay scale for computing the excess was adopted by us at the midrange and the percentage of ISDA was adopted at 12.5 per cent i.e. the lowest of the three ranges of ISDA. The excess payment based on this conservative computation worked out to ₹3.29 crore as brought out in the Annexure-II and III.

Our further scrutiny (June/July 2012) showed that while Air Force has explicitly indicated in their orders that ISDA was not payable during leave/ training exceeding 15 days at a time and 30 days in a year and the Army had also strictly been regulating the ISDA, the Order issued by IHQ MoD (Navy) remained silent on the regulation of ISDA. We also noticed that in its correspondence with HQ ANC, the IHQ MoD (Navy) admitted (June 2013) that ISDA was not admissible during leave / training beyond 15 days at a time and beyond 30 days in a year and during suspension and joining time. However, in response to our reference (February 2013) on the issue, the IHQ

MoD (Navy), stated (July 2013) that there were no Government Orders/rules in the case of Navy, for restriction of payments during leave etc.

The reply is factually incorrect, as the later Government Orders of 2002 clearly stipulate that the orders of ISDA allowance for civilian personnel would mutatis mutandis be applicable to DSP posted in Andaman & Nicobar Islands. This was further amplified in the subsequent Government Orders of 2008 on the VIth Pay Commission and is also proven by the fact that restrictions on regulation of payment of ISDA have been properly implemented by the Air Force and the Army.

Thus despite IHQ MoD (Navy)'s own awareness of its irregularity, IHQ MoD (Navy) did not take any further steps to rectify the erroneous interpretation. The Ministry of Defence (Ministry) needs to take a view on the matter and also ascertain the exact quantum of overpayments for further appropriate action.

The draft paragraph was issued to the Ministry (May 2013), their reply was awaited (December 2013).

CHAPTER V: COAST GUARD

Procurement

5.1 Avoidable expenditure on Short Refit of Indian Coast Guard Ship Vikram

ICGS Vikram, identified for decommissioning went in for short refit at a cost of ₹5.66 crore, just prior to decommissioning, due to lack of co-ordination between the two Directorates of ICGHQ.

Ships become due for repairs and refurbishing after completing a certain duration of service. However, after a certain stage, it is no longer viable to economically refurbish/repair the vessels, and the same are decommissioned. Indian Coast Guard instructions (CGO 12/2001) stipulate detailed procedures for decommissioning of ships. As per these guidelines for ships awaiting decommissioning/disposal, only essential repairs termed as Essential Repairs Dry Docking (ERDD) should be undertaken to ensure safe floatation till disposal of the vessel.

Audit scrutiny (August 2012) in the case of ICGS Vikram revealed that contrary to the above instructions an expensive and unwarranted Short Refit was undertaken at a cost of ₹5.66 crore, even though ICGS Vikram was identified for decommissioning, as brought out in succeeding paragraphs.

ICGS Vikram, an Offshore Patrol Vessel (OPV) was commissioned into service in December 1983, with a normal service life of 20 years i.e. up to year 2002. However, ICG decided (January 2002) that ship could not be decommissioned as per the normal life cycle, till a replacement was received, to avoid depletion in the existing force levels. The decision was despite the fact that material state of the ship was poor in year 2002 itself. Thus, the

decommissioning of ICGS Vikram was clearly linked to a replacement vessel being made available.

Thereafter, the Directorate of Fleet Maintenance (DFM) in the Indian Coast Guard Headquarters (ICGHQ) initiated the case for Short Refit of ICGS Vikram in July 2009. The last Short Refit of the ship was completed in July 2008 and the next Short Refit was due in October 2009. The proposal for offloading the Short Refit of ICGS Vikram to M/s Homa Engineering Works, Mumbai was approved (April 2010) at a cost of ₹6.68 crore. The refit was completed between July 2010 and December 2010.

Simultaneously, while the case for offloading of refit was in progress, the case for decommissioning of ICGS Vikram was revisited and a Board of Officers was constituted (September 2009) at Regional Head Quarters, Coast Guard (East), Chennai to assess the material state of ICGS Vikram. The Board recommended (November 2009) that overall material state of the ship was unsatisfactory, any major repairs would involve high cost and that the ship be decommissioned and disposed in the shortest possible time and sold as scrap.

Based on the recommendations of the Board, the Directorate of Planning and Policy (DPP), in the ICGHQ proposed (April 2010) the phase out the ship from service by decommissioning and placing the ship in Category 'Z' reserve with effect from middle of year 2010. Meanwhile replacement ship ICGS Vishwast was received and commissioned in March 2010. It was envisaged that manpower complement of the ICGS Vikram would be re-appropriated to ICGS Vishwast. The ICGHQ finally approved the proposal in September 2010 for seeking approval of the Ministry of Defence for decommissioning, which was approved by the Ministry in December 2010 indicating clearly that the ship be decommissioned in January 2011.

The absence of co-ordination between the two Directorates of the ICGHQ is evident. Thus while the DPP processed the case for decommissioning during the period April 2010 to September 2010, the DFM marshalled the case for

offloading of Short Refit from April 2009 to July 2010. The Table below brings out the sequence of events by the two Directorates of the ICGHQ:

Timelines	**Proposal for decommissioning of ship handled by DPP, ICGHQ**	**Proposal for offloading the refit handled by DFM,ICGHQ**
March 2010	Replacement ship ICGS Vishwast commissioned, paving way for decommissioning of ICGS Vikram.	Refit case being processed.
April 2010	The Directorate recommends decommissioning of ICGS Vikram.	The ICGHQ approve the proposal for offloading the refit.
September 2010	DG, ICG approves decommissioning of ship and recommends the same to Ministry of Defence.	Refit is in progress.
December 2010	Ministry approves decommissioning proposal and placing of ICGS Vikram as category 'Z' with effect from January 2011.	Refit is completed at a cost of ₹5.66 crore.

The above clearly brings out the lack of coordination in the action of two Directorates. Moreover, ICGHQ was well aware of the fact of ICGS Vikram's impending decommissioning while approving the Short Refit. Eventually, the refit was delayed and was completed in the same month in which Ministry approved the decommissioning.

The Regional Headquarters (RHQ) (East) justified (November 2012) the Short Refit stating that it was taken as it provided an additional platform for deployment in view of severe shortage of operational platforms for securing the entire coast. They added that ship acquisition was time consuming task, and till such time extending the operational life of the existing platforms was the best option. While stating that DPP and DFM in the ICGHQ had different roles; the RHQ (East) did not accept that there was lack of co-ordination between them.

The reply is however not acceptable. The refit action was delayed inordinately as the planned Short Refit scheduled in October 2009 could be taken up by ICG only in July 2010 by which time decommissioning of ICGS Vikram was being actively pursued, with its replacement being available.
In sum, ICG undertook an unwarranted Short Refit of an aging ship marked for decommissioning, and in the process incurred an avoidable expenditure of ₹5.66 crore.

The draft paragraph was issued to the Ministry (January 2013), their reply was awaited (December 2013).

5.2 Lack of synchronisation in radar replacement on Dorniers

Failure on the part of Indian Coast Guard to dovetail the procurement of Inverters and INS GPS with surveillance radars resulted in an extra expenditure of ₹2.87 crore and also delayed the integration of these radars on Dornier aircraft.

The Surveillance Radar is the main sensor fitted on a Maritime Reconnaissance aircraft. Non-availability of the same limits the mission role of the aircraft. The Indian Coast Guard has an inventory of 24 Dorniers DO 225-101 (Dornier) aircraft 17 of which are fitted with Super Marec Surveillance Radars (SMRs) which have been in operation for about 20 years. The SMRs fitted on these Dornier aircraft had outlived its life and the Original Equipment Manufacturer (OEM) of this radar had stopped its production. The remaining seven Dornier aircraft are fitted with Maritime Patrol Radars (Elta Radars), as an initial fit, manufactured by M/s Elta Systems Ltd., Israel. The performance of Elta Radars, over a period of time was found to be satisfactory. It was, therefore, proposed (December 2004) by the Indian Coast Guard (ICG) to replace all 17 SMRs with Elta Radars. Our scrutiny of the replacements revealed lapses on the part of ICGHQ as well as M/s HAL in progressing the integration of 17 Elta Radars on Dornier aircraft as discussed in subsequent paragraphs.

In order to meet the requirements of Dornier aircraft of the ICG, the Ministry of Defence (Ministry), in March 2008, concluded a contract with M/s Elta

Systems Ltd., Israel at a total cost of USD 19.49 million for procurement of 10 Elta radars and their major Line Replaceable Units (LRUs). The radars were scheduled for delivery between May 2009 and March 2010. ICGHQ, thereafter, concluded in March 2009 a contract at a cost of ₹16.70 crore, with M/s Hindustan Aeronautics Limited (HAL), Kanpur for integration of these Elta radars on 10 Dornier aircraft. The integration of the first Elta radar was to commence in December 2009 and by April 2011, all the 10 Elta radars were to be integrated onboard the Dornier aircraft. Subsequently, ICGHQ, in February 2010, also placed a supply order on M/s HAL for supply of 10 Inverters[1] and 10 INS GPS[2] at a total cost of ₹9.98 crore. The procurement was necessary to successfully complete the integration of 10 Elta radars on Dornier aircraft. These items were to be delivered in a staggered manner between February and November 2011.

The Ministry in March 2010, concluded one more contract, at a total cost of USD 16.85 million with M/s Elta Systems Ltd., Israel for supply of the remaining seven Elta radars, seven Invertors, seven INS GPS along with LRUs and other auxiliary items. The firm supplied the items as per the schedule i.e. by 25 January 2012. The contract for integration of these seven Elta radars was concluded between the ICGHQ and M/s HAL in March 2010 at a cost of ₹12.03 crore. The aircraft, after radar integration, were required to be delivered between July 2011 and March 2012.

We observed (August 2012) that though Inverters and INS GPS are essential for successful integration of Elta radars, these were neither considered nor contracted with the procurement of 10 Elta radars in March 2008 and later when the contract was concluded in March 2009 with M/s HAL for integration of these Elta radars. The supply order for 10 Invertors and 10 INS GPS was placed only in February 2010, whereas, the integration of first Elta radar was to commence in December 2009 itself. We also observed that M/s Elta Systems Ltd., Israel had quoted in December 2008 for Inverters and INS GPS at a cost which was less by 46 *per cent* and 3 *per* cent respectively than the tendered cost of M/s HAL of February 2010. However, no cognizance was taken of the quote of M/s Elta Systems Ltd., for supply of these items, made in

1 Inverters supply the requisite power to the radar system.

2 INS GPS is critical for inertial navigation and gives directional and spatial information to the radar system for correct orientation.

December 2008. Non-consideration of the offer made by M/s Elta Systems Ltd., Israel for Inverters and INS GPS led to an extra expenditure of ₹2.87 crore. Procurement of these items subsequently in March 2010, by the Ministry, directly from M/s Elta Systems Ltd., Israel was also at prices lower by 45 *per cent* and 13 *per cent* for Invertors and INS GPS respectively *vis a vis* the rates accepted by the ICGHQ in February 2010.

We further observed (August 2012) that despite a delay of almost two years by the ICGHQ in placement of supply order on M/s HAL for inverters and INS GPS, there was a lack of urgency resulting in delayed placement of in turn supply order in February 2011 by M/s. HAL for these stores and that too for only three instead of the required 10 INS GPS. The delayed supply of Inverters and INS GPS by HAL was a major factor, which necessitated three change orders for delivery of Elta radars contracted in March 2008, thereby, resulting in extension of letter of credit for which ICG had to bear an extra expenditure of ₹0.92 lakh.

We also noticed (February 2013) that as of December 2012, only 14 out of 17 Dorniers, were integrated with Elta radars and even in this, the integration of radars on three Dorniers could be possible through re-appropriation of INS GPS and Inverters available with the ICG through other contracts. The slippage in delivery of Inverters and INS GPS had impeded the optimum utilisation of the costly radars, thereby, limiting the mission role of the Dornier aircraft fleet of the ICG.

Ministry of Defence in its reply (November 2013), admitted that ten Inverters and INS GPS could not be contracted with the procurement of 10 Elta Radars as they did not form part of the Acceptance of Necessity but added that the procurement of these items from M/s HAL was in conformity with the previous procurements made by the ICG from M/s HAL i.e. under Repair Maintenance Order Route. Ministry also stated that M/s HAL was the OEM for the Dornier aircraft and the compatibility of Inverters and INS GPS was the reason due to which global tendering was not resorted to as the best option was to let M/s HAL procure a compatible Inverter and INS GPS for the ICG. Further, the Ministry held that the quote of M/s Elta Systems Ltd. (2008) was considered for benchmarking and that the extra cost due to procurement

through M/s HAL was limited to ₹1.66 crore as M/s HAL had to be paid escalations, handling charges and extended warranty. The Ministry also stated that Elta radar was installed on only one aircraft by re-appropriating an INS GPS from an ICG Dornier, which was under major servicing and an Inverter ex-ICG stock. The Ministry further accepted that there was a delay by M/s HAL in placing orders on M/s Elta Systems Ltd for Inverters and INS GPS and attributed the delay in integration of radars, to capacity constraints at M/s HAL and simultaneous integration of other systems *i.e.* X, Y and Z in addition to the Elta radars, on the Dornier aircraft.

The reply of the Ministry is not acceptable as the Defence Procurement Manual (DPM) issued in 2005 and 2009 does not contain any provision for procurement of stores under Repair Maintenance Order Route. The procurement of these items in March 2010 by the Ministry of Defence directly from M/s Elta Systems Ltd, without involvement of M/s HAL, underscores the fact that there were no issues relating to compatibility of these items vis-à-vis either the radar or the aircraft. The explanation offered by the Ministry with respect to the extra expenditure of ₹1.63 crores is also not acceptable as the Ministry has also taken into account various overheads payable to M/s HAL in determining the reasonability of quotes submitted by M/s HAL. Purchase of these items from the OEM i.e. M/s Elta Systems Ltd, would have resulted in a saving of ₹2.87 crore. Further the contention of the Ministry that only one aircraft was installed with re-appropriated INS GPS is also not acceptable as Coast Guard Headquarters in February 2013, had admitted that three Elta radars had been integrated on-board Dorniers, by initially re-appropriating Inverters and INS GPS available to the ICG through various contracts. Besides, there was no evidence on record to suggest that the replacement of Elta Radars on-board Dorniers was initially with fitment of X, Y and Z.

Thus, failure on the part of the Indian Coast Guard to synchronise the procurement of Inverters and INS GPS with the procurement/integration of Elta radars delayed the integration of radars. Besides, belated procurement of these items, made from M/s HAL, also led to extra expenditure of ₹2.87 crore.

5.3 Avoidable extra expenditure of ₹1.75 crore due to faulty exercise of option clause

Indian Coast Guard authorities did not carefully exercise the option clause in the contract for the 6th Advance Offshore Patrol Vessel. This led to an avoidable payment of ₹ 1.75 crore to M/s GSL, Goa.

In February 2004, Ministry accorded sanction for acquisition of one Advance Offshore Patrol Vessel (5th AOPV) from M/s Goa Shipyard Limited, Goa (M/s GSL) for the Indian Coast Guard (ICG) at a cost of ₹228.14 crore. Accordingly, a contract was concluded with M/s GSL on 18 March 2004. As per option clause of the contract, the buyer could place order for one more AOPV within one year from the effective date of contract, without any cost escalation. The cost of ₹228.14 crore for an AOPV was therefore valid up to 17 March 2005. Thereafter, the validity of the option clause was extended up to 30 September 2005.

Meanwhile the ICG proposal for placing order for an additional AOPV (6th AOPV) was examined by the Ministry and Acceptance of Necessity (AON) was accorded in February 2005 under option clause as a repeat order on nomination basis[3]. The Ministry in July 2005 accorded sanction for acquisition of 6th AOPV from M/s GSL as a repeat order of the 5th AOPV without any cost escalation and change in contract terms and contract for the same was concluded with M/s GSL in August 2005.

Our scrutiny (July 2012) showed that the relevant articles of contract provisions included the following:

- ✓ Article 2.1 provided that the vessel was to be designed, constructed and delivered as per the provisions of the contract, which included the Building Specification and the General Arrangements Drawing.
- ✓ Article 3.2 provided that in case any deletion, addition and modification was required to the list of machinery and equipment as specified in 'the Building Specification' the Contract price was also to be adjusted accordingly.

[3] Nomination in shipbuilding is selection of a defence public sector undertaking for construction of navy / coast guard vessels.

- ✓ Section 1.3 under Article 2.1 stated that the same 'Building Specification' provided for a model testing[4] of the hull form under different conditions.

Since the 6th AOPV was a repeat of the 5th AOPV and identical to the previous AOPV, design development and Model Testing was not required for the 6th AOPV. The time period of the 6th AOPV was also reduced from 41 months to 36 months since no design development and 'model test' was required. Accordingly no model test was carried out for the 6th AOPV.

However, we observed (July 2012) that the contract price was not suitably amended by ICGHQ in the contract for the 6th AOPV and no deduction in contract price was carried out for not carrying out any model testing. We also observed (January 2013) that ICG had made a payment of ₹1.75 crore towards model testing which was not warranted. Thus, failure of ICG in not adhering to the contract provisions led to a situation under which a payment of ₹1.75 crore had to be made for model testing which was neither required nor carried out.

Ministry replied (May 2013) that:

- As per contract, the cost of ₹228.14 crore was valid only upto 17 March 2005. M/s GSL agreed to extend the option clause up to September 2005, without any change in price; whereas there would have been substantial increase in input costs. Thus the cost advantage towards non-conduct of model testing was passed on by M/s GSL to the Government, in the form of retaining the validity of option clause period for additional three months and reduced delivery period.
- The Defence Procurement Board (DPB) took into consideration various aspects in totality viz. that the initial negotiated price for the 5th AOPV, the reduced delivery period and the extended validity period of option clause and decided to keep all the terms of contract unchanged.
- The Shipbuilding projects are highly complex in nature consisting of numerous elements and that the cost of the next AOPV cannot be revised only on the basis of one of the costing element i.e. model testing.

[4] 'Model Testing' is carried out to verify the design, for which the hull form is tested.

The reply of Ministry is however not acceptable since ICG had obtained reduction in delivery period on the ground that no model testing was necessary, indicating that they were fully aware of such deletion. Further ICGHQ note dated 28 January 2008 clearly brings out that an oversight had occurred by not raising the issue of reduction in expenditure while reducing the delivery period.

Thus, failure to enforce adequate attention to detail in exercising the option clause in the finalisation of the contract led to an avoidable expenditure of ₹1.75 crore.

CHAPTER VI: DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION

6.1 Qualitative Requirements based projects at Naval DRDO laboratories

Scrutiny of 24 projects aimed at achieving indigenisation, undertaken by Navy affiliated DRDO laboratories at a cost of ₹731.51 crore revealed that 21 projects i.e. 87 *per cent,* did not adhere to the original timeframe for completion. Seven projects witnessed cost overruns ranging from 38 to 348 *per cent.* Scrutiny of 12 projects related to critical naval technologies showed delays, technological obsolescence, difference of perceptions between Navy and DRDO on success criteria, delayed communication of QRs and frequent changes in QRs by Navy contributing to failure in actual induction of indigenously developed capability.

6.1.1 Introduction

Research and Development activities need to be dynamic in order to cope with the highly complex and technology intensive requirements of the Navy. The development of equipment, sonar systems, underwater weapons and materials for naval platforms such as ships, submarines and aircrafts require incorporation and integration of multi-disciplinary technologies. To achieve this, the Directorate of Naval Research & Development (DNRD) at DRDO HQ acts as the interface and facilitates effective interaction between Indian Navy and DRDO Labs. The Directorate deals with technologies in areas such as underwater Weapons, underwater Sensors, Naval Materials and Marine Biology, underwater Ranges, Oceanography, Ship Hydrodynamics and Structure, and Fuel Cell and Marine Stealth.

DRDO has a network of three naval laboratories, *viz.* Naval Material Research Laboratory (NMRL), Ambernath with competency in metallurgy, polymer science and technology; Naval Physical and Oceanographic Laboratory (NPOL), Kochi engaged in the design and development of underwater

surveillance systems and Naval Science and Technological Laboratory (NSTL), Visakhapatnam, dedicated to the design and development of underwater weapons and associated systems for the Navy.

6.1.2 Project formulation and the Financial Powers

Like other DRDO laboratories, Naval Laboratories also take up Mission Mode (MM)/Staff projects, Technology Demonstration projects (TD)/Research and Development projects (R&D)/Science and Technology (S&T) and Infrastructure Facility (IF) projects. Selection of a DRDO project involves a process of conducting a feasibility study, planning and peer review. After completion of the peer review, the project proposal is submitted for sanction to the competent authority as per the delegated financial powers vested with the respective authority. A brief description of various types of projects and the procedures required for approval is as under:

6.1.2.1 Mission Mode (MM)/Staff projects

These projects involve deliverables for the services within a specified time frame for induction. These projects are usually referred to DRDO by concerned Staff (Army, Navy & Air Force), in the form of General Staff Qualitative Requirement (GSQR)/Naval Staff Qualitative Requirement (NSQR). Based on SQR submitted, DRDO conducts pre-project or feasibility studies and offers its expert comments on the project to the initiating Staff, after which the project is finalised, modified or dropped by the initiating Staff. The procedures for various activities for project management are conceptualisation, feasibility studies, peer reviews, sanctioning, monitoring and reviews, closure of projects and transfer of technologies.

6.1.2.2 Technology Demonstration (TD) projects

These projects are normally initiated by DRDO as feeder technologies for future or imminent Staff projects. These are funded and controlled by DRDO with modest or limited user inputs. The purpose of this type of project is to develop, test and demonstrate a particular technology. Modules of this may be developed by industry and design/analysis packages by academia.

6.1.2.3 Science and Technology (S&T) projects

These are low level projects funded solely at the Lab level with loose alignment to future technological needs. S&T projects are normally taken up with academia involvement and include a quantum of analysis and simulation modules.

6.1.2.4 Infrastructure Facility (IF) projects

These are for setting up infrastructure facilities**.** The Competent Authority for sanctioning of the project and the cost limits are as under:-

Amount in ₹

Sl. No.	AUTHORITY	FINANCIAL POWERS	FINANCIAL POWERS (with financial concurrence)
1.	Laboratory Director	Up to 10 lakh	Up to 5 crore (with IFA concurrence)
2.	Chief Controller	-	5 crore to 25 crore (with IFA concurrence)
3.	DG	-	25 crore to 50 crore (with IFA concurrence)
4.	Secy Def(R&D)	-	50 crore to 60 crore (with JS & Add FA concurrence) 60 crore to 75 crore [(with FA(DS)/Secy Def(Fin) concurrence)]
5.	Raksha Mantri	75 crore to 500 crore	-
6.	Finance Minister	500 crore to 1000 crore	-
7.	Cabinet Committee on Security(CCS)	Beyond 1000 crore	-

6.1.3 Scope of Audit

The present audit focuses on the MM, TD and R&D projects with emphasis on meeting the user's requirement based on the Qualitative Requirements

{[1]Outline/Preliminary/Definite Naval Staff Qualitative Requirements (NSQR)}. The QR expresses the user's requirements in terms of capability desired with minimum required verifiable functional characteristics at the same time to ensure that formulation does not prejudice the technical choices by being narrow and tailor made. The SQR is drafted by the user directorate at Service Headquarters. The existence of a QR indicates that Navy had some plans of acquisition or at least a felt need. Therefore, projects with QRs were selected for audit scrutiny. Completed projects and projects which witnessed time overruns were subjected to detailed audit scrutiny. In the case of on-going projects, except for the analysis of reasons of time and cost overruns, a detailed assessment was not attempted, as evaluation of achievements with reference to definite deliverables, would be premature.

Audit covered twenty four projects with QRs, sanctioned during the period 1991 to 2010 at a total cost of ₹731.51 crore and examined whether the deliverables anticipated in these projects were achieved within the projected time and cost framework.

6.1.4 Criteria to determine success of project

MM/Staff projects are high priority projects taken up by the DRDO based on well defined user requirements in terms of QR, deliverables and time frame. Successful projects involve technology transfer and post-project production activities. A project can be considered successful only if the deliverables in terms of equipments and systems are accepted by the users for induction into service after satisfactory users' trials, thereby, leading to their productionisation and induction in the Indian Navy. Similarly, the success in the case of TD and R&D projects leads to an MM/Staff project, which in turn leads to induction of the realised system/technology in the service. Based on the above, the audit criteria are:

(i) Whether TD/R&D project led to an MM/Staff project and

(ii) Whether the Staff/MM project led to induction in service.

[1] SQR's lay down user's requirements in a comprehensive, structured and concrete manner. Staff Equipment Policy Committee in the Service Headquarters finally approves the SQR's. Prior to finalization and approval of SQR's, these are called Outline/Preliminary/Draft QRs.

6.1.5 Audit Methodology

Audit was taken up at the three Naval DRDO laboratories and DRDO Headquarters during July 2012 to November 2012. Audit methodology was based on examination of records, documents and issue of audit queries and observations. Draft Audit Report was issued to the Ministry in May 2013. Ministry's reply was received in September 2013 which has been suitably incorporated wherever necessary.

6.1.6 Audit Objective

The audit objective was to ascertain the outcome of projects having a QR undertaken by the Naval Laboratories in terms of productionisation and induction of equipment/system in the Navy. In relation to TD/R&D projects, the audit objective was to ascertain whether these in turn led to a Staff/MM project.

6.1.7 Measurement of the effective management of the MM/Staff projects/TD and R&D projects.

The success of any project primarily depends upon its timely completion within the sanctioned cost of the project. We undertook an analysis of time and cost overrun of the projects. The results are as under:

6.1.7.1 Time Overrun Projects

An analysis of the 24 projects showed that out of 24 projects sanctioned during 1991 to 2010 at a cost of ₹ 731.51 crore, 21 projects (i.e. 87 *per cent*) did not adhere to the original time schedule. The delay ranged between six months to nine and a half years, as detailed below:

Sl. No.	Project No.	Project Name	Date of sanction	Original PDC	Last PDC	No. of exten-sions granted	Time overrun (in Years/ Months)
1.	NCM-221	Weld consumable (DMR249A)	18.1.05	17.7.06	17.1.07	1	6 Months
2.	NCM-223	Weld consumable (DMR249B)	12.9.06	11.3.08	31.12.08	1	9 Months

3.	NPL-217	USHUS-I	16.2.04	16.2.06	31.3.09	4	03 Years 01 Month
4.	NPL-220	HUMSA NG	8.9.06	8.9.09	31.3.11	1	01 Year 07 Months
5.	NPL-221	DDSK	29.11.06	31.5.08	28.5.11	2	03 Years
6.	NPL-206	NAGAN	23.6.98	23.6.02	31.12.11	7	09 Years 06 Months
7.	NPL-214	LFDS	12.3.03	12.3.05	30.6.12	6	07 Years 03 Months.
8.	NPL-215	SBA	26.3.03	26.3.05	31.3.10	3	05 Years
9.	NPL-216	MAARECH	18.6.03	17.6.05	31.12.13	5	08 Years 06 Months
10.	NST-161	WGT	14.6.91	June 95	June'99	2	04 Years
11.	NST-168	UWR, Goa	20.6.95	19.10.98	6.7.08	7	09 Years 06 Months
12.	NST-171	SHAKTHI	16.5.96	15.5.00	30.11.02	4	02 Years 06 Months
13.	NST-179	DISHA	02.5.00	01.5.03	31.5.05	1	02 Years 01 Month
14.	NST-188	VARUNASTRA	5.8.02	04.8.06	31.5.13	5	06 Years 10 Months
15.	NST-189	AET	14.11.02	13.11.05	13.11.06	1	01 Year
16.	NST-194	MAREECH	29.8.03	28.8.06	31.12.13	5	07 Years 04 Months
17.	NST-195	AEM	31.10.03	30.4.05	31.12.07	2	02 Years 08 Months
18.	NST-201	LWM	19.8.04	18.8.06	31.12.07	1	01 Year 04 Months
19.	NST-205	EAST	6.3.07	5.3.12	5.3.14	1	02 Years
20.	NST-208	ALWT	12.2.08	14.8.13	31.12.15	1	2 Years 04 Months
21.	NST-213	MIGM	30.4.10	30.4.12	31.12.13	1	01 Year 08 Months

NOTE: **NCM: NMRL, Ambernath**
NPL : NPOL, Kochi
NST : NSTL, Visakhapatnam

The reasons attributed (September 2012) by the DRDO for the time overrun were delay in completion of trials, non-availability of the platform and

changes in the design and QRs. Delay in completion of these projects may have an adverse impact on the capabilities of the Navy, as some of these projects have been sanctioned with definite QRs or with Outline Requirements so that the system developed can be put to best use before the onset of technological obsolescence of the developed items.

6.1.7.2 Cost Overrun

We observed (July 2012 to November 2012) cost overrun ranging between 38 and 348 *per cent* in seven out of 24 projects as detailed below:

₹ in Lakh

Sl. No.	Project No.	Project Name	Original cost	Revised cost	Cost overrun (in *per cent*)
1.	NPL-206	NAGAN	3000	6415	114
2.	NPL-214	LFDS	1171	2465	111
3.	NPL-216	MAAREECH*	1315	5889	348
4.	NST-194	MAAREECH*	1740	4073	134
5.	NST-161	WGT	1732	2382	38
6.	NST-168	UWR, Goa	1841	3743	103
7.	NST-188	VARUNASTRA	4850	7450	54

* NPL-216 (Maareech) was undertaken by NPOL, Kochi for development of Anti Torpedo Decoy System. NST-194 (Maareech) was undertaken by NSTL, Visakhapatnam for development of expendable decoys and fire control system. Both projects were complementary to each other. NPOL, Kochi was the leading lab for Project Maareech as a whole.

The cost overrun of 38 to 348 *per cent* indicated in the Table above, was attributed (September 2013) by the DRDO to increase in cost of materials/stores, change of platform for conducting trials involving removal of the system under trial from one ship and installation onboard another ship, non-availability of nominated aircraft for the trials, variation in exchange rates, change in requirement of stores for the project and requirement of additional Design & Engineering (D&E) models. Clearly, the cost estimates were not prepared with due diligence and did not account for project exigencies correctly.

In its reply, Ministry of Defence (DRDO) stated (September 2013) in relation to project at Sl. No. 3 above that the cost and time overrun was due to addition of two production grade systems and change of trial platform. Ministry also accepted that they had no control over availability of ships, submarines and aircraft for trials. They also stated that productionisation required Research and Development, customized engineering and vendor development.

The reply only confirms that initial cost estimation did not factor in these critical requirements which in turn also impacted the timely completion of projects.

6.1.7.3 Status of QR based Naval DRDO projects

We examined the R&D, TD and Mission Mode (Staff) projects undertaken by three laboratories[2] wherein Qualitative Requirements were formulated by the user either as a draft QR, preliminary QR, Outline QR or in a few projects, by a definite NSQR.

We noticed (July 2012 to November 2012) that out of 24 projects, four projects of NSTL[3] and two projects each of NMRL[4] and NPOL[5] were successfully completed. Of the remaining 16 projects executed by NSTL and NPOL, four projects were still in progress whereas twelve projects (five by NPOL and seven by NSTL) could not meet the objectives of user acceptance, productionisation and induction in service.

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[2] The three laboratories are: Naval Materials Research Laboratory (NMRL), Ambernath, Naval Science and Technological Laboratory (NSTL), Visakhapatnam Naval Physical and Oceanographic Laboratory (NPOL), Kochi.

[3] NSTL: (1) Setting up of underwater range (UWR)(NST-168) (2) Advanced Modular Fire Control System (NST-168) (3) AET (NST 189) (4) EEM (NST 195)

[4] NMRL: (1) Weld consumables for Steel DMR-249A(NCM-221) (2) Weld consumables for Steel DMR-249B(NCM-223)

[5] NPOL: (1) USHUS-1 (NPL-217), (2) USHUS Training Simulator (NPL-226)

Ministry of Defence (DRDO) stated (September 2013) that estimated PDC did not include system engineering documentation and TOT. The reply did not take into account the objective of actual productionisation and induction which would have to necessarily include the estimation of system engineering, documentation and TOT.

Each of these twelve projects is discussed below in detail:

Projects undertaken by NPOL

(a) Development of Active cum Passive Towed Array Sonar (Project NAGAN)

Sonar (originally an acronym for Sound Navigation and Ranging) is a technique that uses sound propagation to navigate, communicate with or detect objects such as other vessels on or under the surface of water. There are two types of "sonar". Passive sonar essentially listens for the sound made by vessels; active sonar emits pulses of sounds and listens for echoes.

Towed Array Sonar plays an important role in Anti-Submarine Warfare (ASW) operations and is the sonar for warships to locate very silent submarines capable of launching high speed torpedoes. The Passive Towed Array Sonar (PTAS) technology was developed by NPOL, Kochi through a Technology Demonstration project in the nineties. Earlier, PTAS could meet the requirement of detection of a submarine at long range due to low frequency operations of the sonar and reduced self-noise effect of operating platform. However, new submarines had become quieter due to incorporation of stealth technology and passive detection. Therefore, Navy projected the requirement of an Active cum Passive towed array sonar system for fitment on its frontline warships. Subsequently, based on an NSQR formulated in August 1997, NPOL took up development of "Active" cum Passive Towed Array Sonar" (Project NAGAN, NPL-206), a user driven Mission Mode Project sanctioned by the Government in June 1998 at an estimated cost of ₹30 crore and PDC of June 2002.

Mention was made in C&AG of India Report No. 5 of 2007 regarding time and cost overrun of Project NAGAN and the consequential non-availability of

the technology for Indian Navy, resulting in commissioning of its four frontline warships without Sonar capability between January 2001 and April 2004. In their Action Taken Note, Ministry had indicated (June 2009) that as a remedial measure, Decision Aid for Technology (DATE) analysis would be undertaken in all future mission mode staff projects to project realistic time frame and funds before obtaining sanction.

Our further examination revealed (October 2012) that the project underwent three further revisions of PDC (March 2008, March 2009 and finally till December 2011) as also cost revision upto ₹64.14 crore from the originally sanctioned amount of ₹30 crore. NPOL attributed the time and cost overrun to delays in commissioning of chilled air circulator system, power supplies and intercoms by Navy, non-conduct of trials due to monsoon/rough sea, refit of trial ship, shift in the basis of user acceptance[6] leading to unanticipated purchase of two sets of wet end system; inaccurate estimates on the requirement of spares and lack of understanding of the engineering complexities of the project.

The system which was refurbished (April 2012) after carrying out the re-engineering works was termed as "Re-engineered NAGAN". DRDO stated (May 2012) that NAGAN RE was undertaken for the upgradation of NAGAN as per the NSQRs and the initial trials in April 2012 with user participation had shown encouraging results. Extensive evaluations of NAGAN RE capability would be continued, wherein, DRDO was expected to demonstrate the total capability of NAGAN. However, Navy viewed (March 2009) that NAGAN was far from meeting its primary requirements of even detecting a dived submarine and that the performance of NAGAN was even inferior to the medium frequency HUMSA sonar.

The delay in the project coupled with the non-achievement of the parameters of even detecting a dived submarine, compelled the Navy to consider the project as unsuccessful in February 2010 after incurring ₹48.51 crore, and eventually reduced the status of the project from MM to TD. As a result, a

[6] Unlike in the earlier sonar projects of NPOL i.e. HUMSA and Panchendriya; in NAGAN, Navy expected the NPOL prototype to be functional like a production model proved for extreme operational conditions and not only meeting the technical requirements.

new NSQR was framed in November 2010 enhancing the performance requirements and in April 2012, a fresh MM project 'Advanced Light Towed Array Sonar' (ALTAS) (NPL-232) was sanctioned by Ministry of Defence at an estimated cost of ₹114.42 crore with PDC of April 2016.

NPOL, however, did not agree (September 2012) with the Navy's views on the project as unsuccessful. DRDO stated that Project ALTAS had enhanced performance parameters incorporated in NSQR to meet present and futuristic requirement of the Navy and that Project NAGAN would continue as a TD project facilitating inputs to the design and testing of project ALTAS.

Thus, a project conceived in 1998 with a definite requirement projected by Navy could not be completed conclusively by the DRDO even after time overrun of nine and half years and cost overrun of ₹34.15 crore. NPOL cited (September 2012) the outdated QRs of 1998 as one of the reasons for non-acceptance of the developed system by the Navy. In addition, Navy opined (November 2012) that rapid advancements in technologies available worldwide made the system obsolete.

Due to continuous delays in completion of sonar NAGAN, Defence Acquisition Council (DAC) in 2008 approved procurement of ATAS (Advanced) for Delhi and Talwar class ships. Thus, due to prolonged delays and non-fructification of sonar NAGAN, project ALTAS had to be sanctioned at a cost of ₹114.42 crore, besides resorting to import.

Our scrutiny (October 2012) also brought out differences in perception between the DRDO and Navy regarding the project; while DRDO held that User Acceptance Trials (UAT) were conclusive and the system was ready for User Evaluation Trials (UET), Navy did not agree with this on the ground that certain key technologies/capabilities were yet to be proved.

The audit scrutiny revealed that while DRDO claimed success, Navy opined (April 2009) that NAGAN was based on obsolete technology, did not show enhanced passive detection and was not comparable even with the 1980s' technology. Navy further opined that that NPOL did not represent a realistic situation regarding the project at various fora such as Steering Committee,

Apex Committee Meetings and Chief of Naval Staff/Vice Chief of Naval Staff reviews.

In reply to the Draft Audit Paragraph, Ministry of Defence (DRDO) stated (September 2013) that the Navy had recommended a major change in QR after the conclusion of the UETs in February 2010, which could not be absorbed in the system, rendering NAGAN as virtually a non-inductable system. Further, with regard to Navy's views on capabilities of NAGAN system, it was stated that the Navy did not give DRDO an opportunity to test efficacy of the capability of NAGAN. The Ministry of Defence (DRDO) also stated that the Navy had no intention of continuing with User Evaluation Trials (UETs) post June 2010 due to trial platform ship (INS Sharda) entering refit which would make the trial ship unavailable for conducting further trials.

The reply is however not acceptable as considerable delay in the project had rendered the NSQR outdated.

(b) Development of Anti Torpedo Defence System (ATDS). (Project Maareech)

Navy had a requirement for an Anti Torpedo Detection System (ATDS), capable of detecting, confusing, decoying and destroying incoming torpedoes. Based on a Preliminary QR formulated by Navy and a project proposal initiated by NPOL, Kochi, in October 2002, Ministry in June 2003 sanctioned a 'mission mode' project ATDS (Project No. NPL-216, Project Name MAAREECH) to NPOL at an estimated cost of ₹13.15 crore, with PDC of 24 months (June 2005). While NPOL was responsible to develop the ATDS and the Towed Acoustic Decoy (TAD), a supplementary project for developing a set of counter measures (expendable decoy and fire control system) was allotted to NSTL, Visakhapatnam. This project titled 'Anti Torpedo Decoy System' (MAAREECH) (Project No. NST-194) was sanctioned in August 2003 at an estimated cost of ₹17.40 crore with a PDC of 24 months (August 2005). The system to be developed by NSTL was to be integrated with the ATDS being developed by NPOL. ATDS Maareech was planned to be fitted on a total of 38 ships and a truncated version consisting of only expendable decoy launcher was to be fitted in eight ships.

We observed (September 2012) considerable time and cost overruns in the project. The PDC of the project was extended six times upto December 2013 and cost was upwardly revised twice to ₹14.89 crore and ₹58.89 crore. Similarly, the PDC of NSTL's project was revised five times upto December 2013 and cost was revised once to ₹40.73 crore. As of November 2012, further trials were to be conducted under both the projects for evaluating its acceptance. It was also noticed that the preliminary QR was not converted in to a definite NSQR by the Navy. Reasons for not formulating a definite NSQR were called for (April 2013) from the Navy. Their reply was awaited (December 2013).

DRDO attributed (May 2005) the reasons for the delay of seven and a half years in both the project to *ab initio* development of new hardware architecture for ATDS, non-availability/withdrawal/decommissioning of trial ship, technical problems, onset of monsoon and trials extending to more than two seasons.

We also noticed (September 2012) that there was a clear divergence in views of DRDO and Navy with regard to availability of platform for trials, reasons for delay, availability of ready systems for fitment of the prototype and methodology for UET itself and lastly, even difference of opinion with regard to whether performance of the system was documented correctly during evaluation, as discussed below:

- While the NPOL cited (February 2008) non-availability of platform for trials from the Navy as a major cause for the delay, Navy maintained (November 2012) that they had provided trial platforms. Navy further added that the mutually agreed timelines were always adhered to by them and were factored in while planning the deployment of ships for operational commitment. Navy also pointed out that it was in fact the non-availability of the system for trials on the scheduled dates, and change/additional/late intimation regarding requirements by the DRDO which contributed to the delay.
- NPOL stated (January 2011) that they had insisted upon that the UETs should be conducted against a UET document only. A draft UET

document was prepared by NPOL and sent to Navy for their comments and vetting, but the trials were not conducted as per any specific document or methodology. According to NPOL, improper conduct of trials resulted in inconclusive trials. However, Navy stated that the UETs were conducted in accordance with the Trial Directive approved by the competent authority and that all procedures as per practice torpedo firing were observed and all data were recorded which were later forwarded for analysis to Weapon Analysis Unit.

- While the Navy held (November 2012) that the system developed by the DRDO failed to perform as per promulgated NSQRs in both the UETs**,** NPOL attributed (September 2012) Navy's non-acceptance of the system to its insistence on tactical performance instead of system functionality during trials.

We observed (September 2012) that lack of coordination between Navy and DRDO regarding adherence to timelines fixed for making the system available for trials by the DRDO and the platform for conduct of trials by the Navy, documentation of outcome of trials in an undisputed manner and arriving at the mutually accepted criterion for user acceptance led to the delay in the projects.

Thus, due to delay, DRDO could not meet its requirements resulting in a critical capability gap in Navy's operational preparedness. In order to overcome this, procurement of 'A' number torpedoes at a cost of ₹600 crore, was approved by the Defence Acquisition Council in January 2011.

In response, Ministry of Defence (DRDO) stated (September 2013) that the Navy had never agreed to mutually accepted test schedule or acceptance criteria during 2007-2010. They further stated that the capabilities of Mareech were comparable to NTDS, the imported system being processed by the Navy. They opined that Project Mareech ought to be subjected to the same acceptance criteria and number of trials as agreed for the imported torpedoes. Regarding time overrun, DRDO reiterated that it was due to Navy's insistence on the changed hardware architecture and to the extension in PDC to carry out sea evaluation trials and user acceptance. Further, with regard to the cost escalation, the DRDO stated that the development cost of four systems was less as compared to the cost of one imported NTDS.

The above contention of the Ministry of Defence (DRDO) thus strengthens the audit observation that there was lack of coordination between the DRDO and the Navy in conducting trials and in formulating mutually agreed criteria for user acceptance. Further, the comparison of cost of the imported systems with that of the DRDO developed ones is hypothetical at this stage, as the developed system is yet to be accepted by the Navy.

(c) Low Frequency Dunking Sonar (LFDS)

Low Frequency Dunking Sonar (LFDS) is a sensor for detection of submarines and is used for Anti Submarine Warfare (ASW) operation.

In January 2003 Indian Navy projected the requirement of LFDS with an assured detection range of 15 Km. Accordingly, DRDO proposed (January 2003) to design and develop dunking sonar with better range and detection capabilities. Govt of India, Ministry of Defence sanctioned the Mission Mode project LFDS in March 2003 without an NSQR, to be carried out by NPOL at an estimated cost of ₹11.71 crore with the PDC as March 2005. The sanction of an MM project without a QR rendered the DRDO unclear about the actual requirement of Navy. The objective of the project was to design and develop a LFDS optimized with long range detection capability to be fitted on helicopters (in service/due for induction) like Advanced Lightweight Helicopter (ALH). As NPOL had earlier completed a dunking sonar, the DRDO claimed that part of the technology of MIHIR and another Sonar project NAGAN could effectively be used in this project. Preliminary NSQR with necessity as "OPERATIONAL IMMEDIATE" was sent to NPOL for compliance by Navy in January 2004. However PDC for the project was extended six times till June 2012. The major reason attributed by DRDO (September 2011) for the extension of PDC was the revision of technical issues including use of state of the art technology instead of the available technology, requirement of additional funds for procurement of additional electronics hardware, installation activities of the LFDS on the nominated platform, issues relating to airworthiness of platform, non-availability of the nominated aircraft ALH and the conduct of Phase-3, Phase-4, Phase-5 flight trials.

We observed (September 2012) that the main reason for the time overruns was attributable to the DRDO, in meeting the revised technical requirements as envisaged by the Navy. In all, five phases of trials were concluded and in the Phase-5 trial conducted (April-May 2012), deficiencies in design were noticed by Navy. However, according to the Navy, the Phase-5 trial conducted (April-May 2012) to assess the maximum ranges attainable with LFDS and prove the performance of the system, revealed deficiencies.

In addition to the revision in PDC till June 2012, the cost of the project was also revised thrice (first revision to ₹14 crore, second revision to ₹20.337 crore and lastly to ₹24.65 crore) against the original sanctioned cost of ₹11.71 crore. The increase in cost was mainly due to requirement of additional funds in the conduct of Phase-3, Phase-4 & Phase-5 trials and for procurement of additional new electronics hardware. Since there were no definite guidelines/inputs from the Navy, the project was considered (December 2012) for closure by the DRDO who also proposed (December 2012) for productionisation of the system for eventual fitment on an operational platform.

However Navy opined (December 2012) that prolonged development timelines and NSQR non compliance had resulted in 'obsolescence' in the LFDS system and approximately 30 *per cent* of the verifiable technical characteristics could not be complied. Navy further stated that the QRs of LFDS were diluted to enable fitment on ALH helicopter for conducting trials. However, LFDS in its present form was not suitable for fitment on any ASW helicopter. Navy further added that prolonged development time lines had led to purchase of foreign sonar systems.

In reply (September 2013) to the Draft Audit Paragraph, Ministry of Defence (DRDO) admitted that the deficiencies noticed during Phase-5 trials could be made good only in Phase-6 trials. They further added that LFDS does not face any component obsolescence and that certain features (Active Buoy and Bathy Buoy) could not be demonstrated due to the Navy not having these items in their inventory. The Ministry of Defence (DRDO) attributed the change in QRs to Navy's choice of ALH for trials which was not an ASW platform. It was also stated that the airworthiness for the LFDS was granted in 2008-09

and hoped that the Navy would give a go ahead for exploitation of LFDS on an operational platform.

Thus, besides time and cost overrun, the development of the system remained unfruitful.

(d) Sea Bed Arrays

Sea Bed Arrays (SBA) technology consists of passive acoustic hydrophones, connected through cables, placed on the seabed to continuously monitor the movement of submarines and surface ships by way of detection, localisation, classification and tracking. Navy forwarded draft staff requirements for the project to NPOL in August 2001.

Indian Navy planned to use the seabed array technology to monitor the strategic locations at sea on continuous basis. Ministry of Defence sanctioned the project as a Technology Demonstration (TD) project in March 2003 at an estimated cost of ₹13.17 crore with the PDC of 24 months (i.e. March 2005). PDC for the project was revised twice i.e. in March 2007 and June 2008 to cater for design changes suggested by the Critical Design Review (CDR) Committee constituted by the Director NPOL in December 2006, in areas of data acquisition, telemetry, ocean deployment and retrieval technologies and also to accommodate delays on the development and evaluation of RF telemetry systems and its trials. Thereafter the non-availability of the trial platform INS Nireekshak further delayed the project which was finally closed in March 2009 after incurring an expenditure of ₹9.98 crore.

Subsequently, Navy was asked (August 2010) to examine the conceptual requirement of the SBA based on a decision[7] taken in the 32nd Steering Committee on Underwater Sensors (SCUWS) (January 2010), i.e. nine months after completion of the project. In the meantime, Directorate of Staff Requirements of IHQ MoD (Navy) and NPOL decided (February 2012) to identify areas of its usage and sought comments from all Commands and the Directorate of Naval Operations (DNO). In April 2012, all but Command

[7] The decision taken was to examine the conceptual requirement of Sea Bed Array system by 30th September 2010.

Headquarters (SNC, Kochi) and the DNO of IHQ MoD (Navy) opined that the system could not be accepted for operational deployment.

In reply to the Draft Audit Paragraph, Ministry of Defence (DRDO) stated (September 2013) that the SBA project was completed successfully in the presence of naval representatives at Karwar in May 2009. DRDO HQrs also stated that in January 2013, the Navy had shown keen interest in the project which highlighted the need for the project.

However, the fact remains that the Navy did not accept the system for operational deployment. Further, documentary evidence in support of Navy's continued interest in the system was not provided to Audit (December 2013).

Thus the project was to be undertaken by the DRDO at the instance of Navy even though the latter was unclear about the project's functional utility. Eventually, the Navy found that the system could not be deployed, after incurring an expenditure of ₹9.98 crore by DRDO.

(e) Diver Deterrence Sonar for Karwar

Diver Deterrence Sonar (DDS) deters divers from approaching a harbour/installation from the sea. In 2001, it was decided by the Navy that DDS may be introduced in all harbours as an 'OPERATIONAL IMMEDIATE' requirement and accordingly, in November 2004, a decision was taken to undertake a 'Mission Mode' project for development of DDS for Karwar. Navy promulgated NSQR for DDS in August 2005. In November 2006, Government of India, Ministry of Defence sanctioned the project to NPOL, Kochi to design and develop an engineered DDS with remote controls using Radio Frequency (RF) system at an estimated cost of ₹7 crore with an anticipated completion within 18 months (May 2008).

The PDC for the project was extended three times due to critical changes in design, feasibility study on deterrence and constraints on the range parameters before the project was finally closed in May 2011. Prior to the closure of the project, the Steering Committee on Under Water Sensors (SCUWS) suggested (July 2010) that Navy and NPOL explore the world market to identify the

existence of similar system and its capabilities. However, as no such system was found available, Navy accorded approval (October 2010) for the closure of the project and DRDO closed the project (May 2011) stating that the project met all the QRs as defined in the NSQR. However we observed (December 2012) that the system developed by the NPOL was not accepted by the Navy for the reason that the instantaneous deterrence of divers could not be achieved apart from the fact that it caused acute physiological discomfort to the crew of submarines and its adverse influence on submarine equipment. The Navy had also concluded (September 2012) that the NSQR formulated was not achievable and any reduction in its parameters would not create the requisite deterrence. As a result, the Navy did not clear the DDS for production. Since instantaneous deterrence could not be achieved Defence Acquisition Council accorded (October 2012) an AoN for the procurement of 78 Portable Diver Detection System in addition to a contract concluded in June 2012 for the procurement of Integrated Underwater Harbour Defence and Surveillance System (IUHDSS) for four naval harbours.

In reply to the Draft Audit Paragraph, Ministry of Defence (DRDO) stated (September 2013) that by not accepting the system at Karwar, the Navy lost an opportunity to energise an unmanned deterrent mechanism, to supplement other means of diver deterrence and that the decision to buy Diver Detection Sonar was independent of the non-induction of DDS. They further stated that the expenditure incurred on the project was not entirely infructuous, since all hardware bought for DDS had many other applications in the Lab (power amplifier, transducer). The Ministry of Defence (DRDO) also stated that the objective of Diver Deterrence Sonar was not ill-conceived, and would be used in areas where own divers are not required to operate.

The contention of the Ministry of Defence (DRDO) that the hardware bought for DDS has many other applications in the Lab is not acceptable as the project was primarily envisaged for the requirement of Diver Deterrence Sonar, which was not achieved.

The sequence of events clearly indicates that the objective of deterrence of underwater saboteurs envisaged by the NSQRs was ill-conceived which led to

non induction of the deterrence based systems and rendered the expenditure of ₹5.09 crore incurred on the project as unproductive.

Projects of NSTL, Visakhapatnam

(a) Development of Wire Guided Torpedo

As the existing torpedoes of the submarines of the Indian Navy were either anti-ship or anti-submarine, Navy planned to widen the role of the submarines by introducing new torpedoes which had a dual operation.

Accordingly, as a sequel to a Research & Development (R&D) Project[8] sanctioned at a cost of ₹4.755 crore in 1982, a project for "Development of Wire Guided Torpedo" (WGT) was sanctioned by the Government of India to NSTL, Visakhapatnam in June 1991 at an estimated cost of ₹17.32 crore, later revised to ₹23.82 crore with PDC of four years (June 1995). The project was sanctioned as a Technology Demonstration (TD) project based on a Draft QR approved by the Navy in April 1988. The weapon was to be developed for X_1 submarines and was also expected to be compatible for use by X_2 submarines. The project was to be executed in three phases. In the first phase, completion of total development work, integration of subsystems and Lab proving trials was envisaged. In the second phase, Transfer of Technology to M/s BEL, Bangalore and delivery of production models by them was envisaged. Acceptance by the user was planned in the third phase. PDC was revised twice till June 1999. Meanwhile, Navy in 1994 approved the Outline Staff Requirements (OSRs) for WGT and identified X_2 submarine as the platform in place of X_1 submarine designated originally. On completion of phase-I of the TD project, Government in November 2001 sanctioned its closure with effect from June 1999 after incurring an expenditure of ₹23.81 crore without completing the second and third phases, as the Navy had declared that the torpedo developed by the DRDO did not meet the envisaged QRs. Reasons for not completing the second and third phases of the project were called for from the Navy. Their reply was awaited (November 2013). Our scrutiny

[8] Development of Wire Guided Torpedoes was initiated by NSTL in 1977 and an R&D project was sanctioned for the purpose in 1982 at a cost of ₹4.755 crore. The torpedo developed was found to be unsuitable for induction.

revealed (December 2012) that the project could not reach its desired objective mainly due to Navy's inconsistent policies as discussed in the subsequent paragraphs.

Although the Navy had decided (1997) to close the project as TD it, however, continued with the trials. For this purpose, a project 'Evaluation Trials for WGT' at a cost of ₹4.80 crore was sanctioned to NSTL in October 2001 with PDC as April 2004. In the meantime, in June 2002, the Navy decided to convert the submarine WGT to a ship WGT, naming it "Takshak". This project was successfully completed in April 2004 at a cost of ₹4.47 crore and eventually paved way for the development of pre-production models and conducting user acceptance trials for induction into service. For this purpose, in August 2004, Ministry of Defence sanctioned the project "Development and Evaluation Trials of Heavy Weight Ship Launch Torpedo [(TAKSHAK (NST-200)] at an estimated cost ₹22.25 crore. Under this, five D&E torpedoes were to be developed and produced under ToT.

The Navy finally decided in July 2005 not to induct WGT in their inventory on the ground that the NSQRs were outdated and instead preferred 'Varunastra' (High Speed Heavy Weight Ship Launch Torpedo), a new project that had been sanctioned in August 2002 at a cost of ₹48.50 crore. The Navy, thus, recommended (July 2005) to stage-close the project Takshak.

We noticed (July 2012 to November 2012) that NSTL had in its closure report of the project WGT stated (February 2001) that they had developed the WGT indigenously with the infrastructure established within the country. Various critical and state of the art technologies had been established which would be used in ongoing and future projects and that WGT could replace a torpedo in the Navy, if required in the near future. However, Navy had then stated (June 2001) that WGT would be inducted into service when proved to their satisfaction. According to the Navy, the development of indigenous torpedo technology was in keeping with their long term goal of total self-reliance in armaments. We, however, observed (December 2012) that the project could not achieve this ultimate objective even after a decade since its closure and the outcome of WGT evaluation trials was limited to successful technology

demonstration and establishment of processes and products in the areas of both ship launch and submarine launch heavy weight torpedoes.

Ministry of Defence (DRDO) in its reply (September 2013) agreed that frequent changes in the QR, especially at the end of the project proved to be a hindrance for the DRDO to bring the project to any logical conclusion. They added that though the Navy had procured torpedoes rendering the DRDO's efforts unfruitful, the expertise accumulated had been kept alive as the technology was relevant and could be required in future.

To sum up, the process started in 1991 with a definite requirement to develop and induct a Submarine launch WGT did not reach its logical conclusion of induction into service even after passage of two decades and an expenditure of ₹28.33 crore (₹23.81 crore on WGT, ₹4.47 crore on its trials and ₹5.05 lakh on TAKSHAK). Citing obsolete technology, another project VARUNASTRA has been taken up in August 2002 at a cost of ₹48.50 crore. The sequence of events of the development of WGT shows that frequent changes given by the user led to the non-achievement of the objective of the project and an expenditure of ₹28.33 crore incurred on the development of Wire Guided Torpedo has largely been rendered unfruitful.

(b) Design and development of High Speed Heavy Weight Ship Launched Torpedo (VARUNASTRA)

Varunastra is an electrically propelled Heavy Weight Ship Launch Torpedo for Anti submarine operations. Varunastra was sought to be developed with state of the art features in control, homing and recovery aspects and with the best propulsion technology that could be achieved in the country. The torpedo was designated for existing 'R' class ships, 'D' class ships and also future ASW ships, capable of firing Heavy Weight Torpedoes. The torpedo was to be made compatible to the launchers available onboard of the ships and to the Fire Control System (FCS).

Based on the experience gained by NSTL, Visakhapatnam in the development of Advanced Experimental Torpedo (AET) and Wire Guided Torpedo (WGT)), Navy in March 2002 requested DRDO to undertake a project to develop a torpedo to meet the operational needs of enhanced homing

performance, higher speed, range and low self noise. The anticipated requirement of the torpedo for the Navy, was more than 'Z' numbers.

Based on a project proposal submitted by NSTL and Outline Staff Requirements (OSRs) formulated by Navy in March 2002, the Government of India, Ministry of Defence in August 2002 sanctioned the project to NSTL, initially as an R&D project, at an estimated cost of ₹48.50 crore with PDC of four years (August 2006). The OSR were later translated into NSQR in August 2005 with higher-end specifications. The aim of the project was to design, develop, fabricate, test and prove at sea all the technologies and systems required for an Advanced Heavy Weight Torpedo for launch from the designated classes of ships. Ten prototypes were proposed to be developed; out of which four would be R&D models and six to be D&E models.

The project underwent six revisions in PDC, last revision being December 2013, and two revisions of cost to ₹74.50 crore. So far (September 2013), three R&D torpedoes and eight D&E torpedoes were developed in association with the production agency, M/s BDL, Hyderabad, of which two D&E and one R&D torpedoes were lost during trials at sea. User Evaluation Trials (UETs) were in progress and an amount of ₹70.87 crore had been incurred on the project (November 2012).

Absence of a firm QR at the outset impacted the completion of the project. NSTL stated (October 2011) to DRDO Headquarter that the OSRs, based on which the project was sanctioned, were found (October 2011) not feasible for realisation with the available technology in the country, particularly in respect of battery and motor, but Navy had urged (October 2011) DRDO to pursue the project. Thereafter, it took another three years i.e. from April 2002 to August 2005 for the Navy to come up with an approved NSQR with realisable requirements. In the NSQR, Navy enhanced the features of Varunastra and altered the specifications. To accommodate the changed specifications, the Lab had to re-start the whole development and the design which entailed extension of PDC. A significant span of three years was lost in the process. The remaining delay was attributed, *inter alia*, to the time taken in identifying and engaging the production agency and delay in conduct of trials. The cost overrun was due to introduction of production agency (M/s BDL and

M/s BEL), transfer of technology and procurement/integration of torpedoes for User Evaluation Trials (UETs).

Navy, however, disagreed (June 2013) with the DRDO's contention and stated, inter alia, that:-

(i) OSRs of March 2002 were promulgated after prolonged consultations with NSTL and after scaling down the 'staff targets' promulgated in May 2000. The Lab had confirmed (January 2002) that it would meet these requirements.

(ii) The formulation of final NSQRs was delayed due to delay by the DRDO (2 ½ years) in preparation of the Project Definition Document (PDD) Version 3. NSQRs were formulated within six months of receipt of the draft PDD Version 3.

(iii) There was no enhancement of features and the features/specifications were mutually defined.

(iv) The contention of DRDO that the whole development of Varunastra was restarted after August 2005, was not correct as the trials of Varunastra had started in December 2005.

(v) As regards cost overrun due to introduction of production agency, the OSR itself had envisaged concurrent engineering approach which was accepted by NSTL and at no stage, NSTL had highlighted any problems in this regard.

Our scrutiny, (November 2012), however, revealed that the final NSQRs were at variance with the OSR in the parameters of length, weight, range, operating depth and crushing depth of the torpedo. The changed specifications contributed to the delay. Thus, while Navy was responsible for the delay due to changes made in the NSQRs, the DRDO delayed the preparation of PDD Version 3, and caused further delay in identification of production agency and in conduct of trials.

Thus, the project sought to be completed by August 2006 had not been completed (September 2013) even after time overrun of six years and cost overrun of ₹26 crore.

(c) Design and development of Thermal Propulsion System for Heavy Weight Torpedo (Project Shakti).

NSTL, Visakhapatnam in February 1995 proposed to design, develop, test and prove a thermal propulsion system using Otto fuel and Hydroxyl Ammonium Perchlorate (HAP) to power a heavy weight torpedo at a higher speed for use by the Navy at the turn of the century. It was also felt that the technology involved was representative of state of the art engines of advanced weapon systems being inducted into service and would not be available from any external agency. It was, therefore, important to start developing such engines indigenously.

Based on NSQR promulgated by Navy in March 1996, the Government of India, Ministry of Defence in May 1996 sanctioned the project "Design and Development of Thermal Propulsion System for Heavy Weight Torpedo (SHAKTI)" (NST-171) as a Technology Demonstrator (TD) to be carried out by NSTL at an estimated cost of ₹16 crore with PDC of four years (May 2000).

PDC of the project was revised four times, till November 2002 on the reason that the turbine had to be re-designed for higher inlet temperatures, delay in realising improvement in hardware, delay in manufacture and testing of pump stack and in completing the integrated trials for proving integrated engine performance, design modifications, and completion of integrated and endurance trials. The project was successfully completed in November 2002 after incurring an expenditure of ₹15.86 crore.

In November 2003, the Government of India, Ministry of Defence sanctioned another TD project to NSTL for "Packaging, Integration, and Proving of Thermal Torpedo including Technical trials at an estimated cost of ₹34.04 crore with date of completion as May 2007, and also merged it with another project on Technical Co-operation between NSTL and a foreign firm for "Development of Thermal Torpedo". The latter project was not based on

QR and its scope was to manufacture, assemble and integrate thermal torpedo test vehicle and check for the functional performance trials. The project was completed in March 2010 after three revisions of PDC for various technical reasons relating to trials, development of turbine rotors etc. NSTL stated (January 2012) that upon successful demonstration of the project, the Lab had expressed their desire to take up a MM project for Development of Thermal torpedo. However, Navy did not respond to formulate a revised NSQR for the development of Thermal Torpedo.

Even though NSTL had claimed that the TD project was successful, Navy did not agree. When audit sought to know (March 2013) the reasons for the delay in taking up the project on development of Thermal Torpedo, Navy stated (June 2013) that culmination of a TD project into an MM project is possible only when DRDO demonstrates its capability to develop component technology in a TD project. Since the objectives of the TD project were not met and developmental capability not demonstrated, the project was not pursued further.

Thus, the objective of the TD project could not be met by the DRDO and the expenditure of ₹47.68 crore incurred on the two TD projects (₹15.86 crore on Project Shakti and ₹31.82 crore on its integration and trials) did not benefit either the Navy or the DRDO.

(d) Design and Development of Light Weight Mine (LWM)

Based on a project proposal from NSTL and NSQR from Navy, the Government of India, Ministry of Defence, Department of Defence Research & Development accorded sanction in August 2004 for the Project titled "Design and Development of Light Weight Mine (LWM)" at an estimated cost of ₹2.86 crore with PDC as of August 2006. Preliminary NSQR of December 2002 was modified in May 2003 and in August 2005.

The main objective of the project was the design and development of shallow water Light Weight Mine (LWM) for the Indian Navy. The project was to be undertaken in two phases: (i) Design, development and proving of ship launched version and (ii) Design and Development of air launched version.

The project was extended till December 2007 due to changes in QR and eventual design changes. Besides, change in the platform for mine laying from aircraft 'D' to aircraft 'I' and also the technical requirements such as ship countermeasure settings, MCM logic, acoustic telemetry and integration of all sub-systems added to the delay.

We observed (November 2012) that the User Evaluation Trials concluded between January 2010 & October 2011 were unsuccessful due to non-compliance of the QRs. Consequently, the induction of LWM was awaited (October 2012) subject to successful compliance of the UETs.

Thus, though the project commenced with a definite QR in 2004 and was planned to be completed by August 2006, it was extended till December 2007. Further, UETs were still (November 2012) under progress. In November 2012, Navy stated that there was considerable gap in their mining capability due to delay in realisation of the project and the existing mines stock catered only partially to the total requirement. The compliance to NSQR post UET in October 2012 was sought (March 2013) by us from the Navy and the DRDO and was awaited (November 2013).

In response (September 2013) to the Draft Audit Paragraph, Ministry of Defence (DRDO), however, accepted our findings and stated that the change in QR led to fresh design, different specifications, infrastructure and finally to time and cost overrun.

Conclusions

Our review of 24 projects which had a QR and were undertaken by three naval laboratories, viz. NMRL, NPOL and NSTL showed that 21 (87 *per cent*) out of 24 projects witnessed time over runs of six months to nine and a half years and six projects witnessed cost over run ranging from 38 to 348 *per cent*.

A further examination of nine projects with significant time overruns showed that the desired outcome i.e. productionisation and ultimately induction of the system/ technology could not be realised. Existence of QRs indicated that Navy either had a definite requirement or at least a felt need of the capability.

Recurrent cost and time overruns raised questions on the ability of the laboratory to deliver the systems / technologies as promised, at initially sanctioned cost and within the PDC. The time overruns in 87 *per cent* of the projects could lead to a situation where originally envisaged PDC being viewed as indicative only, with every possibility of extension of the project at the sanction stage itself.

Specifically, this study has brought out that:

- There were differences of opinion between the Laboratory and the Navy regarding whether a project was successful or not. While the Laboratories viewed the outcome based on the conformity of the technology / system to the QRs, Navy measured success based on its ability to perform in an operational situation. The differences also extended to what methodology be used in evaluation and whether all the results of evaluation were documented properly (Projects Nagan/Maareech). This indicated the need for a more rigorous approach to determine the success criteria and an agreed methodology for evaluating the same.
- The delays in completion of DRDO projects resulted in the projects facing a constant threat of obsolescence. By the time the systems were ready for evaluations, they were found to be obsolete *vis a vis* the contemporary technology. This led to sanction of new projects with stiffer parameters for the same deliverable (Project Nagan, LFDS, WGT, LWM). Clearly, there was a need to spell out the time frames realistically, taking into account parameters like time required for evaluations, contingencies, technological challenges, non-availability of platforms for evaluations.
- Some of the projects suffered due to inefficiencies in framing and communicating the QRs timely, or due to changes in QRs midway. While Project Nagan was a case of obsolescence, the Navy did not

improve and communicate revised NSQRs. Only on completion of the Project did the Navy communicate the outcome as obsolete. Similarly, in Project Mareech, though the Navy had a definite need, it did not communicate NSQRs to the DRDO in this MM/Staff project. In the case of Project LFDS, Navy initially diluted the NSQRs but on completion of the project, held the developed system obsolete and not fit for induction. For Project WGT, the platform was changed from submarine launched to ship launched midway of the project. This project was closed and a new Research & Development Project Varunastra was launched with OSRs that were found to be unrealizable by the DRDO. NSQRs for this project were framed three years later and further enhanced thereafter. In Project Shakti, Navy was yet (September 2013) to come up with a Staff/MM NSQRs. Project LWM also witnessed changes in NSQRs. Clearly, timely formulation and communication of appropriate QRs require to be far more robust than those available at present.

- Two projects namely Diver Deterrence Sonar and SBA were ill-conceived. In the case of former, such technology did not exist elsewhere as admitted by the Navy. Similarly, with regard to SBA, the project did not suit Indian conditions. The projects were closed only after DRDO had spent considerable resources.

Ministry of Defence (DRDO) stated (September 2013) that the projects are successful regardless of the technology developed being utilised or not and that the non-acceptance of the user cannot be termed as failure in Research and Development.

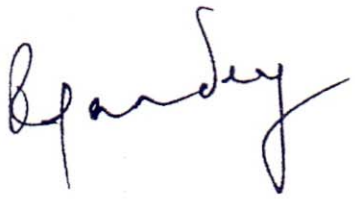
While the Ministry's contention that R&D projects cannot be termed as failure is partially acceptable, however, the fact remains that projects with a QR indicate that the Navy had a specific need for the equipment and such projects would, therefore, definitely need to be completed successfully, which in many cases as has been brought out in review, was not done. Similarly, a successful R&D and TD project should lead to a MM/Staff project, eventually leading to productionisation. However, this was not the case.

Ministry of Defence (DRDO) while broadly agreeing to the audit conclusions, stated, *inter alia*, (September 2013), that all these projects were first time development of products with *ab initio* development of necessary technology and hence were time consuming. Technology Development processes are difficult and therefore, time and cost estimates for such projects are at the best 'approximate'. Sometimes, the user is forced to seek changes in NSQRs due to changing technological scenario and any change in NSQR had time and/or cost penalty; and in some cases when a sub-assembly is developed in the lab, it becomes difficult to find suitable vendor. They also stated that various measures have been taken to mitigate the pitfalls in the execution of projects: concurrent development of technology, commissioning of a series of TD projects to develop technologies to keep them ready to meet product requirement of the user; development of well defined UET schedules with quantiative success criteria by mutual negotiations with the users to address the ambiguity and conflicts and involvement of the user from the beginning of the project and not at the trial stage.

Recommendations

- There is a need to re-visit comprehensively the existing project planning and management, particularly in terms of the probable date of completion (PDC) being projected. The PDC should be more realistic and also include sufficient time for user evaluation and user trials, availability of platforms, time required for modifications to platforms and development of prototypes etc.
- To overcome the different perceptions over success criteria for a project, there is a need to further refine and document the success criteria and test conditions etc. in addition to the QRs, at the time of project sanction itself, to ensure greater clarity.
- Navy needs to formulate and communicate mature QRs quickly to DRDO. In case, it is not feasible to formulate QRs, the fact should be communicated to the DRDO as early as possible. In those cases where owing to the technology obsolescence, existing QRs require a change, the revised QRs should also be communicated promptly to the DRDO.

- There is also a need for the Navy to introduce greater rigour in formulating QRs and ensure that QRs reflect the appropriate and deployable technology.
- DRDO should be more pro-active in timely completion of existing projects. Where the projects are beyond current capability of the DRDO, this should be communicated early to the user service.



New Delhi **(RAJIV KUMAR PANDEY)**
Dated: **Principal Director of Audit**
Air Force

Countersigned

New Delhi **(SHASHI KANT SHARMA)**
Dated: **Comptroller and Auditor General of India**

ANNEXURE- I

Statement showing UEs and Strength of ASVs

Sl. No.	Type of ASV	Year	Fleet UE	Maint-enance Res-erve 12.5 %	Depot Res-erve 10.0 %	Total	Hold-ing as on 1st April	Surplus against			Deficiency against			Total defi-ciency in per - centage
								UE	UE + MR	UE+ MR+ DR	UE	UE + MR	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	GPU 40 KVA	07-08	683	86	68	837	528	-	-	-	155	241	309	36.92
		08-09	665	84	67	816	552				113	197	264	32.35
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	717	90	72	879	669	-	-	-	48	138	210	23.89
2	NI-CD TROLL EY	07-08	314	40	31	385	312	-	-	-	2	42	73	18.96
		08-09	264	33	26	323	308	44	11	0	0	0	15	4.64
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-
3	HST-120D	07-08	203	26	20	249	269	66	40	20	0	0	0	0.00
		08-09	214	27	21	262	261	47	20		0	0	1	0.38
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	339	43	34	416	282	-	-	-	57	100	134	32.21
4	HST-200	07-08	43	6	4	53	27	-	-	-	16	22	26	49.06
		08-09	46	6	5	57	26	-	-	-	20	26	31	54.39
		09-10	@					-	-	-				
		10-11	@					-	-	-				
		11-12	@					-	-	-				
5	HST-300	07-08	30	4	3	37	26	-	-	-	4	8	11	29.73
		08-09	30	4	3	37	26	-	-	-	4	8	11	29.73
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-

6	SAT-300	07-08	122	16	12	150	127	5	-	-	0	11	23	15.33
		08-09	118	15	12	145	125	7	-	-	0	8	20	13.79
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	118	15	12	145	151	33	18	6	0	0	0	0.00
7	SAT-650	07-08	57	8	6	71	36	-	-	-	21	29	35	49.30
		08-09	61	8	6	75	36	-	-	-	25	33	39	52.00
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	92	12	9	113	43	-	-	-	49	61	70	61.95
8	KG5H-230	07-08	48	6	5	59	71	23	17	12	0	0	0	0.00
		08-09	45	6	5	56	66	21	15	10	0	0	0	0.00
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	62	8	6	76	64	2			0	6	12	15.79
9	MACV-350	07-08	70	9	7	86	58				12	21	28	32.56
		08-09	69	9	7	85	67				2	11	18	21.18
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	69	9	7	85	77	8			0	1	8	9.41
10	Nitrogen Generating Storage and Distribution Station	07-08	94	12	9	115	60				34	46	55	47.83
		08-09	94	12	9	115	60				34	46	55	47.83
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	72	9	7	88	76	4			0	5	12	13.64
11	Oxygen Charger	07-08	45	6	5	56	5				40	46	51	91.07
		08-09	47	6	5	58	26				21	27	32	55.17
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	58	8	6	72	37	-	-	-	21	29	35	48.61
12	DC GPU 24 V/28.5V	07-08	378	48	38	464	375	-	-	-	3	51	89	19.18
		08-09	569	72	57	698	442	-	-	-	127	199	256	36.68
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-
13	Hydra-	07-08	10	2	1	13	9				1	3	4	30.77

	ulic Trolley for Mirage - 2000	08-09	10	2	1	13	9				1	3	4	30.77
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-
14	EHTB	07-08	6	1	1	8	6	0	0	0	0	1	2	25.00
		08-09	6	1	1	8	6	0			0	1	2	25.00
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-
15	AN-32 GPU	07-08	42	6	4	52	14				28	34	38	73.08
		08-09	40	5	4	49	14				26	31	35	71.43
		09-10	**@**	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	40	5	4	49	12				28	33	37	75.51
16	Air Jet Starter	07-08	6	1	1	8	0				6	7	8	100.00
		08-09	6	1	1	8	0				6	7	8	100.00
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-
17	Self Prop-elled Bheema Trolley for SU-30	07-08	42	6	4	52	0				42	48	52	100.00
		08-09	45	6	5	56	0				45	51	56	100.00
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-
18	Self Propelle d Air Nitrogen Trolley	07-08	254	32	25	311	156				98	130	155	49.84
		08-09	254	32	25	311	156				98	130	155	49.84
		09-10	@	-	-	-	-	-	-	-	-	-	-	-
		10-11	@	-	-	-	-	-	-	-	-	-	-	-
		11-12	@	-	-	-	-	-	-	-	-	-	-	-

Authority: Compiled on the basis of data supplied by Air HQ (DMT) vide their letter no. Air HQ/81957/1/MT/ASQ dated 7 Aug 2012

@ - Data not supplied by the Air HQ
UE - Unit Establishment i.e authorisation
MR - Maintenance Reserve
DR - Depot Reserve

EXCESS PAYMENT OF ISLAND SPECIAL DUTY ALLOWANCE IN NAVY

ANNEXURE - II

Statement showing details of overpayment on account of payment of ISDA during Leave/ training exceeding 15 days at a time

Rank	No of days of Leave/ Training	Scale of pay	**Gr. Pay**	**Average Pay (Approx) Per Month**	**Average ISDA per day (@ 12.5%)** **Amt. in ₹**	**Excess payment of ISDA** **Amt. in ₹**
1	**2**	**3**	**4**	**5 (Mid range of Col 3+ Col 4)**	**6 (Col 5/30 *12.5%)**	**7 (Col 2 *Col 6)**
Slt	535	15600-39100	5400	32750	136	72760
Lt	4866	15600-39100	6100	33450	139	676374
Lt Cdr	20384	15600-39100	6600	33950	141	2874144
Cdr	2324	37400-67000	8000	60200	251	583324
Capt	57	37400-67000	8700	60900	254	14478
Sailors	293541	5200-20200 &9300-34800	2000 to 4800	23400	98	28767018
					Total	**32988098**

EXCESS PAYMENT OF ISLAND SPECIAL DUTY ALLOWANCE IN NAVY

ANNEXURE - III

Unit wise and Rank wise details of Leave/Training taken by the Officers and Sailors posted at Andaman & Nicobar Island for the period 2008 to 2012

		NUMBER OF DAYS OF LEAVE/TRAINING TAKEN BY :					
Sl No	**Name of the ship/ Unit**	**Slt**	**Lt**	**Lt Cdr**	**Cdr**	**Capt**	**Sailors**
1	INS Utkrosh	249	2566	3391	2123	57	59529
2	INS Cheetah		398	116	19		14008
3	IN LCU L-33		163		28		6374
4	INS Guldar	132	280	117	38		13751
5	INS Baratang	49	121				3393
6	INS Bitra	18	174	43			3003
7	IN LCU L-35	20	129	73			6673
8	IN LCU L-39	17	162	16	30		4622
9	INS Bangaram		143				1690
10	IN LCU L-36		114				3613
11	INS Battimaly	50	397	40			8885
12	INS Mahish		219	166	86		8515
13	INS Kardip			363			6566
14	INS Jarawa			16059			152919
	Total	**535**	**4866**	**20384**	**2324**	**57**	**293541**

Glossary of Terms	
AA	Administrative Approval
AET	Advanced Experimental Torpedo
AF	Air Force
AFCAO	Air Force Central Account Office
AFLS	Airfield Lighting System
AFS	Air Force Station
AFSEC	Air Force Standing Establishment Committee
Air HQ	Air Headquarters
AoN	Acceptance of Necessity
ASVs	Aircraft Support Vehicles
ATN	Action Taken Note
BEL	Bharat Electronics Limited
BOO	Board of Officers
BRD	Base Repair Depot
BSF	Base Support Facilities
CBDT	Central Board of Direct Taxes
CCS	Cabinet Committee on Security
CDA	Controller of Defence Accounts
CE	Chief Engineer
CGDA	Controller General of Defence Accounts
CIP	Carriage and Insurance paid
CNC	Contract Negotiation Committee
COM	Chief of Material
CSTEP	Centre for Study of Science, Technology and Policy
CUVs	Common User Vehicles

CWE	Chief Works Engineer
D&D	Design & Development
D&E	Design & Engineering
DAD	Defence Accounts Department
DARE	Defence Avionics Research Establishment
DCW	Deposit Contribution Work
DDP	Department of Defence Production
DDP&S	Department of Defence Production & Supplies
DFM	Directorate of Fleet Maintenance
DFP	Delegation of Financial Power
DGONA	Director General of Naval Armament
DMT	Directorate of Mechanical Transport
DNO	Directorate of Naval Operations
DNRD	Directorate of Naval Research and Development
DPM	Defence Procurement Manual
DPP	Defence Procurement Procedure
DPRO	Directorate of Procurement
DPSU	Defence Public Sector Undertaking
DRDO	Defence Research Development Organisation
DWE	Directorate of Weapon Equipment
DWP	Defence Work Procedure
EAC	Eastern Air Command
ED	Equipment Depot
E-in-C	Engineer-in-Chief
ENC	Eastern Naval Command
FAC	Factory Acceptance Test
FADS	Financial Adviser Defence Services
FOB	Free on Board

GDP	Gross Domestic Product
GE	Garrison Engineer
GOI	Government of India
GRSE	M/s Garden Reach Shipbuilders and Engineers Ltd.
GSE	Ground Support Equipment
HAL	Hindustan Aeronautics Limited
HAT	Harbour Acceptance Trials
IAF	Indian Air Force
ICG	Indian Coast Guard
ICGS	Indian Coast Guard Ship
IHQ	Integrated Headquarter
IN	Indian Navy
INDT	Indian Naval Diving Team
ISDA	Island Special Duty Allowance
LCU	Landing Craft Utility
LD	Liquidated Damages
LRU	Line Replaceable Unit
LTE	Limited Tender Enquiry
LWM	Light Weight Mine
MES	Military Engineer Service
Ministry	Ministry of Defence
MoD	Ministry of Defence
MoF	Ministry of Finance
MR	Medium Refit
MRO	Military Receivable Order
MSL	Minimum Stock Level
NAD	Naval Armament Depot
NHQ	Naval Headquarters

NMRL	Naval Material Research Laboratory
NOC	No Objection Certificate
NPO	Naval Pay Office
NPOL	Naval Physical and Oceanographic Laboratory
OEM	Original Equipment Manufacturer
OFP	Offshore Petrol Vessel
OH	Overhaul
OTE	Open Tender Enquiry
PAC	Proprietary Article Certificate
PCDA	Principal Controller of Defence Account
PDC	Probable Date of Completion
PNC	Price Negotiation Committee
QR	Qualitative Requirement
R&D	Research and Development
RCC	Re-Compressor Chamber
RFP	Request for Proposal
RHQ	Regional Headquarter
S&T	Science & Technology
SAC	Southern Air Command
SADC	Scale of Accommodation for Defence Services
SNC	Southern Naval Command
SO	Supply Order
SR	Short Refit
STE	Special Test Equipment
SWAC	South Western Air Command
TD	Technology Demonstration
TNEB	Tamilnadu Electricity Board
TTL	Total Technical Life

UAT	User Acceptance Trails
UE	Unit Establishment
UET	User Evaluation Trials
WAC	Western Air Command
WECORS	Weapon Equipment Calibration Overhaul Repair Shop
WNC	Western Naval Command
WOT	Warship Overseeing Team