

**Report of the
Comptroller and Auditor General of India**

for the year ended March 2014

**Union Government (Defence Services)
Army, Ordnance Factories and
Defence Public Sector Undertakings
Report No. 44 of 2015**

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PREFACE

This Report for the year ended March 2014 has been prepared for submission to the President of India under Article 151 of the Constitution of India.

This Report of the Comptroller and Auditor General of India contains the results of audit of the financial transactions and performance reviews of projects/schemes of Ministry of Defence pertaining to Army, Ordnance Factories, Department of Defence, Department of Defence Production, Defence Research and Development Organisation, Military Engineer Services and Border Roads Organisation in 2013-14. The matters arising from the Finance and Appropriation Accounts of the Defence Services for 2013-14 have been included in Audit Report No. 1 of 2015 (Financial Audit).

The instances mentioned in this Report are those, which came to notice in the course of test audit for the period 2013-14 as well as those which came to notice in earlier years, but could not be reported in the previous Audit Reports; matters relating to the period subsequent to 2013-14 have also been included, wherever necessary.

The Report includes 33 Paragraphs (including three performance reviews and five long paragraphs), reporting important audit observations as discussed from Chapter II onwards.

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

Audit wishes to acknowledge the cooperation received from Ministry of Defence at each stage of the audit process.

OVERVIEW

Working of the Cantonment Boards

Cantonment Boards (CBs) with the status of Municipalities, have to provide civic amenities to the personnel residing in the cantonments. During the period 2009-10 to 2013-14, none of the test checked 17 CBs, except for one CB (Clement Town) had prepared and implemented Town Planning schemes, plans for economic development and social justice in their respective areas. Further, none of the CBs provided all the 24 types of services, mandated as per the Cantonments Act, to its residents and no Central Government schemes for upliftment of the poor applicable in the CBs were implemented. The CBs were unable to ensure adequate revenue generation through taxes and non-taxes, leading to their increased dependency on Grant-in-aid from the Ministry of Defence. This was mainly due to non-revision of taxes every five years, recovery of property tax at a rate lower than the stipulated rate and non-levy of Vehicle Entry Tax *etc.*

(Paragraph 2.1)

Non-availability of Specialised Parachutes

Combat free Fall parachutes developed by DRDO in 2006 could not be put to production successfully even after incurring an expenditure of ₹10.75 crore. Parachutes (Special Forces) Battalions of Indian Army are therefore without these specialised parachutes for over a decade.

(Paragraph 2.2)

Functioning of Army Aviation Corps

" For the contents of this paragraph/report, printed version of the relevant report may be referred to"

(Paragraph 3.1)

Shortfall in availability of BMP vehicle in Indian Army

" For the contents of this paragraph/report, printed version of the relevant report may be referred to"

(Paragraph 3.2)

Unwarranted procurement of Image Intensifier Sight for Commander of Tank T-55

Integrated Headquarters (IHQ) of Ministry of Defence (MoD), Army procured Image Intensifier Sights between February 2011 and June 2013 valuing ₹22.12 crore for Commander of Tank T-55 whereas the tank was declared obsolescent in December 2011.

(Paragraph 3.3)

Less deduction of Liquidated Damages

While the procedure for levy of Liquidated Damages (LD) stated that LD at reduced rates was to be levied only if there is no loss caused to the State, yet the Army Purchase Organization invoked the condition without ascertaining the facts about the loss caused and thereby extended undue benefit to the defaulting contractors. In a test case, Audit found that loss had actually occurred.

(Paragraph 3.5)

Non- installation of Hydraulic Test Benches

Due to delay in installation/commissioning and in creation of requisite infrastructure in the repair workshops, four out of five Hydraulic Test Benches procured for MBT Arjun at a cost of ₹2.23 crore were lying idle since their procurement in November 2010.

(Paragraph 3.6)

Avoidable expenditure in procurement of Hi-Lo Beds

Indecisiveness regarding inclusion of Comprehensive Annual Maintenance Contract (CAMC) in the contract for procurement of Hi-Lo beds by the Director General Armed Forces Medical Services (DGAFMS) led to retendering, resulting in extra expenditure of ₹63 lakh in procurement of 1406 beds.

(Paragraph 3.7)

Recoveries, savings and amendment of annual accounts at the instance of Audit

Based on our observations, the audited entities had recovered overpaid pay and allowances, sundry charges, electricity charges and cancelled works sanctions and amended annual accounts, having a net effect of ₹11.70 crore.

(Paragraph 3.8)

Loss due to excess payment and short recovery of electricity charges

Due to failure on the part of the Garrison Engineers (GEs) in exercising the requisite checks and in adhering to the approved electricity tariff, an excess payment of ₹24.54 crore was made by the GEs selected for audit. The GEs also failed to effect recovery of electricity charges worth ₹23.66 crore from the paying consumers, including private parties, which was mainly due to short recovery of energy and fixed charges, delay in floating of bills, defective meters, *etc.* These lapses of excess payment and short recovery underscore the inadequacy of internal controls in Military Engineer Services.

(Paragraph 4.1)

Inadequate monitoring of execution of a project

Inadequate monitoring of execution of work by the Engineers for Indian Military Academy (IMA), Dehradun resulted in non-completion of main building work costing ₹22.75 crore. The delay of five years had not only deprived the Gentlemen cadets of proper training with modern facilities but also held up the other training projects valuing ₹2.50 crore.

(Paragraph 4.2)

Non-utilisation of Assets

Missiles storage shed constructed in August 2008 at a cost of ₹2.29 crore could not be utilised for the purpose for want of Air conditioning system. CESZ failed to conclude the contract for air conditioning, despite the same being approved in the sanction alongwith the building. Non availability of the sheds affected the drawal plan of the missiles, as the missiles were being held at another location at a distance of 110 km, thereby impacting the operational efficiency of the users.

(Paragraph 4.3)

Blockage of government money due to conclusion of contracts without availability of site

Chief Engineer, Jabalpur Zone, Jabalpur concluded contracts without availability of clear site for construction of Baffle Range. This was not only in

contravention of the codal provisions but also resulted in payment of ₹1.68 crore to the contractor. Case has now been initiated for closure of the work.

(Paragraph 4.4)

Infructuous expenditure due to procurement of substandard pipes

Procurement of defective pipes by Chief Engineer, Jaipur Zone (CEJZ) led to execution of substandard work. As a result fire fighting infrastructure created at an Ammunition Depot at a cost of ₹2.33 crore had to be abandoned rendering entire expenditure infructuous.

(Paragraph 4.5)

Avoidable expenditure due to acceptance of contract at higher rates

Director General Border Roads could not accord approval to lowest tender due to delay in concurrence by the Integrated Financial Adviser (IFA) within the validity period. The contract was concluded at a higher rate after third call which resulted in extra expenditure of ₹1.89 crore.

(Paragraph 5.1)

Under Recovery of Service Tax from the Contractors

Service Tax was not recovered as per the provisions of J&K State Government Act on the gross value of works in five contracts concluded by the Chief Engineer (Project) Vijayak. This resulted in under recovery of ₹1.06 crore on account of service tax from the contractors.

(Paragraph 5.2)

Delay in procurement of Water Truck resulted in extra expenditure

The delay in decision making by Director General Border Roads (DGBR) to select the type of trucks to be procured, led to extra expenditure of ₹81 lakh on account of escalation of rates.

(Paragraph 5.3)

Project Management in Terminal Ballistics Research Laboratory Chandigarh

Out of 28 projects selected for audit, 24 projects including two staff and 22 R&D projects were completed by TBRL. We however observed that against the two staff projects, parameters as per qualitative requirements of Army were not completely achieved. Out of the remaining 22 completed R&D projects, success against the prescribed objectives, in qualitative and quantitative terms was achieved only in 10 projects. These projects were however still to be translated into deliverables. In the remaining 12 projects,

the objectives were only partly achieved. In spite of monitoring at various levels through Executive Committee, Project Monitoring Committee, 58 per cent projects got delayed mainly due to non-materialisation of supply orders.

(Paragraph 6.1)

Production of Weapon Manufacturing Factories

Audit covered the performance of six weapons manufacturing Factories for 2011-12 to 2013-14, on 25 strategic weapon items that together accounted for 79 per cent of total cost of production of 68 weapon items in the product line of these Factories.

Meeting the requirements of Indentors

Army's Roll-on-Plan projecting its requirements for 2011-12 to 2015-16, was to aid the Board in short term planning. However, indents received from the Army were not matching with the Army's Roll-on-Plan. Ministry of Home Affairs, though projected a Roll-on-Plan in 2010, its requirements were largely reduced in the annual target fixation meetings.

The Board faced capacity constraints in 68 per cent of the items and hence, fixed lower targets than the Army's requirements for most of the items. The Board provided original target to the Factories in December/ November of the previous year, giving only three months for advance planning by the Factories against six months time required for the procurement of input materials. Revision of these targets mid-year also disrupted the production. The Factories achieved the targets by 80 per cent and above for eight to 16 items during 2011-12 to 2013-14. But for five to 10 items, the achievement was less than 60 per cent. Total value of shortfall in issue of the selected weapons against the revised targets stood at ₹1479 crore during 2011-12 to 2013-14. Delays in receipt of input stores are the predominant cause for slippages across the Factories.

- **Marshalling resources for production**

Delay in procurement of stores impacted the Factories in achieving the production targets. Three out of the six Factories placed 60 to 70 per cent of their supply orders in 2011-12 to 2013-14, within five months of identifying the requirement of stores. The remaining Factories could meet the timelines in only 3 to 52 per cent of the supply orders. Compounding the inefficiencies in procurement from trade sources was the inability of a sister Factory in meeting the requirements for forgings for manufacture of barrels for high-calibre weapons at Field Gun Factory Kanpur. The Factories could not complete the quality control of stores within prescribed 15 days time in 40 to 63 per cent instances.

- **Quality Control and Quality Assurance**

Quality problems besiege the Factories with impact on cost, achievement of targets and above all, the reputation of the Board and its products. The

incidence of “Return for Rectification” and rejection declared by Senior Quality Assurance Establishments (SQAE) were high on certain products like 5.56mm rifle, 7.62mm MAG, 30mm cannon and spare barrel T-90. The recurrence of defects previously pointed out by the SQAE in its Quality Inspection Notes indicates inadequate attention to these Notes. Defects such as variations in gauge dimensions to be covered in the inspections by the Factory’s Quality Control section, remained undetected and were raised at subsequent stages by SQAE. The users, the Army noted the erosion of trust in field units because of weapon defects.

- **Financial Management**

The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective and fluctuations, especially in overheads were controlled. This was not, however, the case in these Factories, which operated on high overheads, particularly, the fixed overheads. The apportionment of the overheads over products was irrational, overloading it on some products, making them uneconomical. Ordnance Factories are generally focused on meeting the demand placed on them without due regard to cost control and cost reduction. The availability of assured funds with the Armed Forces helped them to accept the products from the Board regardless of the high issue prices.

- **Planning for future**

The Board prepared a Perspective Plan 2007-12 to provide the Armed Forces with “timely supply of state-of-the-art technology with greater value for money”. The dreams of the Perspective Plan could not be translated into reality, with implementation marred by delays in development of the new items.

Even as the Board did not prepare a plan for the subsequent period, the environment has changed substantially. The Army prepared the Long Term Integrated Perspective Plan (LTIPP) covering a period of 15 years, to which the Board was yet to formulate a plan to position itself as an important player.

Small Arms Factories were facing multiple challenges like declining demand from indentors and quality problems; lacklustre response from clients for its new products; and delays in project for new generation carbines. The traditional weaponry in the high calibre range 81mm Mortar, 105mm LFG is facing a downturn. Besides, delayed indigenisation and continued reliance on imports of certain assemblies posed a challenge to the Factories in meeting the demand.

(Paragraph No 7.2)

Production of Chemical manufacturing factories

The Chemical Group of Factories is a sub-group under the operating group: Ammunition & Explosives (A&E). This group accounted for 35 *per cent* of the total cost of production during 2011-12 to 2013-14. Four chemical producing Factories, with an average annual cost of production of ₹755 crore, during 2011-12 to 2013-14 contributed to around five *per cent* of the cost of the production of the Ordnance Factory Board.

Meeting the requirement of Indentors

Mid-year enhancement of targets by the Board to Factories covering majority of products did not, in most cases, result in target achievement as the factories were unable to meet even the original targets.

The Chemical Group of Factories is required to meet the production targets by January each year, a commitment the Factories were unable to meet. This impacted the production schedules of the ammunition filling factories.

The irregular practice of preparing advance issue vouchers for claiming credit without actual physical issue of products to the indentors persisted at High Explosive Factory Kirkee, Ordnance Factory Bhandara and Ordnance Factory Itarsi.

The internal controls in the Board to monitor production against targets were routine and hence their effectiveness diminished.

Marshalling resources for production

The Factories could not achieve compliance with the timeframe prescribed by the Board on placing supply orders in one-third of the procurements. Further, if the lead time for delivery of stores were to be factored, procurement would consume most of the production year. Due to the delays in procurement, the factories could not maintain even flow of production, with production peaking in the fag end of the year. The labour productivity reported by the Factories was high and did not correlate with the performance against targets.

Quality Control and Quality Assurance

There were rejections in quality control and inordinate time was taken in proof establishment, causing cascading effect on achievement against targets.

Absence of dedicated proof range at Factories caused delay in conduct of dynamic proof; a project sanctioned in December 2008 was abandoned and alternatives have not come to fruition.

Financial Management

The Factories ran on high overheads that inflated the cost of production. The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective to closely monitor abnormal fluctuations in cost. This

was not however the case in the Factories with the two controls: the Shop Budget Committee and the Quarterly Financial Review, being inadequate interventions suffering from structural deficiencies.

Ordnance Factories being sole production unit for the armed forces are generally focused on meeting the demand placed on them without due regard for the considerations of cost control and reduction.

Environmental Issues

Factories did not identify the specific environmental risks or prepare a perspective plan for progressive risk mitigation measures. The investment of funds on environmental measures was low in all the Factories.

Large number of pending recommendations in energy audit indicated the future potential savings that will require investment of funds.

The general trend of the accidents, especially in Ordnance Factory, Itarsi indicated a gap in safety training of the staff.

(Paragraph No 7.3)

Loss of ₹1.37 crore due to non-fulfilment of contractual obligation against export orders

Ordnance Factory Board delayed the delivery of the Kavach system against an export order due to slippages in development of the Kavach system and non-supply of Fire Control System (part of the Kavach) by an Indian firm. Consequently, the foreign firm deducted penalty of ₹1.37 crore from the bills of the Board.

(Paragraph No 7.4)

Non-utilization of feeder system

A new substation installed by Rifle Factory Ishapore (RFI) at a cost of ₹4.09 crore in June 2006 remained unproductive owing to RFI's failure to procure and install switch gears for it. (April 2015).

(Paragraph No 7.6)

Procurement and Inventory Management – Bharat Earth Movers Ltd.

One of the many factors contributing to decrease in profits was high inventory levels impacting on the working capital. Vendor negotiations resorted to by the Company were in deviation to the Purchase Manual and CVC guidelines. The amount of Bank Guarantees obtained for advances paid was not in accordance with the CVC guidelines. Documentation of all the activities

relating to procurement was inadequate. Vendor management was not foolproof due to non-availability of data regarding all the tenders in the system. Vendor list contained duplicates indicating lack of sufficient controls in SAP. Advances remained unadjusted and also could not be monitored due to inclusion of payments made against proforma invoices, ad-hoc payments against pending POs, *etc.* under advances. Stores manual was not updated for last 23 years. Due to inadequate security features, SRM system of the Company lacked confidence of foreign vendors. No integration of data between SAP and SRM was provided.

(Paragraph 8.1)

Blocking of funds due to accumulation of Inventory - ₹16.14 crore

Continued procurement of raw materials by M/s BEML Limited when the new technology was yet to be proven and production of dumper without matching shovel resulted in blocking of inventory valued ₹16.14 crore.

(Paragraph 8.3)

CHAPTER I: INTRODUCTION

1.1 Foreword

This Report relates to matters arising from the audit of the financial transactions of the Ministry of Defence and its following Organisations:

- Army,
- Inter Services Organisations,
- Defence Research and Development Organisation and its laboratories dedicated primarily to Army and Ordnance Factories,
- Defence Accounts Department
- Ordnance Factories, and
- Defence Public Sector Undertakings

The primary purpose of the report is to bring to the notice of the legislature important results of audit. Auditing standards require that the materiality level for reporting should be commensurate with the volume and magnitude of transactions. The findings of Audit are expected to enable the Executive to take corrective actions as also frame policies and directives that will lead to improved financial management of the Organisations, thus contributing to better governance and improved operational preparedness.

This chapter, in addition to explaining the planning and extent of audit, provides a synopsis of the significant audit observations, followed by a brief analysis of the expenditure of the above Organisations. Subsequent chapters present detailed findings and observations arising out of the audit and performance reviews of the Ministry and the aforementioned Organisations.

1.2 Audited entity profile

Ministry of Defence, at the apex level, frames policies on all Defence related matters. It 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 who is the Head of the Department of Defence also coordinates the activities of other departments.

Army is primarily responsible for the Defence of the country against external aggression and safeguarding the territorial integrity of the nation. It also renders aid to the civil authorities at the time of natural calamities and internal disturbances. It is, therefore, incumbent upon the Army to suitably equip, modernize and train itself to meet these challenges.

DRDO, through its chain of laboratories, is engaged in research and development, primarily to promote self-reliance in Indian Defence sector. It undertakes research and development in areas like aeronautics, armaments,

combat vehicles, electronics, instrumentation, engineering systems, missiles, materials, naval systems, advanced computing, simulation and life sciences.

The Inter Services Organisations, such as Armed Forces Medical Services, Military Engineer Services (MES), Defence Estates, Quality Assurance, *etc.*, serve the Defence forces in the three wings of the Army, Navy and Air Force. They are responsible for development and maintenance of common resources for optimising cost-effective services. They function directly under Ministry of Defence.

Ordnance Factory Board (OFB) functions under the administrative control of the Department of Defence Production and is headed by Director General, Ordnance Factories. Thirty-nine factories are responsible for production and supply of ordnance stores to the armed forces.

Defence Public Sector Undertakings(DPSUs) function under the administrative control of Department of Defence Production. There are nine DPSUs which are headed by respective Chairman cum Managing Director (CMD).

1.3 Integrated Financial Advice and Control

Ministry of Defence and the Services have a full-fledged internal financial control system in place. With fully integrated Finance Division in the Ministry of Defence, the Secretary (Defence Finance) and his/her officers scrutinize all proposals involving expenditure from the Public Fund. Secretary (Defence Finance) is responsible for providing financial advisory services to Ministry of Defence and the Services at all levels, and for treasury control of the Defence expenditure.

Being Chief Accounting Officer of the Defence Services, Secretary (Defence Finance) is also responsible for the internal audit and accounting of Defence expenditure. This responsibility is discharged through the Defence Accounts Department with the Controller General of Defence Accounts as its head.

1.4 Authority for Audit

The authority for our audit is derived from Articles 149 and 151 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) (DPC) Act, 1971. We conduct audit of Ministries/Departments of the Government of India under Section 13¹ of the CAG's (DPC) Act. Major Cantonment Boards are audited under Section 14² of the said Act. Principles and methodology of compliance audit are prescribed in the "Regulations of Audit and Accounts, 2007".

¹ Audit of (i) all expenditure from the Consolidated Fund of India (ii) all transactions relating to Contingency Funds and Public Accounts and (iii) all trading, manufacturing, profit & loss accounts & balance-sheet & other subsidiary accounts.

² Audit of receipt and expenditure of bodies or authorities substantially financed by grants or loans from the Consolidated Fund of India or of any State or of any Union Territory.

1.5 Planning and Conduct of Audit

Our audit process starts with the risk assessment of the Organisation as a whole and of each unit, based on expenditure incurred, criticality and complexity of activities, level of delegated financial powers, assessment of overall internal controls, and concerns of stakeholders. Previous audit findings are also considered in this exercise. Based on this risk assessment, the frequency and extent of audit are decided. An annual audit plan is formulated to conduct audit on the basis of such risk assessment.

After completion of audit of each unit, Local Test Audit Reports (LTARs) containing audit findings are issued to the Head of the unit. The units are requested to furnish replies to the audit findings within a month of receipt of the LTARs. Whenever the replies are received, audit findings are either settled or further action for compliance is advised. Important audit observations arising out of these LTARs are processed for inclusion in the audit reports which are submitted to the President of India under Article 151 of the Constitution of India. During 2013-14, audit of 732³ units/formations was carried out by employing 10920⁴ party days. Our audit plan ensured that most significant units/entities, which are vulnerable to risks, were covered within the available manpower resources.

1.6 Significant audit observations

Capital and Revenue procurements made by the Ministry of Defence and the Service Organisations form the critical area as far as the audit of Defence Sector is concerned. We have been pointing out deficiencies in the procurement process in the previous Audit Reports and the Ministry of Defence has taken several measures to improve the procedures involved. Periodical revisions of the Defence Procurement Procedure (DPP) and Defence Procurement Manual (DPM) are significant steps to evolve better practices. The present Report highlights cases which assume importance in the light of their impact on operational preparedness. The Report also brings out issues regarding Non-availability of specialised parachutes, inaccurate assessment of requirement of BMP vehicle by Indian Army, working of Cantonment Boards, Army Aviation Corps, loss due to excess payment and short recovery of electricity charges, loss due to under recovery of brass rod in conversion orders, production of weapon manufacturing factories and blockage of funds due to accumulation of inventory *etc.* which require redressal.

- The Cantonments in India are permanent military stations in which troops are being regularly quartered. There are 62 notified Cantonment Boards (CBs) in the country. The Audit of CBs is carried out under Section 14(1) & (2) of the Comptroller and Auditor General's (Duties, Powers, and Conditions of Service) Act, 1971 (C&AG's DPC Act

³ Number of units/formations audited by O/o DGADS, New Delhi and O/o DG (OF) Kolkata.

⁴ Number of Party days employed during the financial year 2013-14 by the O/o DGADS New Delhi and O/o DG (OF) Kolkata.

1971). Each CB is headed by a Chief Executive Officer (CEO), who performs the executive functions of the Board and also acts as the Member-Secretary of the Board. He reports to the Director General Defence Estates (DGDE), New Delhi. On the basis of the population, the CBs are categorized into four categories. CBs have been given the status of Municipalities, to provide civic amenities to the personal residing in the cantonments. During the period 2009-10 to 2013-14, none of the test checked 17 CBs, except for CB Clement Town, had prepared and implemented Town Planning schemes, plans for economic development and social justice in their respective areas. Moreover none of the CBs provided all the 24 types of services, mandated as per the Cantonments Act, to its residents. Further no Central Government schemes for upliftment of the poor applicable in the CBs and provision of infrastructure facilities were implemented in the cantonments. The position regarding revenue generation was also not encouraging as the CBs were unable to optimize revenue generation through taxes and non-taxes, leading to their increased dependency on Grant-in-aid from the Ministry of Defence. This was mainly due to non-revision of taxes every five years, recovery of property tax at a lower than the stipulated rate and non-levy of Vehicle Entry Tax *etc.* (Paragraph 2.1)

- Combat Free Fall (CFF) Parachutes are authorised for Parachutes (PARA) Special Forces (SF) personnel which are required during highly specialized operations and are vital to the success of the mission. CFF Parachutes had been procured in 1986, through import, with shelf life of 10 years and commissioned out of service in 2002 being no longer operational worthy. The parachute was developed by DRDO in 2006, could not be productionised successfully. Parachutes Special Forces Battalions of Indian Army were not having parachutes for over a decade. An expenditure of ₹10.75 crore incurred on its development and production had become unfruitful. (Paragraph 2.2)
- Army Aviation Corps was created with the main objective of contributing to battle field success by providing guidance to the field Commanders in applying decisive combat powers. The Corps is, however, plagued with 32 *per cent* deficiency against its authorised fleet strength. The helicopters held are old and ageing, with 52 *per cent* of the fleet more than 30 years old. Low level of serviceability of helicopters further reduces the effective availability for operations, to 40 *per cent* of the authorisation. Despite these shortcomings, Army Aviation could not replace its fleet of Cheetah/Chetak helicopters being used for reconnaissance and observation, which are due for de-induction since 10th Plan period (2002-2007) onwards. We observed that against 18 schemes approved in 11th and 12th Service Capital Acquisition Plan, contract in respect of only four schemes could be concluded in nine years period, so far. Thus failure in meeting the targets and objectives of the acquisition plans and tardiness in procurement action were the main reasons denying the Corps to acquire suitable replacement for the old and ageing fleet. (Paragraph 3.1)

- Infantry Combat Vehicle BMP is the mainstay of the Mechanized Infantry of Indian Army. It was inducted into service in 1986 to be a complimentary vehicle with tank. BMP is a fighting combat vehicle which is of Russian origin and presently manufactured by the Ordnance Factory (OF) Medak. OFB could produce only 265 BMPs during last six years against production capacity of 600 BMPs which resulted in short fall of 55 *per cent* of available capacity. Thus non augmentation of facilities for production of BMP in Ordnance Factory, Medak not only resulted in delay in supply of 389 BMPs valuing ₹1,374 crore to Army, but also adversely impacted the operational preparedness of Mechanised Forces. Moreover, there was extra liability/expenditure to the tune of ₹270.97 crore due to delay in supply.(Paragraph 3.2)
- Army took more than 10 years in procurement of 432 numbers of Image Intensifier Sights for Tank T-55 by which time, the Tank was declared Obsolescent (OBT) and would be retained in service only till 2018-19 as per de-induction plan. Thus, delay of over a decade in procurement of Image Intensifier Sight for Commander of Tank T-55 and non-cancellation of indent resulted in procurement of 432 sights worth ₹22.12 crore, although not warranted by the Army at that belated stage. Out of which 180 Sights worth ₹9.22 crore were issued to command units after the Tank T-55 were declared obsolescent and 252 sights worth ₹12.90 crorewere held in stock as of April 2014.(Paragraph 3.3)
- While the Garrison Engineer (GE) is responsible to enforce pre-check on the electricity bills before making payment to Electric supply agencies, we found that due to failure on the part of the GEs in exercising the requisite checks and in adhering to the approved electricity tariff, an excess payment of ₹24.54 crore was made by the GEs selected for audit. The GEs also failed to effect recovery of electricity charges worth ₹23.66 crore from the paying consumers, including private parties, which was mainly due to short recovery of energy and fixed charges, delay in floating of bills, defective meters, *etc.* These lapses of excess payment and short recovery underscore the inadequacy of internal controls in MES.(Paragraph 4.1)
- The selected six weapon manufacturing Factories falling under the Weapons, Vehicles and Equipment group contributed to 11 *per cent* of the total cost of production in the Ordnance Factory Board (Board) during 2011-12 to 2013-14. Audit covered the performance of six Factories for 2011-12 to 2013-14, on 25 strategic weapon items that together accounted for 79 *per cent* of total cost of production of 68 weapon items in the product line of these Factories. The aim of our audit with five objectives was to form an opinion on the Board's ability to provide quality products on time to its clients, mainly the Armed Forces. Total value of shortfall in issue of the selected weapons against the revised targets stood at ₹1479 crore during 2011-12 to 2013-14. Delays in receipt of input stores are the predominant cause for slippages across the Factories. Quality problems besiege the Factories with impact on cost, achievement of targets and above all, the reputation of the Board

and its products. The Factories could not complete the quality control of stores within prescribed 15 days time in 40 to 63 *per cent* instances. The availability of assured funds with the Armed Forces helped them to accept the products from the Board regardless of the high issue prices. The users, the Army noted the erosion of trust in field units because of weapon defects. Further the recurrence of defects previously pointed out by the SQAE in its Quality Inspection Notes indicates inadequate attention to these Notes. Besides, delayed indigenisation and continued reliance on imports of certain assemblies posed a challenge to the Factories in meeting the demand. (Paragraph 7.2)

- Provision of lower product yield and higher process loss by Metal and Steel Factory Ishapore in their orders on trade firms for conversion of brass billets to brass rods, inspite of the fact that one of the trade firms offered higher product yield and less process loss, had resulted in low recovery of brass rods by ₹3.32 crore and extended undue benefit to the trade firms to the same extent.(Paragraph 7.9)
- In order to obtain a reasonable assurance on whether the commercial interests of M/s Bharat Earth Movers Ltd. were adequately met, Audit decided to review the system of Procurement and Inventory Management in the Company during the period from 2010-11 to 2012-13. Our analysis of the various causes contributing to the decrease in profit revealed that one of the many factors contributing to this was high inventory levels impacting on the working capital. Vendor negotiations resorted to by the Company were in deviation to the Purchase Manual and CVC guidelines. The amount of Bank Guarantees obtained for advances paid was not in accordance with the CVC guidelines. Documentation of all the activities relating to procurement was inadequate. Vendor management was not foolproof due to non-availability of data regarding all the tenders in the system. Vendor list contained duplicates indicating lack of sufficient controls in SAP. Advances remained unadjusted and also could not be monitored due to inclusion of payments made against proforma invoices, ad-hoc payments against pending POs, *etc.* under advances. Stores manual was not updated for last 23 years. Due to inadequate security features, SRM system of the Company lacked confidence of foreign vendors. No integration of data between SAP and SRM was provided.

(Paragraph 8.1)

1.7 Persistent irregularities in Defence Research and Development Establishment

Cases of non realization of project deliverables in terms of Staff projects, Technology Demonstration/Research and Development projects have been highlighted in Report No. 24 of 2011-12, Report No. 16 of 2012-13 and Report No. 35 of 2014. However, no significant improvement was noticed as reported in Chapter VI. Corrective steps need to be taken urgently in this regard.

1.8 Response of the Ministry/Department to Draft Audit Paragraphs

On the recommendations of the Public Accounts Committee, Ministry of Finance (Department of Expenditure) issued directions to all 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 are forwarded to the Secretaries of the Ministry/ departments concerned drawing their attention to the audit findings and requesting them to send their response within six weeks. It is brought to their personal attention that in view of likely inclusion of such Paragraphs in the Audit Reports of the Comptroller and Auditor General of India, which are placed before Parliament, it would be desirable to include their comments in the matter.

Draft paragraphs proposed for inclusion in this Report were forwarded to the Secretaries concerned between January 2015 and June 2015 through letters addressed to them personally.

The Ministry of Defence did not send replies (September 2015) to 30 paragraphs out of 33 Paragraphs featured in Chapters II to VIII.

1.9 Action taken on earlier Audit Paragraphs

With a view to enforcing 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 date of laying of the Reports in Parliament.

Review of ATNs relating to the Army as of September 2015 indicated that ATNs on 60 paragraphs included in the Audit Reports up to and for the year ended March 2013 remain outstanding, of which the Ministry had not submitted even the initial ATNs in respect of 20 Paragraphs and 14 ATNs (Sl. No.1 to 14) are outstanding for more than 10 years as shown in **Annexure-I**.

1.10 Financial Aspects and Budgetary Management

1.10.1 Introduction

The budgetary allocations of the Ministry of Defence are contained under eight Demands for Grants of which six grants are included under Defence Service Estimates (DSE) and two under Civil Grants.

- Two Civil Grants which include Demand No. 20 - Ministry of Defence (Civil) and Demand No. 21 - Defence Pensions.

- Six Grants of the Ministry of Defence, which include the following:
 - Demand No.22, Defence Service - Army
 - Demand No. 23, Defence Services - Navy
 - Demand No. 24, Defence Services - Air Force
 - Demand No. 25, Defence Ordnance Factories
 - Demand No. 26, Defence Services - Research & Development
 - Demand No. 27, Capital Outlay on Defence Services -Includes All Services and Departments other than those covered by the Demands for Grants of Ministry of Defence (Civil)
- The budgetary requirements for the Border Roads Organisation are provided by the Ministry of Road Transport & Highways.

The above mentioned Grants are broadly categorized into Revenue and Capital expenditure.

- **Revenue Expenditure:** This includes expenditure on Pay & Allowances, Transportation, Revenue Stores (like Ordnance stores, supplies by Ordnance Factories, Rations, Petrol, Oil and Lubricants, Spares, *etc.*), Revenue Works (which include maintenance of Buildings, water and electricity charges, rents, rates and taxes, *etc.*) and other miscellaneous expenditure.
- **Capital Expenditure:** This includes expenditure on Land, Acquisition of new weapon and ammunitions, Modernization of Services, Construction Works, Plant and Machinery, Equipment, Tanks, Naval Vessels, Aircraft and Aero-engines, Dockyards, *etc.*

Approval of Parliament⁵ is taken for the Gross expenditure provision under different Demands for Grants. Receipts and Recoveries, which include items like sale proceeds of surplus/obsolete stores, receipts on account of services rendered to State Governments/other Ministries, *etc.* and other miscellaneous items are deducted from the gross expenditure to arrive at the net expenditure on Defence Services for the six Demands, *viz.* Demands Nos. 22 to 27. A brief analysis of these grants is given below except Grant No. 23, Defence Services-Navy and Grant No.24, Defence Services-Air Force which are commented upon in a separate report.

1.10.2 Grant No.20 & 21- Expenditure from Civil Grants

1.10.2.1 Grant No. 20- Expenditure of Ministry of Defence(Civil)

The budgetary provisions and actual expenditure including Revenue and Capital expenditure for the year 2013-14 under Demand No. 20 is shown in **Table - 1** below:

⁵ Report No.20 of Standing Committee on Defence (2012-13, Fifteenth Lok Sabha)

Table-1: Budgetary allocation and Actual Expenditure: MoD (Civil)*(₹in crore)*

Budget Estimates	Revised Estimates	Actual Expenditure
17,293.79	16,811.89	16,828.99

Major components of Gross Revenue expenditure of ₹15732.60 crore for 2013-14 are Canteen Stores Department (CSD) (₹12,290.22 crore), Defence Accounts Department (₹1,037.20 crore), Coast Guard Organisation (CGO) (₹1047.73 crore), Jammu & Kashmir Light Infantry (J&K LI) (₹837.27 crore) Defence Estates Organisation (DEO) (₹300.96 crore) *etc.* In the Capital Outlay of ₹1,096.39 crore of actual expenditure in 2013-14, the major components are Capital Outlay on Other Fiscal Services- Customs (₹1,070.22 crore), housing and office buildings (₹23.94 crore) and Miscellaneous Loans for Unit Run Canteen (URC) by CSD (₹0.62 crore). Further, a sum of ₹729.79 crore was surrendered at the fag end (27.03.2014) mainly due to 10 *per cent* mandatory cut imposed by Ministry of Finance.

1.10.2.2 Grant No. 21 - Defence Pensions

Defence Pensions, under Ministry of Defence, provides for pensionary charges in respect of retired Defence personnel (including Defence Civilian employees) of the three services, *viz.* Army, Navy and Air Force, and of employees of Ordnance Factories, *etc.* It covers payments of service pension, gratuity, family pension, disability pension, commuted value of pension, leave encashment, *etc.*

The position of budgetary allocation and expenditure for the year 2013-14 under this Grant is as under:

Table- 2: Budgetary allocation and Actual Expenditure: Defence Pension*(₹in crore)*

Budget Estimates	Revised Estimates	Actual Expenditure
44,500.00	45,500.00	45,499.54

1.11 Grant No. 22 to 27 – Defence Services Estimates

1.11.1 At a glance

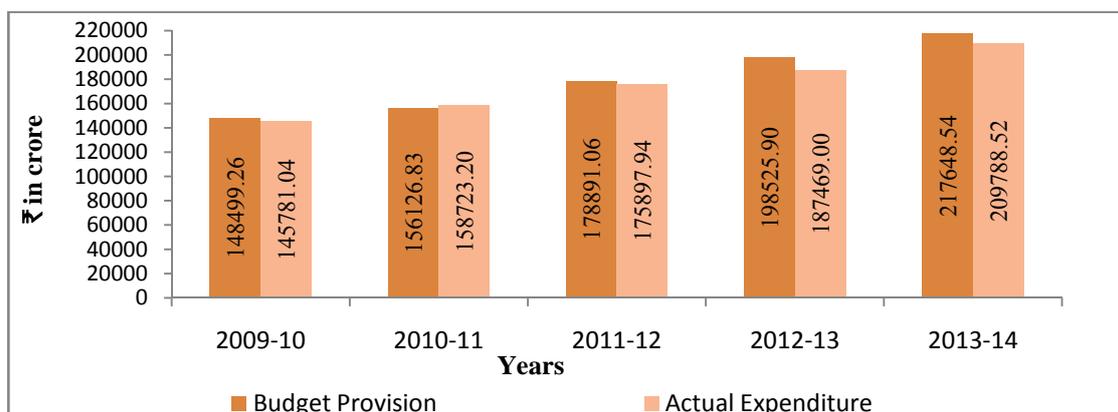
The overall Defence Budget (Grant No. 22 to 27) allocation and actual expenditure (Voted & Charged) for the period 2009-10 to 2013-14 are given in **Table-3** and **Chart -1** as under:

Table-3: Total Defence Budget allocation and Actual expenditure

(₹ in crore)

Year	Budget Provision	Actual Expenditure
2009-10	1,48,499.26	1,45,781.04
2010-11	1,56,126.83	1,58,723.20
2011-12	1,78,891.06	1,75,897.94
2012-13	1,98,525.90	1,87,469.00
2013-14	2,17,648.54	2,09,788.52

Chart-1: Budget Provision Vs Actual Expenditure

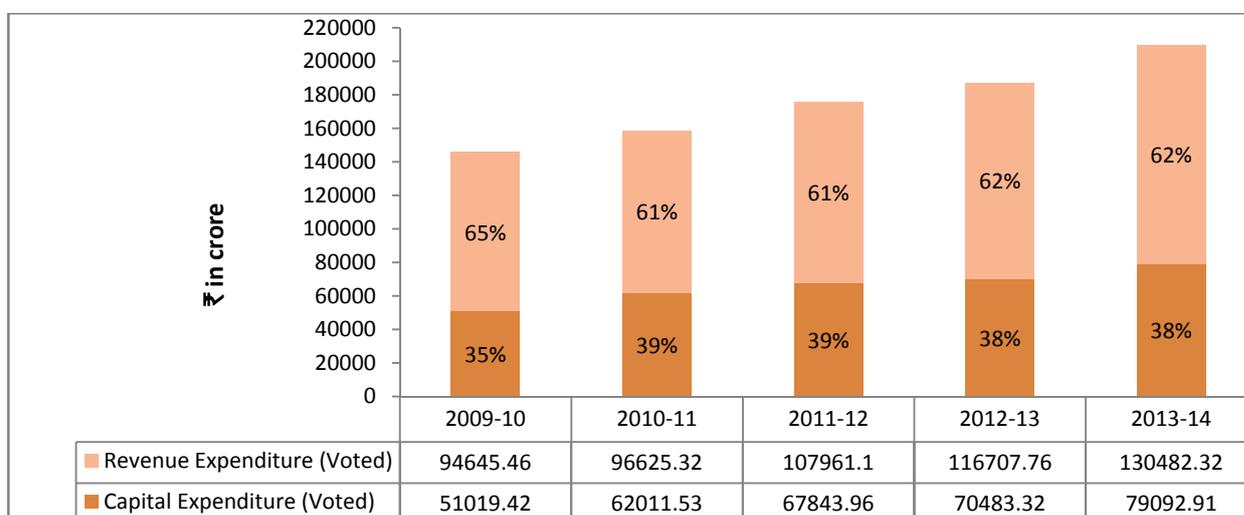


- The data relating to actual Defence expenditure shows an overall increase of 43.91 per cent during the period 2009-10 to 2013-14 whereas the increase in 2013-14 over the previous year is 11.91 per cent.

1.11.2 Revenue expenditure vs. Capital expenditure in Defence Services

Capital and Revenue expenditure (Voted) for the period 2009-10 to 2013-14 is given in **Chart - 2** below:

Chart - 2: Revenue expenditure vs. Capital expenditure (Voted)



The above data shows that the proportion of Voted Capital and Revenue expenditure as a percentage of total Defence expenditure (Voted) has remained between 35 to 39 *per cent* during the period 2009-10 to 2013-14, however, there is no change in percentage in expenditure over the previous year in 2013-14.

1.12 Break-up of Expenditure (Voted) relating to Army, Ordnance Factories & R&D (Capital & Revenue) – Grant No. 22, 25, 26 and 27⁶

A detailed analysis of the expenditure (Voted) for the period 2009-10 to 2013-14 relating to Army, Ordnance Factories and R & D showing Revenue and Capital expenditure is given in **Table-4** below.

Table-4: Expenditure (Voted) of Army, Ordnance Factories & R&D

(₹ in crore)

Description of Grant	Components of Expenditure	2009-10	2010-11	2011-12	2012-13	2013-14
Army	Actual	77,512.29	80,789.82	86,776.05	94,274.06	1,02,138.70
	Revenue	62,716.64 (80.91%)	65,001.96 (80.46%)	71,832.66 (82.78%)	79,516.95 (84.35 %)	87,720.08 (85.88 %)
	Capital	14,795.65 (19.09%)	15,787.86 (19.54%)	14,943.39 (17.22%)	14,757.11 (15.65 %)	14,418.62 (14.12 %)
Ordnance Factory	Actual	3,520.27	1,527.00	1,704.15	2,116.26	3,963.91
	Revenue	3,279.98 (93.17%)	1,073.42 (70.30%)	1,427.94 (83.79%)	1,754.03 (82.88%)	3,498.57 (88.26 %)
	Capital	240.29 (6.83%)	453.58 (29.70%)	276.21 (16.21%)	349.07 (16.60%)	465.34 (11.74 %)
R&D	Actual	8,507.87	1,0191.99	9,932.29	9,860.56	10,929.57
	Revenue	4,355.57 (51.20%)	5,230.88 (51.32%)	5,321.24 (53.58%)	5,218.32 (52.92%)	5,696.25 (52.12 %)
	Capital	4,152.30 (48.81%)	4,961.11 (48.68%)	4,611.05 (46.43%)	4,642.24 (47.08%)	5,233.32 (47.88 %)

Note: Figure in the brackets represents the Revenue/Capital expenditure as a percentage of the Actual expenditure

- The total Army expenditure during 2013-14 has registered an increase of 8.34 *per cent* over the previous year with the Revenue expenditure registering an increase of 10.32 *per cent* and the Capital expenditure recording a decrease of 2.29 *per cent*.

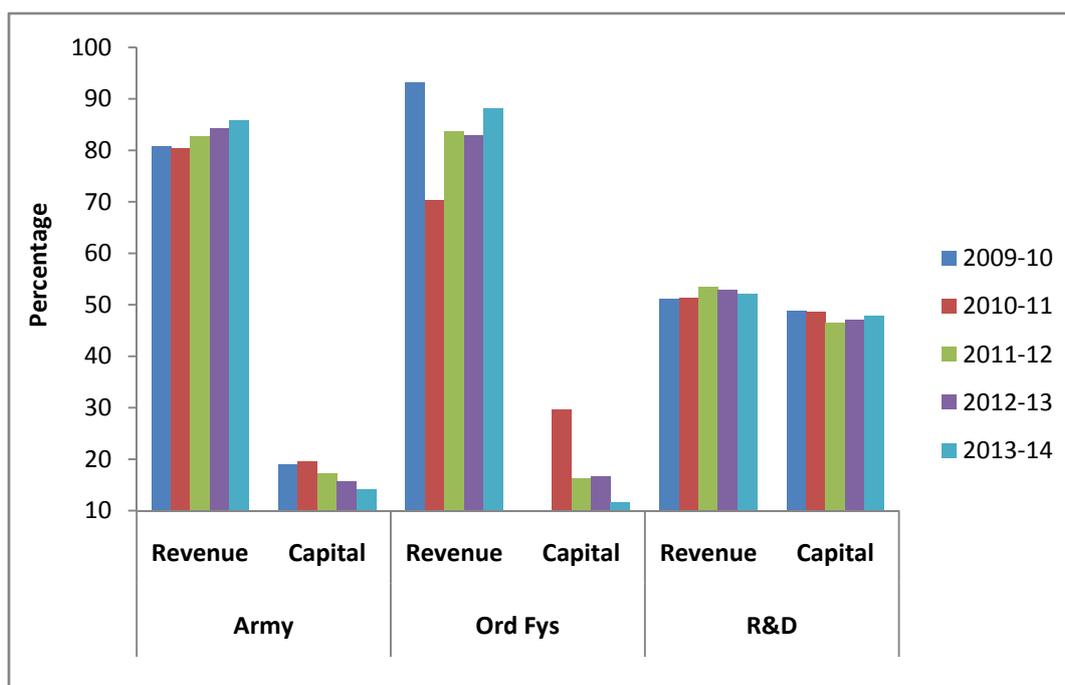
⁶ Grant No. 23 – Navy and Grant No. 24 – Air Force are analysed in the Compliance Audit Report of the Union Government (Defence Services) Air Force and Navy

- The total Ordnance Factory expenditure during 2013-14, has recorded an increase of 87.31 *per cent* over the previous year with the Revenue expenditure an increase of 99.46 *per cent* and the Capital expenditure registering an increase of 33.30 *per cent*.
- The total R&D expenditure during 2013-14, has recorded an increase of 10.84 *per cent* over the previous year with Revenue expenditure a increase of 9.16 *per cent* and the Capital expenditure registering an increase of 12.73 *per cent*.

1.12.1 Trend of total Expenditure in respect of Army, Ordnance Factories and Research & Development - Capital and Revenue

A trend of total Army, Ordnance Factories and Research and Development expenditure both Capital and Revenue as a proportion of actual expenditure during the period 2009-10 to 2013-14 is given in **Chart-3** below:

Chart-3: Trend of total Capital and Revenue Expenditure in respect of Army Ordnance Factories (Ord Fys) and Research & Development (R&D)



- **Army:** In the year 2013-14 Revenue component of total Army expenditure has increased by 5 *per cent* since 2009-10 from 81 *per cent* in 2009-10 to 86 *per cent* in 2013-14 while the Capital component has recorded a corresponding decrease during the same period from 19 *per cent* (2009-10) to 14 *per cent* (2013-14).
- **Ordnance Factories:** The Revenue component of the total actual expenditure of the Ordnance Factories for the period 2009-10 to 2013-14 decreased by 5 *per cent* from 93 *per cent* in 2009-10 to 88 *per cent* in

2013-14, whereas the Capital component of expenditure increased by a corresponding percentage from 7 per cent to 12 per cent.

- **Research & Development:** The Revenue expenditure on R&D has increased by 1 per cent from 51 per cent in 2009-10 to 52 per cent in 2013-14 during the period 2009-10 to 2013-14 while the Capital expenditure has decreased by a similar percentage from 49 per cent to 48 per cent.

1.13 Trend of major components of Revenue expenditure (Voted)

1.13.1 Army (Voted)

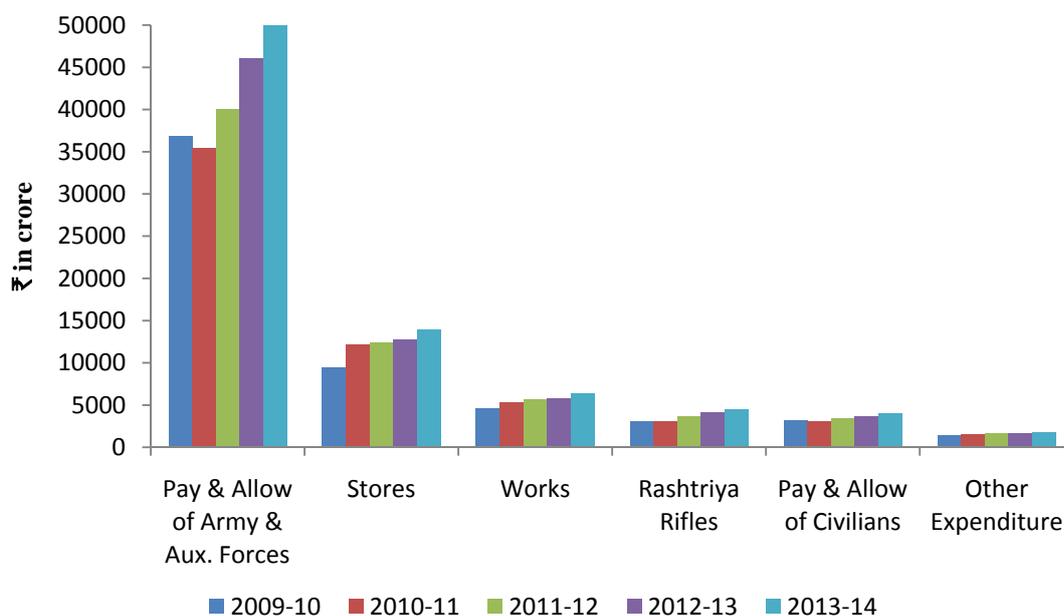
During the period 2009-10 to 2013-14 maximum Revenue expenditure was incurred under six Minor Heads (MH) of the Army as given in **Table-5** and in the **Chart-4** below:

Table-5: Details of major components of Revenue expenditure of Army

(₹ in crore)

Year	Pay & Allowances (MH-101& 103)	Stores (MH-110)	Works (MH-111)	Rashtriya Rifles (MH-112)	Pay & allow. of Civilians (MH-104)	Other expenditure (MH-800)
2009-10	36,896.23	9,404.65	4,608.34	3,047.58	3,132.27	1,380.31
2010-11	35,445.39	12,144.48	5,308.35	3,098.71	3,051.42	1,475.79
2011-12	39,996.27	12,442.20	5,708.68	3,585.38	3,361.21	1,644.18
2012-13	46,057.23	12,749.70	5,768.73	4,076.22	3,673.96	1,638.63
2013-14	50,532.55	13,953.78	6,383.76	4,435.58	4,055.56	1,770.98

Chart-4: Major components of Revenue expenditure of Army



- There is no significant rise in expenditure recorded under first six Minor Heads having highest expenditure viz. Pay & Allowances of Army & Auxiliary Forces, Stores, Works, Rashtriya Rifles, Pay & Allowances of Civilians and Other Expenditure relating to at 36.96 per cent, 48.37 per cent, 38.53 per cent, 45.54 per cent, 29.48 per cent and 28.30 per cent respectively during the period 2009-10 to 2013-14.

1.13.2 Ordnance Factories (Voted)

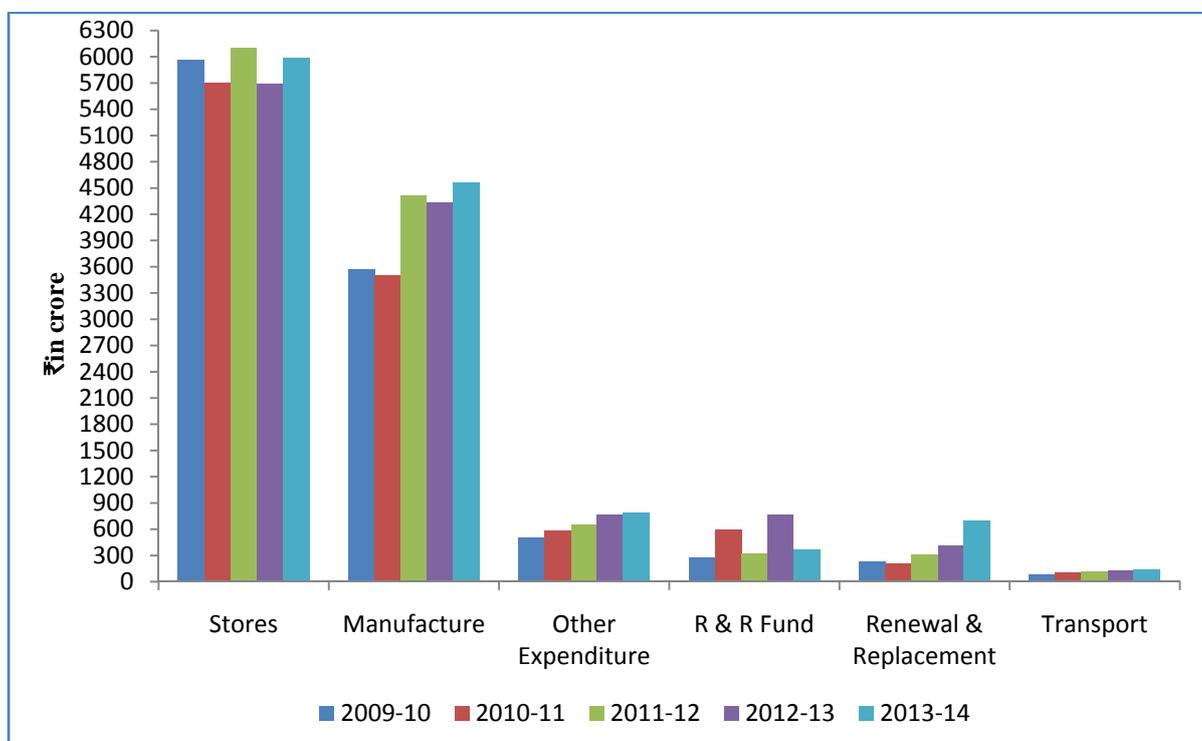
During the period 2009-10 to 2013-14 maximum Revenue expenditure was incurred under six MH of the Ordnance Factories as given in **Table-6** and in the **Chart-5** below:

Table-6: Major components of Revenue expenditure of Ordnance Factories

(₹ in crore)

Year	Stores MH-110	Manufacture- MH-054	Other expenditure MH-800	Renewal & Reserve (R&R) Fund-MH-797	Renewal & Replacement MH-106	Transport MH-105
2009-10	5,965.16	3,566.03	506.74	280.00	228.24	86.59
2010-11	5,704.96	3,499.75	582.66	600.00	207.82	110.73
2011-12	6,101.41	4,415.33	649.75	325.00	310.25	115.98
2012-13	5,691.76	4,335.73	767.68	350.00	415.85	135.01
2013-14	5989.63	4,562.58	794.97	375.00	697.01	146.75

Chart 5: Major components of Revenue expenditure of Ordnance Factories



- **Expenditure under** Minor head 'Renewal and Replacement', 'Transportation', 'Other Expenditure', 'R&R Fund', Manufacture, and

Stores have shown an increase of 205.38 per cent, 69.47 per cent, 56.88 per cent, 33.93 per cent, 27.95 per cent and 0.41 per cent respectively during the period 2009-10 to 2013-14.

1.13.3 Research & Development (Voted)

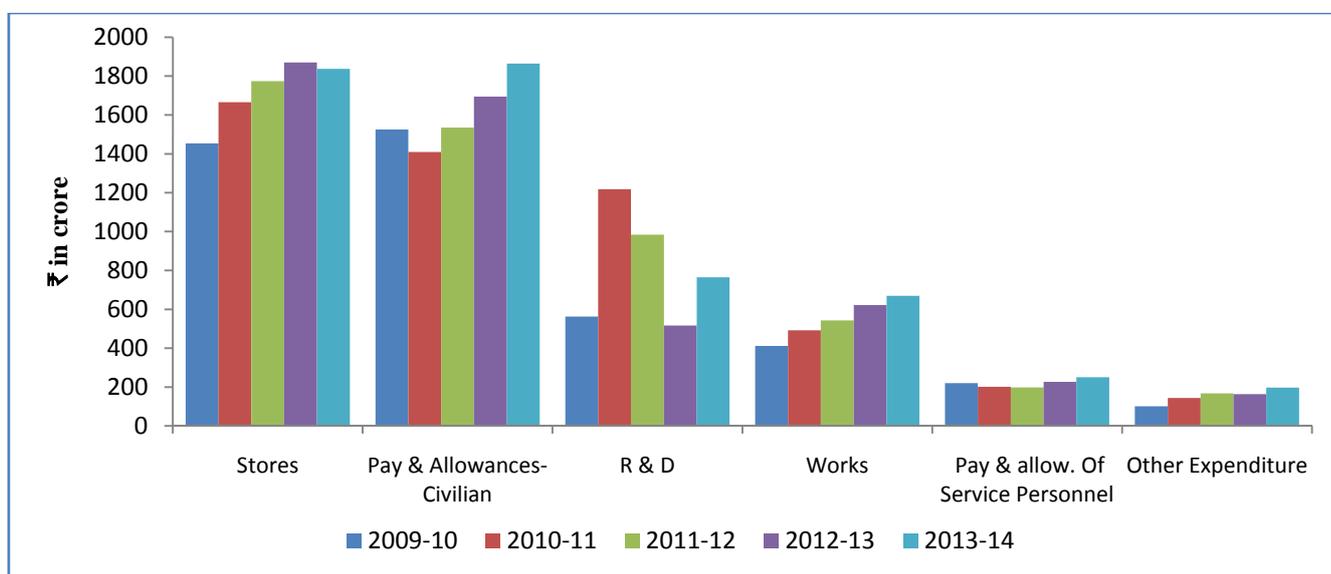
During the period 2009-10 to 2013-14 maximum Revenue expenditure was incurred under six Minor Heads (MH) of the R&D as given in **Table-7** and **Chart-6** below:

Table-7: Major components of Revenue expenditure of Research & Development

(₹ in crore)

Year	Stores MH-110	Pay & Allowances-Civilian MH-102	R&D MH-004	Works MH-111	Pay & Allowances of Service Personnel MH-101	Other Expenditure MH-800
2009-10	1,453.76	1,525.66	562.81	411.80	220.34	101.31
2010-11	1,665.91	1,409.71	1,218.25	492.17	201.61	144.02
2011-12	1,774.18	1,534.88	983.91	543.20	198.23	167.55
2012-13	1,870.19	1,694.22	516.97	621.39	226.38	163.43
2013-14	1,837.27	1,864.71	764.72	669.10	250.76	197.27

Chart 6: Major components of Revenue expenditure of Research & Development



- The expenditure under Minor Head- 'Other Expenditure', 'Works', 'Research and Development', 'Stores', 'Pay & Allowances-Civilian' and 'Pay & Allowances of Service Personnel' have shown an increase of 94.72 per cent, 62.48 per cent, 35.87 per cent, 26.38 per cent, 22.22 per cent and 13.81 per cent respectively during the period 2009-10 to 2013-14.

1.14. Trend of Capital expenditure - Major Head-4076-Grant no. 27-Capital Outlay on Defence Services

1.14.1 Components of Capital expenditure

There are eight Sub Major Heads (SMH) under this Grant, viz. Sub Major Head 01- Army, Sub Major Head 02 - Navy, Sub Major Head 03- Air Force, Sub Major Head 04- Ordnance Factories, Sub Major Head 05 - R&D, Sub Major Head 06 - Inspection Organisation, Sub Major Head 07 - Special Metal and Super Alloys Projects and Sub Major Head 08 - Technology Development.

1.14.2 Trend analysis of Capital expenditure (Voted) of Army, Ordnance Factories and R&D⁷

The details of Capital expenditure of Army, Ordnance Factories and R&D *i.e.*; SMH-01, 04 and 05 during the period 2009-10 to 2013-14 is given in **Table-8** below:

Table-8: Total Capital Expenditure (Defence Services) Vs Army, Ordnance Factories and R&D

(₹ in crore)

Year	Total Capital Expenditure	Capital Expenditure of Army	Capital Expenditure of Ordnance Factories	Capital Expenditure of R&D
2009-10	51,019.42	14,795.65	240.29	4,152.30
2010-11	62,011.53	15,787.86	453.58	4,961.11
2011-12	67,843.96	14,943.39	276.21	4,611.05
2012-13	70,483.32	14,757.11	349.07	4,642.24
2013-14	79,092.91	14,418.62	465.34	5,233.32

- **Total Capital Expenditure of Defence Services:** The total Capital expenditure of Defence Services has recorded an overall increase of 55.02 *per cent* during the period 2009-10 to 2013-14. However, Army expenditure during this period has recorded a decrease of 2.55 *per cent*. Compared to this the component-wise increase in Capital expenditure of Ordnance Factories and R & D were 93.66 *per cent* and 26.03 *per cent*, respectively.
- **Army Capital Expenditure:** The Capital expenditure component of Army against the total Capital expenditure of Defence Services decreased by 11 *per cent* from 29 *per cent* in 2009-10 to 18.23 *per cent* in 2013-14. The Capital expenditure of Army during 2013-14 has recorded a decrease of 2.29 *per cent* over the previous year, despite an

⁷ SMH- 02 and SMH- 03 are analysed separately in Audit Report of Union Government (Defence Services) Air Force and Navy. In respect of SMH- 06- and SMH- 08 total expenditure during the period 2009-10 to 2013-14 was ₹54.23 crore and ₹139.11 crore respectively. In respect of SMH-07 the expenditure during these years was Nil.

increase of 12.22 *per cent* in the Capital expenditure of Defence Services.

- **Ordnance Factory Capital Expenditure:** Capital expenditure of Ordnance Factory has not seen any significant variations as a component of the total Capital expenditure during the period 2009-10 to 2013-14. From 0.47 *per cent* of the total Capital expenditure in 2009-10 it has increased to 0.59 *per cent* in 2013-14, though over the previous year, the Capital expenditure in 2013-14 has shown an increase of 33.31 *per cent*.
- **R&D Capital Expenditure:** Capital expenditure of R&D has seen a decrease of nearly 2 *per centi.e.* from 8.14 *per cent* (2009-10) to 6.62 *per cent* (2013-14) with respect to total Capital expenditure. Compared to the previous year, the Capital expenditure of R&D has increased by 12.73 *per cent*.

1.14.3 Trend of Saving/Excess in Capital Expenditure (Voted)

The trend of ‘Saving’ and ‘Excess’ in Capital expenditure for the period 2009-10 to 2013-14 is given in **Table-9** below:

Table-9: Trend of Saving/Excess in Capital Expenditure

(₹ in crore)

Year	Total Grant (Voted)	Total Expenditure	Under Total Capital Grant	
			Saving (-)	Excess (+)
2009-10	54,779.62	51,019.42	3,760.20 (6.86%)	-
2010-11	60,776.21	62,011.52	-	1,235.31 (2.03 %)
2011-12	69,148.01	67,843.96	1,304.05 (1.89%)	-
2012-13	79,526.99	70,483.32	9,043.67 (11.37%)	-
2013-14	86,685.31	79,092.91	7,592.40 (8.76%)	-

Note: Figure in brackets represents the saving (-)/excess (+) as a percentage of Total Grant (Voted).

- It is evident from the above table that during the period 2009-10 to 2013-14 there were persistent ‘Savings’ except in the year 2010-11 when there was an ‘excess’ of 2.03 *per cent*. The ‘Savings’ have ranged 11.37 *per cent* to 1.89 *per cent* during this period.
- A decrease in ‘Savings’ was noticed from ₹9043.67 crore (11.37 *per cent*) during 2012-13 to ₹7592.40 crore (8.76 *per cent*) in the year 2013-14. However, funds amounting to ₹7854.78 crore (9.06 *per cent*) were surrendered on the last working day of the financial year 2013-14 which was more than savings.

1.15 Profile of Defence Public Sector Undertakings (DPSUs)

There are nine⁸ Defence PSUs under the administrative control of the Ministry of Defence. These Defence PSUs along with two subsidiaries are audited by the Office of the Principal Director of Commercial Audit and ex officio Member, Audit Board, Bangalore.

- i. Bharat Electronics Limited, Bengaluru (BEL) is a listed Company with Government of India as the majority share holder (75.02 per cent). It was primarily set up to meet the specialized electronic needs of the Indian Defence Services. BEL has been conferred the Navratna status by the Government of India. It has one subsidiary i.e., BEL Optronics Devices Limited, Pune. The paid up capital of BEL as on 31 March 2014 was ₹80 crore. The turnover of BEL increased from ₹6103.53 crore in 2012-13 to ₹6275.52 crore in 2013-14 i.e., 3 per cent.
 - BEL Optronics Devices Limited, Pune (BELOP) is a subsidiary of Bharat Electronics Limited (92.79 per cent share holder). It has been established for conducting research, development and manufacture of Image Intensifier Tubes and associated high voltage Power Supply Units for use in military, security and commercial systems. The paid up capital of BELOP as on 31 March 2014 was ₹18.32 crore. The turnover of BELOP increased from ₹146.65 crore in 2012-13 to ₹171.49 crore in 2013-14 i.e. 17 per cent.
- ii. Bharat Earth Movers Limited (BEML) Bengaluru is a listed Company with Government of India as the majority share holder (54.03 per cent). The company operates under three major Business verticals – viz. Mining & Construction, Defence and Rail & Metro. It has one subsidiary i.e. Vignyan Industries Limited Tarikere. The paid up capital of BEML as on 31 March 2014 was ₹41.77 crore. The turnover of BEML increased from ₹2808.91 crore in 2012-13 to ₹ 2911.51 crore in 2013-14 i.e., 4 per cent.
 - Vignyan Industries Limited, Tarikere (VIL) is a subsidiary of BEML Limited (95.56 per cent share holder). This Unit is a Steel Casting Foundry which specializes in churning out components for Earth Moving Machinery, Valves, Die Casting Machines, Ropeways, Automobiles and for Railways. The paid up capital of VIL as on 31 March 2014 was ₹2.79 crore. The Turnover increased from ₹24.50 crore in 2012-13 to ₹32.72 crore in 2013-14 i.e., 34 per cent.
- iii. Bharat Dynamics Limited, Hyderabad (BDL) is a fully owned Government of India undertaking. It is engaged in manufacture of Guided Weapon Systems. The paid up capital of BDL as on 31 March

⁸ Profile and ATN status of four shipyards (Mazagon Dock Shipbuilders Limited, Garden Reach Shipbuilders & Engineers Limited, Goa Shipyard Limited and Hindustan Shipyard Limited) and Hindustan Aeronautics Limited have been covered in the C&AG Report of the Union Government (Defence Services) Air Force and Navy.

2014 was ₹115.00 crore. The turnover increased from ₹1072.01 crore in 2012-13 to ₹1774.05 crore in 2013-14 *i.e.*, 65 per cent.

- iv. Mishra Dhatu Nigam Limited, Hyderabad (Midhani) is a fully owned Government of India undertaking. It is engaged in manufacture of widest range of advanced metals and alloys and products of national security and strategic importance. The paid up capital of Midhani as on 31 March 2014 is ₹187.34 crore. The turnover marginally increased from ₹553.90 crore in 2012-13 to ₹554.62 crore in 2013-14.

CHAPTER II : MINISTRY OF DEFENCE

2.1 Working of the Cantonment Boards (CBs)

During the period 2009-10 to 2013-14, none of the test checked 17CBs, except for CB Clement Town, had prepared and implemented Town Planning schemes, plans for economic development and social justice in their respective areas. Moreover none of the CBs provided all the 24 types of services, mandated as per the Cantonments Act, to its residents. Further no Central Government schemes for upliftment of the poor applicable in the CBs and provision of infrastructure facilities were, implemented in the cantonments. The position regarding revenue generation was also not encouraging as the CBs were unable to optimize revenue generation through taxes and non-taxes, leading to their increased dependency on Grant-in-aid from the Ministry of Defence. This was mainly due to non-revision of taxes every five years, recovery of property tax at a lower than the stipulated rate and non-levy of Vehicle Entry Tax *etc.*

2.1.1 Introduction

2.1.1.1 *The Cantonment and Cantonment Boards*

The Cantonments in India are permanent military stations in which troops are being regularly quartered. The cantonment areas are central territories under the Constitution of India, as such civic bodies functioning in these areas are not covered under State Municipal Laws. Therefore the Cantonments Act, 1924 was enacted to make provisions relating to the administration of the cantonments, which was amended by Cantonments Act, 2006 (41 of 2006) (Act). On declaration of any place as a cantonment, the Central Government constitutes for that cantonment, a Board called Cantonment Board (CB), within a period of one year.

There are 62 notified Cantonment Boards (CBs) in the country, located in 19 States and distributed among five Army Commands. On the basis of the population, the CBs are categorized into four categories⁹.

2.1.1.2 *Organisational Structure*

Each CB is headed by a Chief Executive Officer (CEO), who performs the executive functions of the Board and also acts as the Member-Secretary of the Board. He reports to the Director General Defence Estates (DGDE), New Delhi, under the Ministry of Defence (MoD), through Principal Director of Defence Estates (PDDE), posted at each Command HQ of the Army. The CEO is independent of the Army and is the civil executive interface of the civil population.

⁹Category I having population of more than 50000, Category II with population ranging between 10000 and 50000, Category III with population between 2500 and 10000 and Category IV with population of less than 2500.

The Audit of CBs is carried out under Section 14(1) & (2) of the Comptroller and Auditor General's (Duties, Powers, and Conditions of Service) Act, 1971 (C&AG's DPC Act 1971).

Records of 17 CBs¹⁰, were test checked along with five PDsDE of respective Command Headquarters and the Director General of Defence Estates (DGDE), New Delhi, covering a period from 2009-10 to 2013-14, with the objective to see whether the CBs were able to fulfil their mandate regarding provision of services to its residents and had proper financial and asset management in place. The draft report was issued to the Ministry of Defence in June 2015. Response of the Ministry was yet to be received (August 2015).

2.1.2 Audit Findings

The main functions of the CBs are broadly the same as those of the Municipal Bodies. Section 62 of Cantonments Act 2006 stipulates that it shall be the duty of every Board (CB), so far as the funds at its disposal permit, to make reasonable provisions within the cantonment for 24 types of services, as detailed in **Annexure-II**.

2.1.2.1 Planning

As per the provisions of the Cantonments Act 2006, the CBs were required to prepare and implement town planning schemes and plans for economic development and social justice in their respective areas. The CBs were also required to prepare perspective development plans for about 15 years and five years development plan for implementation.

Further, DGDE issued instructions (May 2011) to CBs, to formulate and implement proposals to improve civic infrastructure of cantonments and provide quality services to the residents. In case of paucity of funds, the DGDE directed the CBs to submit proposal for sanction of special Grant-in-aid.

We observed that except for CB Clement Town, none of the other test checked CBs had prepared any plans as per the provisions of the Act/directions.

2.1.2.2 Non-performance of mandated duties by the CBs

With regard to the performance of the duties mandated in the Act, audit scrutiny revealed that none of the test checked CBs discharged all the 24 duties laid down in the Act. The number of duties discharged by the CBs

¹⁰Category-I Meerut (CC), Lucknow (CC), Dehradun (CC), Ramgarh (CC).
Category-II Ahmednagar (SC), Barrackpore (EC), Wellington (SC), Ranikhet (CC), Danapur (CC), Shillong (EC), Clement Town (CC), Khasyol (NC)*, Pachmarhi (CC).
Category-III Lansdowne (CC), Chakrata (CC).
Category-IV Dalhousie (WC), Jalapahar (EC).
(Due to floods in J&K State during September/October 2014, Audit of CB BadamiBagh could not be carried out. Instead, CB Khasyol was selected for audit).

ranged between three (CB Ranikhet, Central Command) and 22 (CB Clement Town, Central Command).

In response to audit query, the CBs stated that non-performance of duties was mainly due to non-availability of either manpower or funds.

The reply furnished was not acceptable in audit due to following reasons:

- Acute deficiency in the posted strength of manpower in the CBs *viz-a-viz* authorised strength, was not noticed. The posted strength of the test checked CBs, as against their authorised strength, ranged between 59 *per cent* in CB Barrackpore (Cat-II) and 92 *per cent* in CBs Pachmarhi (Cat-II) and Wellington (Cat-II) as indicated in **Annexure-III**. We also observed, that despite manpower shortage of 41 *per cent*, CB Barrackpore discharged 20 duties, whereas CBs Pachmarhi and Wellington with the manpower shortage of eight *per cent* had discharged 16 and eight services respectively.
- No response was received (August 2015) from DGDE to the audit query regarding norms for assessing manpower *viz-a-viz* the services to be delivered by the CBs.
- As regards availability of funds for rendering the mandated services, we observed that there was no deficiency of funds as the test checked CBs failed to utilise the funds allotted to them during the past five years, as discussed in **Para 2.5.3.2**.

2.1.2.3 Non-implementation of Central Government schemes

Under Section 10 of the Act, the CBs were declared as deemed Municipalities in accordance with clause (e) of Article 243-P of the Constitution for the purpose of receiving grants and allocations; or implementing the Central Government schemes of social welfare, public health, hygiene, safety, water supply, sanitation, urban renewal and education to the residents of the cantonment. Following schemes announced by the Central Government were required to be implemented by the CBs:

- Jawaharlal Nehru National Urban Renewal Mission (JNNURM)
- Swarna Jayanti Shahri Rojgar Yojna (SJSRY)
- Rajiv Awas Yojana (RAY)

JNNURM: Government of India, launched (December 2005) Jawaharlal Nehru National Urban Renewal Mission (JNNURM), to encourage reforms and fast track planned development of identified cities.

Scheme provided for 50 *per cent* funds to be provided by the Ministry of Urban Development (MoUD), 30 *per cent* by the State Government and 20 *per cent* by Local Body. As State Governments were reluctant to release funds under the Mission, for infrastructural projects in cantonment areas, the Joint

Secretary Cantonments and Works (JS (C&W)) intimated (March 2010) the Mission Director (JNNURM), that Ministry of Defence was considering funding the share of State Government (30 *per cent*) in addition to 20 *per cent* shared by CBs. However, before making a reference to finance in this regard a confirmation was sought from the MoUD, whether JNNURM funding would become available for CBs.

The Mission Director, JNNURM intimated (April 2010) the JS (C&W), that most of the States had exhausted their allocation and the financing of urban infrastructure in cantonment areas needed to wait till additional allocation was obtained for the Mission. The Rajya Raksha Mantri requested (March 2011) the MoUD to take proactive interest to resolve the issue so that CBs could get benefits of the Mission. Subsequently the Mission Director JNNURM in a meeting (February 2012) stated that the requirements of the CBs would be taken into account by the State Governments while preparing City Development Plan (CDP) for the next phase of JNNURM.

The DGDE informed (May 2014) the Ministry of Defence that the CBs were not included in the JNNURM Phase-I. Scrutiny of the related documents regarding funding for implementation of the scheme revealed, that the issue could not be resolved in the last nine years between DGDE and the MoUD.

The case thus revealed that even though 28 CBs (seven¹¹ out of which were included in the selected 17 CBs) were found to be eligible for benefits under JNNURM, being co-located with the cities which were covered under the Phase-I of the scheme, yet the residents of the eligible CBs remained deprived of its benefits.

Further, it was also seen that even though the eligible CBs took up the matter with the State Authorities, the Mission could not be implemented due to the following reasons:

- CB Shillong: The CB took up the matter (January 2008) with the Meghalaya Urban Development Authority (MUDA), a Government of Meghalaya undertaking, for inclusion of the area of CB Shillong under their City Development Plan in respect of JNNURM. Government of Meghalaya intimated (July 2008) that the area of CB Shillong had been included in the Detailed Project Report for Water Supply Project and asked the CB to earmark funds for the Project which was about 0.20 *per cent* of the total project cost. CB Shillong requested (December 2009) MUDA to provide a copy of the DPR so that the CB could take up the case for allocation of funds. MUDA intimated (February 2010) that the DPR was prepared by State Public Health Engineering (PHE) Department and the matter be accordingly taken up with them. After a lapse of 20 months, CB Shillong requested (October 2011) the PHE Department to intimate the proportionate cost to be borne by the CB. The Chief Engineer, Public Health Engineering Department intimated (December 2011) that the CB would have to construct zonal reservoir at two locations and to make their own arrangement for distribution of

¹¹ Danapur, Lucknow, Meerut, Ramgarh, Shillong, Dehradun and Barrackpore

water within the cantonment area. However we observed that CB Shillong did not prepare any plans for construction of the reservoirs.

In reply (December 2014) the CEO, CB Shillong stated that there was a requirement of construction of two numbers of reservoirs, which would be constructed. It was further stated that presently the CB was supplying 48 litres per capita per day of water to the residents from the existing supply line of PHE.

- CB Danapur: In accordance with the instructions (July 2010) of the DGDE to CB Danapur to prepare CDP under JNNURM, the CB resolved (July 2010) to take necessary action. The CEO CB also met (August 2012) the Secretary, Urban Development and Housing Department, Government of Bihar, wherein it was decided that the authorities of CB and Danapur Municipal Corporation would meet for integration of schemes under JNNURM.

However no further action was taken and the CEO CB in reply stated (December 2014) that no CDP or DPR had been framed/prepared by CB Danapur because of shortage of technical staff with skills and experience required for town planning/sewerage planning *etc.*

- CB Ramgarh: Similarly, PDDE (CC) directed (February 2012) CB Ramgarh to expedite the Cantonment Development Plan for CB Ramgarh and get it integrated with the CDP of Ranchi City for JNNURM Phase-II. Scrutiny of documents at the CB revealed that no progress had been made by the CB for preparation of CDP.

The CEO CB stated (February 2015) that the CB had approached the Urban Development Department of Ranchi and Municipal Corporation who intimated that CB Ramgarh did not fall within the JNNURM scheme. The contention of the Department was not correct as CB Ramgarh was one of the eligible CBs selected by the DGDE for implementation of the scheme.

- CB Barrackpore: The CEO of the CB took up (November 2006) the case with Secretary, Urban Development/Local Self Government, Government of West Bengal for integrating the requirement of CB Barrackpore in the comprehensive urban renewal plan of Kolkata. The PDDE, EC, Kolkata also requested (July 2009) Chief Secretary, Government of West Bengal to instruct Municipal Commissioner Barrackpore to take into account the infrastructural requirement of CB Barrackpore while preparing comprehensive CDP. The CEO CB, forwarded (September 2010), a detailed project report to the Secretary Municipal Affairs Department through Director State Urban Development Authority (SUDA) with the recommendation of Director SUDA, but no response was received (April 2015) by the CB.
- CB Lucknow: CB Lucknow requested (July 2009) the Lucknow Municipal Corporation (LMC) to include the area of CB Lucknow in the Comprehensive City Development Plan of the LMC for

implementation of schemes under JNNURM. The CB was included in the finalised CDP of Lucknow city for infrastructure development such as augmentation of water supply, sewerage, rain water harvesting and solid waste management at a total estimated cost of ₹91.10 crore. Though the CB again requested (December 2010) the LMC to take necessary steps regarding implementation of the said schemes under JNNURM in the CB, the UP Jal Nigam (in-charge of JNNURM) stated (February 2014) that the sewerage scheme in respect of the CB cannot be implemented by them under JNNURM scheme and the expenditure to be incurred on scheme would have to be borne entirely by the CB. The scheme was not implemented in the CB (February 2015).

Swarna Jayanti Shahri Rojgar Yojna (SJSRY)

The scheme sought to provide gainful employment to the under employed and unemployed by encouraging skill development, self-development and also through wage employment for construction of socially and economically useful public assets. The funding pattern under the scheme was *75 per cent* from Centre and *25 per cent* from State Govt. The Deputy Chairman, Planning Commission intimated (June 2010) the DGDE the benefits of SJSRY to be made applicable to the CBs. Under this scheme the people living Below Poverty Line in the cantonment areas were to be benefitted by giving them the opportunity to enhance their income level.

We observed that the scheme was not implemented in any of the test checked CBs.

Rajiv Awas Yojana (RAY)

In June 2011, Cabinet Committee on Economic Affairs, envisaging a slum-free India, approved RAY to be implemented by 2017, in two phases.

The aim of RAY was to provide financial assistance to the States that were willing to assign property rights to slum dwellers for provision of decent shelter and basic civic and social services for slum redevelopment and for creation of affordable housing stock. *50 per cent* cost for provision of these assets including operation and maintenance of the same, was to be borne by the Centre. For the North Eastern and special category States (J&K, HP and Uttrakhand), the share of the Centre was *90 per cent*.

The scheme envisaged that in the case, where the land belonged to CB, it was expected that the concerned CB, working in cooperation with State Governments/Urban Local Bodies (ULBs), would design solutions to unlock the land value trapped by encroachment, by redeveloping/relocating the slum with due property rights.

The Secretary, Ministry of Housing and Urban Poverty Alleviation (MoHUPA), while drawing reference to the foremost priority of the Central Government for providing “Housing for All by 2022”, asked (October 2014) MoD to expedite updated information regarding details of land on which

slums were situated. However, the MoD was yet to furnish (January 2015) the updated information as sought for by MoHUPA.

The status regarding implementation of the schemes was called for (September 2014 and March 2015) from DGDE, but no reply was received (August 2015).

2.1.2.4 Non implementation of Solid Waste Management (SWM)

The Ministry of Environment and Forest, Government of India framed the Municipal and Solid Waste (Management and Handling) Rules 2000 which were applicable to every Municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid wastes.

The DGDE, issued instructions (January 2011) to the PDDEs and CEOs of CBs, for implementation of the Municipal and Solid Waste (Management and Handling) Rules. The activities involved in compliance of the said rules included house-to-house collection, segregation of the municipal solid waste into bio-degradable and non-bio-degradable waste, covered transportation, separate storage of bio-degradable/non bio-degradable/recyclable and other wastes separately and also vermin-composting of bio-degradable waste.

Scrutiny of records at DGDE revealed that instructions in this regard were issued by the DGDE to the CBs after the passage of more than 10 years. Further scrutiny of records in the test checked CBs revealed the following:

- Except for CB Lucknow and in civil area of CB Wellington, solid waste management system had not been implemented in any of the test checked CBs.

In reply CEO CB Wellington stated (March 2015) that the proposal for door-to-door garbage collection in the military area was not authorised as per policy.

- Other CBs partially implemented the scheme by carrying out only two activities such as house-to-house collection and dumping the waste in the trenching grounds/landfills.
- The CEO CB Ahmednagar stated (November 2014) that, the proposal for only door-to-door garbage collection had been implemented in civil area and the required concurrence to the proposal for implementation in Army area, was not received (November 2014) from Principal Controller of Defence Account, whose concurrence was required for sanction of the project, being the Integrated Financial Advisor of the Army.
- The CEO, CB Barrackpore stated (April 2015) that liaison had been made with Housing Infrastructure Development Corporation for implementation of solid waste management project in the cantonment area, but the system was yet to be implemented (April 2015).

2.1.2.5 *Inadequacy in the water supply service provided by the CBs*

As per Section 62 (x) of the Act, it is the duty of the CB to provide potable and adequate water to its residents for usage.

Scrutiny of the records/information made available by the test checked CBs revealed that CBs Dehradun, Meerut, Lucknow, Ramgarh, Danapur, Dalhousie and Pachmarhi had their own water supply system. In CB Clement Town, water was supplied in the cantonment area directly by Uttarakhand Pay Jal Sansthan. Remaining nine CBs purchased water either from the Military Engineers Services (MES) or from the neighbouring Municipal Corporations for supply to its residents. The details of quantity of water supplied per day per person by the 16 CBs (data in respect of CB Clement town is not available) is given in **Annexure-IV**.

We observed that:

- Only six CBs supplied water to its residents at par with the World Health Organisation norms of 135 litres per capita per day (lpcd) for residential accommodation. The quantity of water supplied by the remaining 10 CBs ranged between 36 lpcd (CB Lansdowne, Cat III) and 95 lpcd (CB Wellington Cat-II).
- Only 12 CBs achieved *cent per cent* piped water supply network coverage. In the balance CBs the percentage of piped water supply network coverage ranged between 28 in CB Ramgarh (Cat-I) and 99 in Lansdowne (Cat-III).
- CB Ahmednagar, to overcome the scarcity of potable water, had dug seven bore wells in February-March 2009 at a cost of ₹4.19 lakh and declared it open to the public without confirming its potability. The potability test of the bore well water was not carried out by the CB as of November 2014. However, the CB stated that the residents had been informed that the bore well water should not be used for drinking purposes.

Thus the water supply being provided by the CBs was inadequate.

Avoidable extra expenditure/loss of revenue on purchase of water

Scrutiny of the records of the test checked CBs revealed following cases of avoidable expenditure/loss of revenue on purchase of water by the CBs.

- To meet the normal water requirement of 1589 kilolitres per day (klpd), CB Ahmednagar was purchasing 1012 klpd from the Military Engineering Service (MES) at commercial rates who in turn got it from the Maharashtra Industrial Development Corporation (MIDC). The MIDC supplied water to the neighbouring Municipal Corporation at domestic rates of ₹7.50 per kl, whereas it charged MES at commercial rates resulting in avoidable extra expenditure of ₹3.19 crore during the period 2009-10 to 2013-14. Though CB took up (June 2003) the matter

with GOC-in-C, SC for release of special Grant-in-aid for executing independent water supply project from MIDC to CB, the same was yet to be sanctioned. In the meantime the project cost had increased from ₹1.20 crore (June 2003) to ₹7.62 crore (January 2013).

- CB Wellington was receiving about 22 lakh litres of water from MES for billing period of two months for supply to its residents. The MES charged ₹16.52 per kilolitre (kl) from April 2009 to December 2012 and ₹41.80 per kl with effect from December 2012. However we observed that the CB charged just ₹7 per kl of water subject to minimum of ₹70 per month for dwelling units with effect from April 2008, resulting in loss of revenue of ₹58.13 lakh during the period from 2009-10 to 2013-14.

On being pointed out, the CEO CB in reply (March 2015) stated that elected members objected the increase of water charges.

2.1.2.6 Lack of norms for provision of the medical and educational facilities.

The Cantonments were originally intended to be purely military reserves meant for the troops and their followers. With passage of time, large number of civilians came to reside in the Cantonments. They were encouraged to do so in order to provide amenities to officers, soldiers and retainers of the Army.

As per Section 62 (xiii) and (xiv) of the Cantonments Act 2006, it is the duty of the CB to establish and maintain hospitals and schools.

The medical and educational facilities in the test checked 17 CBs are indicated in the **Annexure-V** and **VI**.

- Scrutiny of the records of these CBs revealed that during the period from 2009-10 to 2013-14, the hospital and school facilities provided by the CBs were not being availed by the Armed Forces residing in the cantonment areas. This was primarily because of the fact that the Armed Forces were no longer dependent on the CBs for such services, as they had come up with their own arrangements to cater to their requirements regarding health care and education.
- Further scrutiny revealed that CB Ramgarh (Cat-I) had a 32 bedded hospital for a population 88781, whereas CB Lucknow (Cat-I) had 44 bedded hospital for a population of 63000. CBs Danapur, Ranikhet, Shillong and Pachmarhi, which are Category-II CBs, did not have a hospital, thus depriving the population of medical facilities whereas CB Ahmednagar (Cat-II) with a comparable population (28986) to CB Danapur (28723) had a 36 bedded hospital. Under category-III, CBs Chakrata and Lansdowne had comparable population of about 5000, but CB Lansdowne had 33 bedded hospital, whereas CB Chakrata had no hospital.

CB Meerut, a category-I CB with a population of 93312, had four Primary Schools and one Intermediate College whereas CB Ramgarh, which is also a category-I CB with a population of 88781, had six Middle Schools and one High School.

CB Danapur, a category-II CB with a population of 28723, had no school, whereas CB Ahmednagar, a category-II CB with a comparable population of 28986, had one Kindergarten, five primary and one High School.

CBs Khasyol and Pachmarhi, category-II CBs, had a comparable population of about 12,000, but CB Khasyol had four Primary Schools and one High School whereas CB Pachmarhi had just one Primary School.

Thus there were no norms/scales regarding provision of medical and educational facilities, as seen in the test checked CBs, which had resulted in disparity in availability of medical facilities with reference to the population of the cantonment.

2.1.3 Financial Management

Financial Management involves forecasting the financial requirements, arranging the funds on need basis, making judicious allocation and monitoring the actual expenditure.

The Cantonments Act 2006 empowers the CBs to generate revenue through levy of Taxes/rates/charges in their area with approval of the Central Government. The total revenue of the CBs, can be broadly divided into own source revenues and Grant-in-aid from the Central Government and other Grants from the State Government.

2.1.3.1 Receipts and Expenditure

We observed that the total receipts including Grants-in-aid for the test checked 17 CBs during the five year period of 2009-10 to 2013-14 was ₹1125.41 crore and the expenditure incurred was ₹1015.58 crore as detailed in **Table-10** below:

Table-10

(₹ in crore)

Cantonment / Category	Tax receipts	Non-tax receipts	Grants-in- Aid		Total receipts	Total expenditure
			Central	State		
Dehradun/I	39.53	19.72	35.36	1.77	96.38	99.62
Lucknow/I	73.86	43.47	46.44	Nil	163.77	161.06
Meerut/I	110.01	29.10	28.82	0.69	168.62	172.85
Ramgarh/I	16.81	20.88	37.23	1.13	76.05	73.82
Ahmednagar/II	31.77	13.24	23.92	5.77	74.70	60.99
Barrackpore/II	26.98	14.36	23.92	0.07	65.33	48.05
Clement town/II	3.4	13.69	30.11	Nil	47.20	42.97

Danapur/II	4.23	12.77	24.47	Nil	41.47	31.75
Khasyol/II	2.95	6.25	18.04	Nil	27.24	24.52
Panchmarhi/II	8.23	4.88	20.62	0.01	33.74	31.38
Ranikhet/II	7.87	12.74	51.56	2.51	74.68	59.39
Shillong/II	7.27	11.78	20.42	1.12	40.59	22.65
Wellington/II	7.00	14.56	60.06	Nil	81.62	78.53
Chakrata/III	1.78	5.91	42.11	1.28	51.08	35.86
Lansdowne/III	4.03	6.87	33.76	1.46	46.12	39.83
Dalhousie/IV	2.13	4.48	10.20	Nil	16.81	15.25
Jalapahar/IV	1.05	2.71	16.25	Nil	20.01	17.06
Total	348.90	237.41	523.29	15.81	1125.41	1015.58

Note: Taxes include Service Charges and Non-Taxes include Military Conservancy, interest on investments, and other miscellaneous income

Analysis of the receipts and expenditure of these test checked CBs revealed that:

- These CBs were mainly dependent on Grant-in-aid, as 48 *per cent* of the total receipts was on account of Grant-in-aid.
- Of the total receipts of ₹1125.41 crore, ₹651.51 crore were utilized on delivery of services which included expenditure of ₹398.82 crore on establishment (61 *per cent*), ₹246.38 crore on maintenance and repairs (38 *per cent*) and ₹6.31 crore on original works (one *per cent*) as detailed in **Annexure-VII**.
- An expenditure of just one *per cent* was on original works, which indicated that no new tangible assets were created by the CBs during the past five years.

2.1.3.2 Unrealistic Budget formulation by CBs

CBs on or before the 1st day of September each year submit to the GOC-in-C of the respective Command, duly passed by the Board, Budget Estimate (BE) of the receipts (including Grants-in-aid required) to be paid into the Cantonment Fund and of the expenditure to be incurred for the ensuing financial year. The GOC-in-C submits it with his recommendations for the release of Grant-in-aid by the MoD, through Principal Director of Defence Estates (PDDE).

Scrutiny of the Budget Estimates and Annual Accounts of the test checked CBs, for the period 2009-10 to 2013-14, revealed that the Budget Estimates prepared by the CBs, with respect to anticipated expenditure during the year, were unrealistic and there was a disconnect between the amounts projected by the CBs in the Budget Estimates/Revised Estimates, funds allotted by the PDsDE and expenditure actually incurred by the CBs, as indicated in **Annexure- VIII**.

The percentage of actual expenditure incurred by the test checked CBs *viz-à-viz* the anticipated expenditure indicated in the Revised Estimates ranged between:

- 29 per cent (CB Danapur) and 98 per cent (CB Khasyol) during the year 2009-10,
- 33 per cent (CB Danapur) and 102 per cent (CB Khasyol) during the year 2010-11,
- 30 per cent (CB Danapur) and 99 per cent (CB Khasyol) during the year 2011-12,
- 27 per cent (CB Ramgarh) and 107 per cent (CB Khasyol) during the year 2012-13,
- 40 per cent (CB Ramgarh) and 101 per cent (CB Khasyol) during the year 2013-14

Moreover, the CBs could not completely utilise the funds sanctioned by PDsDE for incurring expenditure on various activities of the CBs. The percentage of actual expenditure as against funds allotted, including Grants-in-aid, ranged between:

- 37 per cent (CB Chakrata) and 78 per cent (CB Ahmednagar) during the year 2009-10
- 38 per cent (CB Danapur) and 98 per cent (CB Wellington) during the year 2010-11
- 29 per cent (CB Danapur) and 89 per cent (CB Wellington) during the year 2011-12,
- 26 per cent (CB Ramgarh) and 87 per cent (CB Khasyol) during the year 2012-13,
- 43 per cent (CB Chakrata) and 85 per cent (CB Khasyol) during the year 2013-14.

This indicated that the Budget Estimates prepared by the CBs were unrealistic and in spite the availability of funds, the CBs had failed to utilise the funds for rendering the services.

In reply to the reasons for non-utilisation of funds allotted during the year, the CEOs of CB Ahmednagar and CB Wellington stated (November 2014 and February 2015 respectively) that sanctions were received at the end of the year, however maximum efforts were taken to incur the expenditure as provided, but could not be finalised due to administrative reasons.

However, the fact remained that during the last five years, funds ranging between two to 74 per cent remained unutilised every year in the test checked CBs.

2.1.3.3 Certification regarding utilisation of Grant-in-aid by the CBs

In terms of Rule 212(1) of the General Financial Rules, utilisation certificate regarding the utilisation of the Grant-in-aid received during the year is rendered by the CBs to the DGDE, bringing out utilisation or otherwise of the amount of Grant-in-aid received. Scrutiny of records in the test checked CBs revealed that, though the CBs issued utilisation certificates in respect of Grants-in-aid received, but no separate subsidiary cashbook/accounts were maintained by the CBs for accounting the Grants-in-aid. Consequently we could not verify the correctness of the utilisation certificates issued by the CBs.

No response to the audit query issued (March 2015) regarding reasons for non-maintenance of separate subsidiary cash book/account for Grant-in-aid, was furnished by the DGDE (August 2015).

2.1.3.4 Non-sharing of net proceeds of revenue by the State Authorities

In terms of provision of Article 243 X read with Article 243 Y of Constitution of India and recommendations given by the successive State Finance Commissions, Municipalities of the States had started receiving the share of net proceeds of taxes, tolls, duties and fees levied by the respective States. Besides, Municipalities were also assigned certain taxes, duties and fees. This was apart from the Grant-in-aid given to the Municipal Bodies out of the Consolidated Fund of the States.

CBs had been declared as deemed Municipalities under Section 10 of the Cantonments Act 2006. To enable the CBs also to receive a share of net tax proceeds, as well as other allocations and Grants of the respective State Governments, the DGDE, advised (August 2011) all the PDsDE and CEOs of CBs, to liaise and pursue with the respective State Government officials to convince the State Government for agreeing to such devolution of funds to the CBs. Thereafter, the DGDE took up (January 2013) the matter with the Chief Secretaries of various State Governments to allocate appropriate share of net tax proceeds as well as other allocations and Grants, to the CBs located in the State, on the same pattern as was being followed to allocate financial resources to the Municipalities in the State.

Scrutiny of records of test checked 17CBs revealed that in spite of the DGDE having taken up the matter with the Chief Secretaries of various State Governments and the CBs, except CBs Wellington, Danapur and Ramgarh, also having taken up the matter with the respective State Governments/State Finance Commission, the test checked CBs had not received their share out of the net tax proceeds of respective State Governments and other Grants given by the State Government to Municipalities of the States. However, it was noticed that the Government of NCT of Delhi had accepted the recommendations of the Third Delhi Finance Commission and accordingly accepted transfer of funds to CB Delhi to the tune of 0.07 per cent of net tax proceeds of the Delhi Government for a period of three years apart from education grant received every year.

2.1.3.5 Non recovery of service charges from Central Government Departments.

Section 109 of the Cantonments Act 2006 empowers the CBs to annually recover service charges from the Central or State Government for providing collective municipal services or development work in a cantonment where the Central or State Government properties are situated. The service charges are worked out by the CBs, based on the guidelines issued in this regard by the Central Government or State Government. Scrutiny of records in the DGDE revealed that:

- An amount of ₹10521.39 crore was outstanding (31 March 2014) against the Ministry of Defence on account of arrears of previous years demands raised by the CBs in respect of the Defence properties located within the 62 CBs, out of which an amount of ₹311.00 crore was outstanding in respect of test checked 17 CBs.
- In addition, an amount of ₹40.83 crore was outstanding against two Central Government Organisations viz ₹13.03 crore against Indian Railways in respect of CBs Ramgarh, Meerut and Wellington and ₹27.80 crore against Indian Institute of Sugarcane Research, Lucknow in respect of CB Lucknow.

To an audit query in this regard, the DGDE did not furnish any reply (August 2015). CEO CB Ramgarh stated (April 2015), that in spite of repeated reminders, there was no response from the Railway authorities. CEO CB Wellington stated (February 2015) that the Railways refused to pay the amount stating that most of the buildings were in dilapidated condition except for the railway station.

2.1.3.6 Under generation of revenue by the CBs

As per Section 66 (1) of the Act the Board is empowered to levy a) property tax and b) taxes on trades, professions, callings and employment. It is also empowered to levy taxes imposed by the neighbouring Municipality.

Scrutiny of records in the test checked 17 CBs revealed that the CBs were unable to generate revenue through taxes and non- taxes *etc.* due to following reasons:

- Non-revision of property tax every five years;
- Recovery of property Tax at a lower rate than the stipulated rate.
- Non-levy of Vehicle Entry Tax;

A few illustrative cases noticed in audit are indicated below:

➤ Non-implementation of revised rates of taxes

As per Section 66 (2) of the Act, the CB may impose any tax which under any enactment for the time being in force may be imposed in any Municipality in

the State in which cantonment is situated provided that the CB shall revise every five years the rates of property tax, taxes on trades, professions, callings and employment taxes.

- Scrutiny of records of the test checked CBs revealed that except for CBs Ranikhet and Dalhousie, none of the other CBs had revised taxes in the past five years.
- CB Dehradun had not revised Property Tax since 1982, CB Lucknow since 1953, CB Meerut since 1941, CB Ramgarh since 1947, CB Ahmednagar since 1990, CB Barrackpore since 2001, CB Clement Town since 1990, CB Danapur since 1998, CB Khasyol since 2009, CB Pachmarhi since 2008, CB Shillong since 1945, CB Chakrata since 1971, CB Lansdowne since 1989 and CB Jalapahar since 1989.
- It was further observed that though CB Ahmednagar had approved (October 2013) revision in the rate of Consolidated Property Tax (CPT) from 20 to 23 *per cent* for the residential properties, but the same was not implemented (November 2014) resulting in loss of revenue of ₹51.17 lakh due to collection of tax at old rates.

In reply, the CEO CB Ahmednagar stated (November 2014) that the proposal regarding revision of tax was referred to PDDE Southern Command for MoD's approval and would be implemented on receipt of the approval.

- CB Shillong resolved (June 2010) to revise the trade and professional tax from a uniform rate of ₹50 (irrespective of the types of trades and professions) to rates ranging between ₹250 and ₹2500 for different trades and professions. The proposal was forwarded (July 2010) to the PDDE, Eastern Command for vetting by the Ministry of Law, Government of India, which was yet to be approved, thus resulting in loss of revenue of ₹17.60 lakh during the period 2011-12 to 2013-14 due to collection of tax at old rates.

In reply, the CEO CB Shillong stated (December 2014), that the proposal for revision of Trade and Profession Tax was forwarded for approval to the higher authority which was still awaited.

Thus though the CBs were empowered to revise the taxes under the Section 66 (2) of the Cantonments Act 2006, the replies indicate that the same was not done and the CBs continued to impose taxes at old rates.

➤ **Unjustified reduction in the Annual Rateable Value (ARV) of properties resulted in under generation of revenue of ₹4.10 crore**

As per Section 73 of the Cantonments Act 2006, the ARV of a property is assessed as one twentieth of the sum of estimated cost of building and land or gross annual rent by the CB. The Consolidated Property Tax (CPT) is levied as a percentage of the ARV, so arrived at. Section 73 (b) of the Act empowers the President CB (PCB) to fix the ARV, in exceptional circumstances, at any less amount which appears to him to be just.

- We observed in CB Ahmednagar that during the assessment years 2004-07 and 2007-10, the President CB (PCB) Ahmednagar had drastically reduced the ARV of all the properties arrived at as per Section 73, without indicating the exceptional circumstances which merited reduction in ARV. As a consequence CB Ahmednagar suffered a revenue loss of ₹3.72 crore on account of less recovery of CPT.

In reply, the CEO CB Ahmednagar (November 2014) stated that as per provisions of Section 76 of the Act, the CB conducted hearing of the objections received and after the discussion with owners of the property, the ARV was fixed but the minutes of the meeting were not prepared.

The reply indicated that there were no records to justify the reduction in the ARV by the PCB.

- In CB Wellington, the President CB, in 139 cases of new constructions, reduced the ARV for the assessment period 2008-2011 without indicating any reasons. As CPT is calculated as a percentage of the ARV, the reduction in ARV resulted in revenue loss of ₹38.12 lakh on account of less recovery of CPT.

In reply, the CEO CB Wellington stated (February 2015) that initial fixation of ARV was done as per the provisions of the Act. The same was reduced as most of residents belonged to lower middle class and had built the houses for self-occupation through bank loans.

The reply was not relevant as taking of bank loans for construction of the self-occupied houses did not entitle the residents for levy of taxes at lower rates.

- In CB Danapur, the ARV in respect of 1743 holdings had been fixed between 0.046 *per cent* and 19.88 *per cent* of the ARV, calculated as per the provisions of Section 73 of the Cantonments Act 2006. Though the CPT was being levied at the maximum limit of 30¹² *per cent* in accordance with the Act, the amount of CPT recovered was very less since the ARV fixed by the CB, itself was very less. The, fixation of ARV on abnormally lower side had resulted in loss of ₹8.44 crore during the period 2009-10 to 2013-14.

In reply, the CEO CB Danapur stated (October 2014) that triennial revision of assessment for the period 2013-16 was in process and efforts were being made to increase the ARV as per the area and value of the area of a house in a particular locality.

➤ **Recovery of property tax at a lesser than the stipulated rate resulted in revenue loss of ₹29.16 lakh in CB Ramgarh**

As per section 68 of the Cantonments Act 2006, the Property Tax is levied on lands and buildings in the Cantonment and consists of not less than 10 *per*

¹²House Tax-12.5 per cent, Conversancy Tax-4.5 per cent, Water Tax-10 per cent, Light Tax-three per cent

cent and not more than 30 per cent of Annual Rateable Value of lands and buildings.

Scrutiny of records at CB Ramgarh revealed that CPT was being levied at 8.5 per cent instead of the minimum stipulated rate of 10 per cent. It was further observed that though the CB in September 2011 resolved to enhance the rate of property tax from 7.5 to eight per cent of ARV and lighting tax from one per cent to two per cent of ARV, to bring it to the minimum rate of 10 per cent, the same was not implemented and CB continued to recover the CPT at the pre revised rate of 8.5 per cent till 2013-14. This resulted in loss of revenue of ₹29.16 lakh during the period 2009-10 to 2013-14.

➤ **Non-levy/non-revision of Vehicle Entry Fee/Tax (VEF/VET) on entry of vehicles in the Cantonment Area**

Section 67(e) of the Cantonments Act 2006 stipulates that the Board shall charge License Fee on entry of vehicles in Cantonment area.

Scrutiny of the records of the test checked CBs revealed that VEF/VET/Toll Tax had been levied by CBs Dehradun, Lucknow, Meerut, Ahmednagar, Barrackpore, Khasyol, Pachmarhi, Ranikhet, Chakrata and Dalhousie. The remaining seven CBs had not levied this Tax/Fee.

We observed in audit that non-levy and non-revision of Vehicle Entry Tax/License Fee in the cantonment areas by the CBs Danapur, Ramgarh, Ahmednagar and Wellington had resulted in revenue loss of ₹43.15 crore, as detailed below:

- CB Danapur carried out a field survey of vehicles in July 2009 for assessment of the average number of vehicles passing through the cantonment. The data was used to arrive at the estimation of the potential total fee that could be collected by imposition of the Vehicle Entry Fee.

However, levy of VEF was not implemented by the CB resulting in non-generation of revenue to the extent of ₹37.53 crore from August 2009 to March 2014.

The CEO CB Danapur accepted (October 2014) that there was delay in imposing the VEF and levy of the same was in the process of implementation.

- CB Ramgarh, to augment its revenue, resolved (October 2007) to impose license fee on entry of vehicles within the limits of CB Ramgarh. However, the CB had not imposed (February 2015) VEF on entry of vehicles in the cantonment limits.

In reply, the CEO CB Ramgarh stated (February 2015) that the cantonment roads provide only inter connection of all wards/mohallas to National Highway and imposing VEF on Cantonment road would not be economical.

The reply was not tenable as the CB in October 2007 itself had resolved to levy VEF for entry of vehicles within the Cantonment limit.

- CB Ahmednagar decided (February 2007) to impose vehicle entry fee and called tenders for collection of Vehicle Entry Tax at the existing minimum reserve price of ₹3 crore and Vehicle Entry Fee at the minimum reserve price of ₹12 crore. CB Ahmednagar referred (March 2007) the case to PDDE SC for the imposition of VEF instead of Vehicle Entry Tax from April 2007. The CEO CB Ahmednagar recommended (February 2009) to PDDE SC that till introduction of VEF, the existing contract for collection of Vehicle Entry Tax (VET) be continued to avoid loss of revenue to the CB. Accordingly, CB Ahmednagar entered (February 2009) into an agreement with a contractor for collection of VET for the period from 01 April 2009 to 31 March 2010 for an amount of ₹3.56 crore. The contract stipulated a provision that, if VET was not abolished before the expiry of contract, then the contractor will continue with the contract agreement with an increase of 10 *per cent* per year. We observed that neither the decision regarding imposition of VEF was taken by the PDDE SC, nor had the CB implemented the contract condition regarding increase of contracted amount of VET by 10 *per cent* each year. As a result, the CB suffered revenue loss of ₹3.98 crore during 2010-11 to 2013-14.

In reply the CEO, CB Ahmednagar stated (November 2014) that the matter of contract agreement was under litigation and therefore the CB could not take decision in this regard.

Though the matter was under litigation in a Lower Court since June 2010, CB Ahmednagar did not take appropriate action to resolve the issue till date.

- CB Wellington resolved (November 2009) to levy licence fee on the vehicles (VEF) entering in the cantonment limits, at eight entry points, including two entry points on National Highway. The CEO, CB Wellington issued (February/March 2010) tenders for collection of VEF during 2010-11 and the highest bid of ₹41 lakh per annum was considered acceptable. Though a contract agreement was not entered into, but on the written instructions of the CEO, the contractor deposited (March 2010) ₹14.35 lakh on account of 25 *per cent* of the bid amount and security deposit. In the meantime (December 2009) the National Highway Authority of India (NHAI) objected to levy of licence fee on the National Highway. The CEO CB Wellington on request of the Collector, Nilgiris district, asked the contractor (April 2010) to stop the collection of VEF on the National Highway points and to proceed with the collection at other points. The contractor collected the Vehicle Entry Fee at other entry points excluding National Highway during the period April 2010 to March 2012. However there was no collection of VEF since April 2012. We observed that no action had been taken by the CB thereafter, to collect the VEF at other six points within the

cantonment and that the matter regarding imposition of VEF at National Highway was pending with the Ministry resulting in loss of revenue of ₹1.64 crore during the period 2010-11 to 2013-14.

In reply the CEO CB Wellington stated (February 2015) that though the matter for imposition of VEF was placed before the CB in June 2014, no decision was taken by the Board.

➤ **Delay in allotment of Cantonment stalls by CB Wellington**

Scrutiny of records in CB Wellington revealed that there was delay, ranging between 18 to 30 months, in allotment of shops resulting in loss of revenue amounting to ₹77.41 lakh on account of non-realisation of rent.

In reply (March 2015) the CEO CB Wellington simply furnished chronology of events without justifying the delay.

2.1.3.7 Imprudent utilisation of funds amounting to ₹1.35 crore on maintenance of a State Highway

The DGDE circulated (December 2005) guidelines for maintenance of roads in the cantonments, including MES roads, on which the public have the right of way. As the guidelines were silent about maintenance of National Highways or State PWD roads passing through the cantonment areas, the PDDE SC requested (December 2006) the DGDE to issue necessary guidelines as to whether the CBs could undertake repairs of such roads within their jurisdiction. We observed that the same were not issued by the DGDE.

Scrutiny of records at CB Ahmednagar revealed that Station Commander, Ahmednagar approved (February 2007) the handing over of 2.2 Km of Jamkhed Road (JK Road), State Highway, from MES to CB Ahmednagar for repairs and maintenance purposes. MES who had been maintaining the said road till then issued a certificate (April 2007) to the effect that MES had no objection in carrying out repairs and maintenance of the said stretch of JK Road by CB Ahmednagar, for the next three years up to April 2010. We observed that though the guidelines for maintenance of State Highways had not been received, but the CB incurred an expenditure of ₹1.35 crore on maintenance (2009-2014) of the said road, which included an expenditure of ₹93.93 lakh for the period 2010-11 to 2013-14, which was beyond the three years period for which the road was handed over to CB by the MES for maintenance.

In reply the CEO CB Ahmednagar stated that the expenditure of ₹93.93 lakh on maintenance of JK Road was incurred on the approval of the Board.

The reply is not acceptable, as no guidelines regarding maintenance of State Highways by the CBs, had been issued by the DGDE. Moreover, decision of the CB to maintain the Highway was not prudent as the CB was dependent on the Grants-in-aid received from MoD, for its functioning.

2.1.3.8 Non maintenance of Cantonment Development Fund Account

Section 119(1) of the Act stipulates that a Cantonment Fund will be formed by every CB into which all sums received by or on behalf of the Board will be credited including balance if any of the Cantonment Fund. Section 119 (2) of the Act stipulates that a separate Cantonment Development Fund shall be operated by the CBs and all sums (i) received from the Central Government or the Government of any State by way of contributions, grants, subsidies or by any other way for the implementation of any specific scheme or for the execution of any specific project (ii) received from any individual or association of individuals by way of gift or deposit; and (iii) raised or borrowed for the execution of specific development projects, is to be credited to the said account. Section 120 of the Act further stipulates that Cantonment Fund and the Cantonment Development Fund shall be kept in separate accounts.

Scrutiny of records in the test checked CBs revealed that only CB Ahmednagar, Wellington Lucknow, Ranikhet, Lansdowne and Pachmarhi had operated a separate Cantonment Development Fund for the said purpose, whereas CBs Ramgarh and Dehradun did not maintain the account though both the CBs had received special Grant-in-aid in the year 2012-13 and 2012-2014 respectively. CBs Shillong, Clement Town, Danapur, Chakrata and Dalhousie did not maintain the account at all.

2.1.4 Management of Assets

The Ministry of Defence (MoD) holds over 17 lakh acres of land out of which about two lakh acres of such lands are situated within the notified cantonments. The lands are of different need based classification and are occupied by the Armed Forces, Central and State Government organisations, civilian population, *etc.* The Defence lands are classified as A1, A2, B1, B2, B3, B4 and C. The management of only Class 'C' land lies with the CBs, which includes acquisition of land and eviction of encroachments from land, by invoking Public Premises Eviction (PPE) Act 1971.

2.1.4.1 Land record management

One of the important aspects of the land management is related to proper demarcation, verification and periodic survey of the land. Accordingly the Government approved the proposal (February 2011) of the DGDE for Survey, Demarcation and Verification of all Defence lands. The responsibility for the survey, demarcation and verification of lands inside the cantonments was that of the CBs. Further, the CEOs of the CBs were directed to verify the existing records *i.e.*, General Land Register plan (GLR) and GLR entries with actual physical verification and authenticate the same.

- Test checked 17CBs informed that the ground survey work had been completed by the agencies to whom the work was outsourced (M/s Wapcos Ltd, IIT Roorkee, IIT Kharagpur, Gautam Budha Technical University Lucknow, Maulana Azad National Institute of Technology,

Bhopal) but the survey reports were yet to be finalised in respect of CBs Ahmednagar, Meerut, Chakrata, Barrackpore, Danapur, Ramgarh, Shillong, Lucknow, Pachmarhi, Jalapahar, Wellington and Ranikhet.

- The survey of land records was not carried out by CB Khasyol, Dehradun and Clement Town as CB Khasyol had no land and GLRs in respect of CBs Dehradun and Clement Town were maintained by Defence Estate Officer.

In reply, the CEOs CB Ahmednagar and Barrackpore stated (in November 2014 and February 2015 respectively) that action regarding rectification of draft final report was in hand. The CEO CB Ahmednagar further confirmed that the annual verification of its boundaries could not be carried out for the past five years.

Thus the fact remains that verification and authentication of land records of the CBs was yet to be completed.

2.1.4.2 Delay in computerisation of land records

As per the directions (August 2006) of Rajya Raksha Mantri, the CBs and Defence Estates Offices were instructed to complete the computerization of land records by March 2007. DGDE intimated (September 2006) the PDsDE, that a software named 'Raksha Bhoomi' had been developed for computerisation of Defence land records.

The test checked CBs reported that the Raksha Bhoomi software had been implemented in all the CBs. However, a test check in CBs Ahmednagar and Wellington revealed that certain errors, pointed out by the two CBs, were yet to be rectified.

Thus, the computerization of land records, which was required to be completed by March 2007, was yet to be completed by these two CBs.

2.1.4.3 Encroachment of Class 'C' Land under Cantonment Boards

Each CB is responsible for detection and removal of encroachments on the land vested in it and prompt action is to be taken to remove the same.

Scrutiny of records in the test checked CBs revealed that there were 3184 cases of encroachment of Class 'C' land under the control of CBs Ahmednagar, Wellington (five cases), Meerut, Chakrata, Pachmarhi and Barrackpore, by private parties. It was also observed that there was no land with CB Khasyol and assets of the CB had been created on A-1 Defence land.

- In CB Meerut, out of total 2320 cases (39 cases of less than five year, 87 cases of more than five years, 404 cases more than 10 years and 1790 cases of more than 20 years) of encroachment covering an area of 13.3799 acres of land, 32 cases were sub-judice. In remaining cases no penalty had been imposed by the CB.

- In CB Pachmarhi, there were 525 cases of encroachment covering an area of 11.40 acres of land for the past more than 13-14 years. Though notices under PPE Act 1971 had been issued for eviction of encroachments, no concrete result had been achieved.
- In CB Ahmednagar, Defence land measuring 3655.18 sm, was encroached by 205 (nine cases of less than five years, 14 cases of more than five years, 168 cases more than 10 years and 14 cases more than 20 years) inhabitants from the period 1992 onwards including slum area occupied by 155 dwellers, It was also seen that instead of taking action against the encroachers, a resolution was passed to provide essential civic amenities in slum area.

In reply, the CEO CB Ahmednagar stated that notices were issued to the encroachers to remove the encroachment within 30 days. However in 19 cases the encroachers obtained stay orders. In 31 cases the removal action was pending and in the remaining 155 cases removal action was pending due to political interference.

- In CB Chakrata, it was noticed that CB had been forwarding nil report to the PDDE Lucknow regarding encroachments, though 89 notices had been issued by the CB for removal of encroachments. Reasons for discrepancy called for by audit, had not been received.
- In CB Barrackpore, there were 40 cases (three cases of less than five year, four cases of more than five years, 17 cases more than 10 years and 16 cases of more than 20 years) of encroachment covering an area of 0.2326 acres of land.

In reply CEO CB Barrackpore stated that notices had been issued to the encroachers under PPE Act 1971.

2.1.4.4 Unauthorised constructions

As per Section 248 of the Act, the Board (CB) may, at any time, by notice in writing, direct the owner, lessee or occupier of any land in the cantonment to stop the erection or re-erection of a building and direct the alteration or demolition, of the building, or any part thereof.

Scrutiny of records in the test checked CBs revealed that there were 9557 cases of unauthorised constructions in CBs Meerut, Lucknow, Pachmarhi, Barrackpore, Ahmednagar, Wellington and Chakrata.

- In CB Meerut, out of total 7822 cases of unauthorised constructions, 1018 cases were outstanding for less than five years, 851 cases for more than five years, 915 cases for more than 10 years and 5038 cases for more than 20 years.

In reply CEO CB Meerut stated that most of the cases were sub-judice and there were no new cases of unauthorised constructions during the past two years.

- In CB Lucknow, total 739 cases of unauthorised constructions were outstanding for more than 20 years. However the CB did not furnish any reply on the status of these cases.
- In CB Barrackpore there were 454 cases of un-authorised constructions spanning between 1983 and 2014.

In reply CEO CB Barrackpore stated that action as per Cantonment Act had been taken.

- In CB Ahmednagar, out of total 259 cases of unauthorised constructions, 48 were outstanding for less than five years, 26 cases for more than five years, 85 cases for more than 10 years and 100 cases of more than 20 years. Out of these cases six had applied for regularisation, 84 cases were sub-judice and in remaining 169 cases, notices had been issued.
- In CB Pachmarhi, total 174 cases of unauthorised constructions were outstanding, of which 16 cases were pending in court and in 158 cases, regularisation of unauthorised constructions had been applied for by the concerned people.
- In CB Wellington, out of total 85 cases of unauthorised constructions, seven were outstanding for less than five years, 49 cases for more than five years, 28 cases for more than 10 years and one case of more than 20 years. Out of these cases, 41 had applied for regularisation and in the remaining 44 cases notices had been issued.
- In CB Chakrata, total 24 cases of unauthorised constructions were pending for more than 20 years and were subjudice. CEO CB Chakrata also confirmed that there were no court cases in respect of unauthorised constructions.

2.1.4.5 Construction of shops by Ahmednagar CB at a cost of ₹32.40 lakh on B 4 land without the approval for reclassification as class C land

As per Rule 7 of the Cantonment Land Administration Rules (CLAR) 1937, no alteration in the classification of land which is vested in the Government or in the Board shall be made except by the Central Government or by such other authority as they may empower in this behalf.

Rule 43 (ii) of these Rules stipulates that the management of the land entrusted to the Board shall be subject to the condition that the Board shall have no power to occupy or use the land for the purposes of the Act or for its own purposes without the sanction of the Central Government; but that land required for the aforesaid purposes shall be transferred to class 'C' and vested in the Board by the Central government in accordance with the provisions of CLAR.

We observed that in contravention to these provisions, CB Ahmednagar in September and December 2002 constructed 34 shops on Class 'B-4' land, on self-financing basis, without getting the land re-classified as Class C under the

orders of the competent authority. The construction cost of these shops was ₹32.40 lakh, which was recovered from the allottees.

Subsequently, after more than 11 years since construction of these shops, the CB resolved (February 2014) to submit a proposal to higher authority for reclassification of the said land from Class 'B-4' to Class 'C'. However, we observed (November 2014) that the case was not forwarded to the higher authority.

Conclusion

CBs, having been given the status of Municipalities, provide civic amenities to the personnel residing in the cantonments. No town planning schemes and plans for economic development and social justice were undertaken by any of the CBs. Though, as per the Cantonments Act 2006, every CB was required to provide 24 types of services, none of the test checked CBs were providing all the mandated services. Even, the Central Government schemes, that were in operation in the adjoining municipalities and applicable in the eligible CBs as well, had not been implemented. Further, due to absence of norms for providing medical and educational facilities based on the population, there was a disparity in the kind and strength of hospitals and schools provided in different Cantonments. The Budget Estimates prepared by the CBs were unrealistic and in spite the availability of funds, the CBs had failed to utilise the funds for rendering the services. CBs were unable to generate revenue through taxes and non-taxes due to non-revision of property tax every five years, recovery of property tax at a lower rate than the stipulated rate and non-levy of Vehicle Entry Tax, though the CB were empowered to do so, leading to loss of revenue and increased dependency on Grant-in-aid from the Ministry of Defence. Accumulation in cases of encroachment and unauthorised constructions revealed lack of effective action on the part of CBs to safeguard Government property.

2.2 Non-availability of Specialised Parachutes

Parachutes Special Forces Battalions of Indian Army were not having parachutes for over a decade. The parachute developed by DRDO in 2006 could not be productionised successfully. An expenditure of ₹10.75 crore incurred on its development and production had become unfruitful.

Combat Free Fall (CFF) Parachutes are authorised for Parachutes (PARA) Special Forces (SF) personnel which are required during highly specialized operations and are vital to the success of the mission. CFF Parachutes had been procured in 1986, through import, with shelf life of 10 years and commissioned out of service in 2002 being no longer operational worthy.

In 2001, against total authorised quantity of 1,031 CFF parachutes Army initiated a proposal to the Ministry of Defence (MoD) for procurement of 410 parachutes under Fast Track Procedure¹³ (FTP) through Foreign Military Sale¹⁴ (FMS) route to meet inescapable operational requirement. For the balance quantity of 621 parachutes, a project for development of an indigenised CFF parachute was taken up by ADRDE¹⁵ (DRDO) in March 2003. However, the case for procurement of the parachutes through FMS route was foreclosed in 2006 by MoD suggesting that these parachutes be procured from indigenous sources. Trials of CFF parachutes developed by DRDO were completed between March and November 2006 and found successful. Based on successful development of the same, TOT to manufacture the parachutes was given to Ordnance Parachutes Factory (OPF), Kanpur. The MoD placed Supply Order (SO) in October 2008 on OPF, Kanpur at a total cost of ₹55.35 crore for 700 CFF parachutes. As per SO, OPF, Kanpur was to deliver a pilot sample of 40 parachutes within six to eight months of placement of SO for validation trials, which were to be completed within five months of receipt of sample. Bulk Production Clearance (BPC) was to be given to OPF, Kanpur after successful validation of sample parachutes. Within two months of giving BPC, supply of balance 660 parachutes was to commence at the rate of minimum 50 parachutes per month.

We observed that the pilot samples of 40 parachutes were handed over to Army in April 2010 and the trials conducted between May 2010 and November 2010. The Trial team found a number of shortcomings¹⁶, which were of serious life threatening implication. Notwithstanding the same BPC was accorded in July 2011 with the condition that initial sets of two consignments of 25 parachutes each would be test checked to confirm quality control before bulk supply. The first 25 CFF parachutes were provided by OPF, Kanpur in August 2014, out of which only seven parachutes passed the validation trials (October 2014). In respect of delivery of another set of 25 parachutes for validation trials, OPF Kanpur stated (November 2014) that

¹³ FTP is a procedure to ensure expeditious procurement of urgent operational requirements foreseen as imminent or for a situation in which a crisis emerges without prior warning.

¹⁴ Foreign Military Sales (FMS) is a programme of US department of defence which facilitates sales of U.S. arms, defense equipment, defense services, and military training to foreign governments.

¹⁵ ADRDE – Aerial Delivery Research and Development Establishment, Agra, a DRDO's lab.

¹⁶ Substandard quality of material, waist belt and Tightening straps slipping need more incorporation of cotton yarn ratio in belt, asymmetric stitching and rupturing connectors and rubber bands of poor quality

delivery would be delayed due to limited/non availability of fabric. The same were yet to be delivered (June 2015). Failure of 18 parachutes out of 25 parachutes (75 per cent) in validation trials of pilot consignments raises questions on initial user trials held between March 2006 and November 2006 after development of CFF parachute by DRDO at a cost of ₹2.28 crore. The OPF Kanpur however incurred expenditure of ₹7.97 crore for manufacture of the parachutes which failed in validation trial and not accepted by the user.

Meanwhile in January 2008, Indian Air Force concluded a contract for procurement of C130J30 aircrafts which also included purchase of 600 CFF parachutes under FMS route. Out of this procurement, 400 parachutes were given to Army in January 2013.

The case reveals that despite urgent requirement of CFF parachutes for the troops since 2001, the Ministry neither procured them through FMS route nor through indigenous sources till December 2012. This had resulted in non-availability of parachutes with the Army for immediate operational urgency over a decade. ADRDE and OPF Kanpur could not produce CFF parachutes in 12 years after incurring an expenditure of ₹10.75 crore resulting in shortage of 631 parachutes (61 per cent) with the Army.

The case was referred to the Ministry in March 2015; their reply was awaited. (September 2015).

2.3 Short recovery of interest on mobilisation advance

Mobilization advance, paid to contractors, contained interest at two different rates. However, the order in which the advance was to be recovered was not specified. Due to non-recovery of first ten per cent of the amount in the first instance, there was short recovery of interest of ₹1.06 crore in respect of 10 contracts pertaining to Director General, Married Accommodation Projects. Further, though the mobilization advance was to be utilised within five months and failing which, the Bank Guarantee furnished by the contractor was to be encashed, Bank Guarantee was not encashed in the contracts pertaining to Director General, Married Accommodation Projects though the advance was not utilised within the prescribed period.

Director General, Married Accommodation Projects enters into contracts with contractors for execution of various works. Clause 26.1 and 27.1 of Special Conditions of Contract stipulates that mobilization advance upto 15 per cent of the contract amount shall be given to the contractor if he so desires and on specific written request on production of a non-revocable Bank Guarantee. The rate of interest shall be eight per cent per annum simple interest for mobilization advance upto 10 per cent of the contract amount and 10 per cent per annum simple interest for the balance five per cent mobilization advance. Clause 26.2 and 27.2 stipulated that mobilization advance shall be given in one instalment and shall be paid to the contractor within 30 days of acceptance of bank guarantee for corresponding amount. Audit observed the following:

I. Non-specifying the order of recovery of interest in the Contract

As stated above, mobilization advance carried simple interest at the rate of eight *per cent* per annum for advance upto 10*per cent* of the contract amount and 10*per cent* per annum for the balance five *per cent*. However, the contract did not specify the order in which the interest was to be recovered. Audit contends that since the conditions stipulate rate of interest for the 10*per cent* of the contract amount first, this should be recovered first and balance amount of mobilization advance recovered after the recovery of 10*per cent* of the contract amount. Due to non-recovery of 10*per cent* of the contract amount first, there was a short recovery of interest amounting to ₹1.06 crore in 10 contracts pertaining to Director General, Married Accommodation Project reviewed by Audit as detailed in **Table-11** below:

Table-11*(₹in crore)*

Sl. No	Contract Reference	Contractor	Contract Amount	Mobilization Advance Paid	Interest to be recovered	Interest recovered	Difference
1	DGMAP/PHASE -II/PKG 24/21 of 2010-11	M/s Omaxe Infrastructure and Construction Limited, New Delhi	99.41	14.91	1.54	1.45	0.09
2	DGMAP/PHASE -II/PKG 24/21 of 2010-11	M/s Omaxe Infrastructure and Construction Limited, New Delhi	36.45	5.47	0.60	0.56	0.04
3	DGMAP/PHASE -II/PKG 23/A/15 of 2010-11	M/s DSC Limited, Gurgaon	94.82	14.22	1.41	1.20	0.21
4	DGMAP/PHASE -II/PKG 23/A/15 of 2010-11	M/s DSC Limited, Gurgaon	14.08	2.11	0.15	0.13	0.02
5	DGMAP/PHASE -II/PKG 22/JODH (A)/18 of 2010-11	M/s Indu Projects Limited, Hyderabad	121.94	18.29	1.66	1.51	0.15
6	DGMAP/PHASE -II/PKG 37/17 of 2010-11	M/s GVR Infra Projects Limited, Chennai	47.62	7.14	0.70	0.66	0.04
7	DGMAP/PHASE -II/PKG 37/17 of 2010-11	M/s GVR Infra Projects Limited, Chennai	14.45	2.17	0.21	0.20	0.01
8	DGMAP/PHASE -II/PKG 37/17 of 2010-11	M/s GVR Infra Projects Limited, Chennai	28.52	4.28	0.41	0.39	0.02
9	DGMAP/PHASE -II/PKG 21/01/02 of 2010-11	M/s Apex Econ Projects, New Delhi	127.51	19.13	2.01	1.83	0.18

Sl. No	Contract Reference	Contractor	Contract Amount	Mobilization Advance Paid	Interest to be recovered	Interest recovered	Difference
10	DGMAP/PHASE-II/PKG 36NAVY/16 of 2009-10	M/s Nagrjuna Construction Company, Hyderabad	301.26	45.19	3.80	3.50	0.30
					12.49	11.43	1.06

Controller of Defence Accounts (CDA), Secunderabad and Principal CDA, Pune replied (August 2013/November 2013) that it was not mentioned as to which amount was to be recovered first.

The reply is not acceptable since the conditions stipulate the rate of eight *per cent* for the amount equivalent to 10*per cent* of the contract amount and 10*per cent* for the balance amount thereby implying the amount for which eight *per cent* rate of interest was applicable should be liquidated first.

II. Non-encashment of Bank Guarantee for failure to utilise the Mobilization Advance within the time stipulated in the contract

As per Clause 27.8 Special Conditions of Contract, the mobilization advance would be utilised within a period of five months from date of payment of advance and in case mobilization advance was not being used for the purpose intended, Director General could encash the bank guarantee submitted against the mobilization advance. Audit observed that in the following four contracts (**Table-12**), the Mobilization Advance was not utilised within the stipulated period of five months:

Table-12

(₹ in crore)

Sl. No.	Contract Reference	Contract Amount	Advance	Date of Payment	Work done after five months after payment of Mobilisation Advance
1)	DGMAP/PHASE-II/PKG 24/21 of 2010-11	99.41	14.91	02-May-11	3.96
2)	DGMAP/PHASE-II/PKG 24/21 of 2010-11	36.45	5.47	19-Apr-11	1.01
3)	DGMAP/PHASE-II/PKG 23/A/15 of 2010-11	94.82	14.22	22-Mar-11	7.94
4)	DGMAP/PHASE-II/PKG 23/A/15 of 2010-11	14.08	2.11	22-Mar-11	0.52

However, the bank guarantee furnished was not encashed though the advance was not utilised within the stipulated period. Non-encashment of bank guarantee resulted in the amounts lying with the contractors thereby resulting in undue benefit.

PCDA, Pune stated (November 2013) that since the bank account showing the utilisation of advance was not being submitted by the contractors to their

office, the responsibility to ensure proper utilisation of advance rests with Project Managers/DG, MAP.

The reply is not acceptable since PCDA, Pune was to insist and ensure that bank account details of advance paid was enclosed to each RAR and ensure that interests of the Government money was safeguarded. The fact remains that non-encashment of the bank guarantee despite failure to utilise the advance resulted in the funds remaining with the contractors which tantamount to undue benefit to contractors.

The matter was referred to Ministry in June 2015; their reply is awaited (September 2015).

CHAPTER III : ARMY

3.1 Functioning of Army Aviation Corps

" For the contents of this paragraph/report, printed version of the relevant report may be referred to"

3.2 Shortfall in availability of BMP vehicle in Indian Army

" For the contents of this paragraph/report, printed version of the relevant report may be referred to"

3.3 Unwarranted procurement of Image Intensifier Sight for Commander of Tank T-55

Image Intensifier Sights valuing ₹22.12 crore for Commander of Tank T-55 were procured between February 2011 and June 2013 after the tank being declared obsolescent in December 2011.

Defence Procurement Procedure 2002 stipulates that in order to cut down the delays in procurement of equipment and to ensure that the procurement system is more responsive to the needs of Armed Forces, time frame for completion of different procurement activities should be made. Further, as per Army Order (AO) 14/94, when the status relating to Service Stores/Equipment is declared 'Obsolescent' (OBT), no further provisioning of the same will be made.

We noticed during audit of Central Ordnance Depot (COD), Agra in October 2012 and further examination in November 2013 that Integrated Headquarters (IHQ) of Ministry of Defence (MoD), Army took more than 10 years in procurement of an equipment³² (432 numbers) for Tank T-55 by which time,

³¹ $[1,666/3,150]*100=52.89$ (Approx 53 per cent)

³² Z 7 1ZG-1282 Sight Periscope Commander AV, NVD passive (T-55)

the Tank was declared OBT and would be retained in service till 2018-19 only as per de-induction plan.

The case is discussed below: -

Tank T-55 were inducted in Indian Army between 1966 and 1988. As per de-induction schedule, all the Tank T-55 inducted between 1971 to 1988 are to be de-inducted by 2018-19. A need was felt (August 2002) to equip the Commander of 455 numbers Tanks T-55 with an Image Intensifier (II) based night vision device (sight) to enable him to direct the gunner to engage targets at night. Based on request for proposal issued in August 2002 and users trial conducted in December 2002 and March 2003, the Binocular Sight of Opto Electronics Factory (OLF) Dehradun was found successful. Commercial Negotiation Committee (CNC), in their meetings in July 2006, *i.e.*, after a gap of nearly four years recommended procurement of 455 numbers II Sight for Commander of T-55 Tank from OLF Dehradun with revised price of ₹5.12 lakh per unit. The original price quoted in bid of September 2002 was ₹1.87 lakh per unit. Directorate General of Ordnance Services, Army HQrs, New Delhi placed an indent on OLF, Dehradun in February 2007 for procurement of 455 numbers of II Sight at a total cost of ₹23.30 crore (cost per unit ₹5.12 lakh), which were to be consigned to COD, Agra by June 2008. However, no equipment was delivered by OLF, Dehradun by due date of delivery. It was decided in February 2009 that OLF, Dehradun would deliver 455 commander sight by December 2009 in spite of suggestion of the Army regarding not to extend the delivery period as T-55 Tanks were likely to be phased out shortly. However, OLF did not deliver any II Sights up to January 2011. In September 2012, ex-post sanction was accorded by MoD to regularise the last extension of delivery period up to December 2009 and further extended up to March 2013. However, IHQ of MoD (Army) in October 2013 short closed the contract and quantity amended to 432 numbers. Total 432 Commander Sights were received in COD, Agra from February 2011 to June 2013.

Meanwhile, 433 numbers Tanks were declared obsolescent in December 2011 and in terms of Army Order 14/94 no further provisioning of store/equipment for the tanks could be made. The entire population of OBT Tanks (433 numbers) held with the units would be phased out by 2018-19. Hence, procurement of 432 Sights which were to be used by the Commanders of T-55 tanks was not in consonance with AO 14/94 and therefore was injudicious. We observed that 180 Sights valuing ₹9.22 crore received between February 2011 and March 2012 were issued to user units between June 2013 and November 2013 against the OBT Tanks after this was pointed out by Audit in October 2012. Balance quantity of 252 sights valuing ₹12.90 crore received between April 2012 and June 2013 were still (April 2014) held in COD Agra awaiting demand from user units.

The matter was referred to COD Agra in June 2014 through the Factual Statement of case (FSC). COD in its reply of August 2014 stated that declaring an equipment OBT implies that further provisioning would be stopped. However existing indents would be continued with Ex Trade/ Directorate of indigenization in accordance with supplementary directive of IHQ of MoD of February 2014. COD further stated that in order to enable the

Army to effectively utilize these tanks, these night Sights were correctly procured.

The contention of COD was not tenable as OLF could not supply the Sights within original validity of indent and extension of delivery was granted in September 2012 after the tanks (433 numbers) were declared OBT in December 2011. Further Army had also suggested not to extend delivery period for T-55 Sights beyond December 2008 but the Sights were procured even after the due time frame when these were not required due to OBT status and de-induction plan of Tank T-55. Moreover, procurement pertained to the period prior to supplementary directive issued by the IHQ of MoD in February 2014. On verification of the utilization of the Image Intensifier sights in one of the Armoured Regiment it was noticed that out of 23 Image Intensifier sights issued to them without demand, 22 Image Intensifier sights were kept in store after its receipt.

Thus, delay of nine years in procurement of Image Intensifier Sight for Commander of Tank T-55 and non-cancellation of indent after the Tanks were declared OBT resulted in procurement of 432 sights worth ₹22.12 crore. Out of these 180 Sights worth ₹9.22 crore were issued to command units after the Tank T-55 were declared obsolescent and 252 sights worth ₹12.90 crore were held in stock as of April 2014.

The case was referred to Ministry in January 2015; their reply was awaited; (September 2015)

3.4 Excess procurement of stores

Failure of Master General of Ordnance to ascertain the requirements from Directorate General of Electronics and Mechanical Engineering before conclusion of contracts resulted in unwarranted procurement of stores valuing ₹5.95 crore. Though the firm was requested to reduce the quantities by MGO, the firm however did not entertain the request to reduce the quantity after conclusion of contracts

Procurement progressing Organization (PPO), which function under the control of Master General of Ordnance (MGO), Integrated Headquarters (IHQ) of MoD (Army) is responsible for procurement of all spares based on import indents raised by Central Ordnance Depots (CODs) and Ordnance Services (OS) Directorate. The demands are floated as Request for proposal (RFP) on Global Tender or single Tender basis.

We noticed in December 2012 that for procurement of spares for missiles and weapons *etc*, Commercial Negotiation Committee (CNC) meeting was held in February 2011 under the Chairmanship of DDG PPO. The members of CNC inter-alia included representative from DGEME, who accepted the criticality of the stock position of spares during the deliberations. As per the recommendation of CNC, two contracts, for different consignee locations were placed on M/S SFE, Ukraine, in December 2011 at the total cost of

Euro³³ 11.83 million (₹80.78 crore approx.) for supply of spares. However, after conclusion of the contracts, MGO Branch had approached DGEME in July 2012 with a request for vetting of requirement by the Equipment manager of the respective weapon system, for which spares were being procured. DGEME responded in July 2012, by reducing the quantities worth Euro 0.87 million (₹5.95 crore). Since the contract had already been concluded, even before the vetting of quantities from DGEME was solicited, MGO's Branch approached the firm in July 2012 to incorporate the changes in quantity and amend the contract accordingly. The firm however refused to make any amendments to the contracts stating that items were ready for delivery and advance payments had already been made by them to their plants. The firm completed supplies in full in respect of both the contracts and payment was made in November 2012.

Thus, seeking of quantitative requirement of spares from DGEME after conclusion of contract by MGO resulted in procurement of excess stores valuing ₹5.95 crore. In response to issues raised by Audit, though the IHQ of MoD (Army) stated (April 2015) that vetting requirement of stores after signing of contracts could have been avoided yet it differed with the observation that the spares procured were unwarranted. Excess procurement of spares was justified in the reply by stating that all the stores procured under the contract had been utilized and issued to sub depots/user units. It was also stated that all the stores procured were under Life Time Buy to sustain the equipment till 2025.

The reply furnished was not acceptable due to the following reasons:-

- MGO concluded the contract for higher quantities before ascertaining the quantitative requirement of stores from DGEME. Even at the CNC stage, DGEME did not object to the surplus quantities being procured, despite the fact that the contract was concluded after ten months of the CNC.
- Disposal of surplus spares procured by issuing them to Sub Depots /units cannot justify the excess procurement
- Issue of stores to depots is by no means an indication of their gainful utilization.

Thus, failure of MGO in ascertaining the requirement of spares from DGEME, before conclusion of contracts resulted in unwarranted procurement worth ₹5.95 crore.

The matter was referred to Ministry in March 2015; their reply was awaited (September 2015).

³³ 1 Euro = ₹68.28

3.5 Less deduction of Liquidated Damages.

While the procedure for levy of Liquidated Damages (LD) stated that LD at reduced rates was to be levied only if there is no loss caused to the State, yet the Army Purchase Organization invoked the condition without ascertaining the facts about the loss caused and thereby extended undue benefit to the defaulting contractors. In a test case, Audit found that loss had actually occurred.

General conditions of contracts as applicable to contracts placed by the Central Purchase Organization (DGS&D³⁴) of Government of India, prescribes that the Purchaser may recover from the contractor Liquidated Damages (LD) including administrative expenses and not by way of penalty a sum equivalent to 2 *per cent* of the price of any stores which the contractor has failed to deliver within the period fixed for delivery in the schedule for each month or part of a month, provided that the total damages so claimed shall not exceed 10 *per cent* of the total contract price.

Army Purchase Organization (APO), headed by the Chief Director of Purchase (CDP), is responsible for the central procurement of food stuffs, food grains, edible oils, malted items, *etc.*, for the Army. The payment responsibility of such procurement rests with the Principal Controller of Defence Accounts (PCDA), Headquarters (HQ), New Delhi. The Acceptance of Tenders (AT) by the APO is governed by the general conditions of contract placed by DGS&D.

Scrutiny of ATs and payment vouchers in respect of 32 procurement cases concluded between 2010-11 and 2013-14 at PCDA HQ revealed that supply of stores was delayed by the suppliers, thereby attracting levy of liquidated damages at the rate of two *per cent* per month under general conditions of contracts (DGS&D). We however observed that though there was a delay in supplies ranging from one months to eight months the same was regularized by the CDP by levy of LD at the reduced rate of 0.2 *per cent* per month. No justification for levying of LD at reduced rates was found on record. This had resulted in an undue favour and under recovery to the tune of ₹3.55 crore in respect of 32 procurement cases.

The issue of recovery of LD at the reduced rates of 0.2 *percent* against the provision of two *per cent* per month was taken up with APO (December 2014). In their reply, the APO stated (March 2015) that as per the current procedure which is based on legal advice, two *per cent* of the value can be claimed in case of actual loss. It was however stated that if no actual loss occurs, only nominal amount equivalent to ten *per cent* of the applicable rate *i.e.*, 0.2 *per cent* was to be levied. Claiming of LD at the higher rate without any evidence of loss would therefore not stand judicial scrutiny.

Notwithstanding the reply, we observed that while imposing the LD at the reduced rate of 0.2 *per cent* no evidence had been put forth by APO on record to establish that there was no loss caused due to delay in supplies. Imposing

³⁴ DGS&D: Director General of Supplies & Disposal

reduced rates was therefore not duly substantiated. On the contrary, we found during detailed examination of a sample case for procurement of Malted Milk Food which was contracted at a rate ranging from ₹143.46 to ₹174.84 per Kg in 2013, that due to failure in timely supply through APO, DGS&T had purchased the items locally to meet the immediate requirements of the troops at higher rates averaging ₹217 per Kg during the year. Hence, there was a loss caused to the State which establishes the contention that APO had not verified the facts about actual loss caused to the State and had thereby extended an undue benefit to the defaulting contractors by levying LD at a reduced rate. In the 32 cases referred above the effect of under recovery of LD worked out to ₹3.55 crore.

The matter was referred to the Ministry in March 2015; their reply is awaited (September 2015).

3.6 Non- installation of Hydraulic Test Benches

Four out of five Hydraulic Test Benches procured for MBT Arjun at a cost of ₹2.23 crore were lying idle since their procurement in November 2010 due to delay in creation of requisite infrastructure and in installation/commissioning of the equipment.

Master General of Ordnance (MGO) Integrated Headquarters of Ministry of Defence placed indent on Heavy Vehicle Factory Avadi (HVF) for procurement of Hydraulic Test Bench (HTB) to be installed in the repair workshops as a test facility of Gun Control System (GCS) of Main Battle Tank (MBT) Arjun. Accordingly HVF placed (April 2009) a supply order on M/S Leonardo Engineer Pvt. Ltd. Bangalore for procurement of five HTBs at a total cost of ₹2.79 crore. The consignee of HTBs was HVF Avadi.

HVF Avadi had intimated MGO and all identified units the detail of requisite infrastructure *i.e.* 415 volt AC supply and water supply for cooling arrangement anticipated in August 2009. Further complete drawing/specification of HTB to create facility for installation at user site were also communicated to all units in August 2009.

The equipment were supplied by the firm in November 2010 and weredespatched by HVF Avadi in October/November 2010 to Military College of Electronics and Mechanical Engineering, Secundrabad (MCEME) and four Army workshops at the Delhi Cantt. Jaisalmer, Jodhpur and Ahmednagar Payment amounting to ₹2.57 crore was made between March 2010 and May 2010 as per terms and condition of supply order.

Test check of records in 12 Corps Zonal Workshop, Jodhpur in February 2013, revealed that the Hydraulic Test Bench received in December 2010 was lying idle as the work for provision for infrastructure though approved in 2011-12 had not been executed. The Workshop however confirmed in January 2015 that though the infrastructure had been created, yet the equipment was not commissioned as the firm expressed its inability to do so till clearance of outstanding dues.

Further examination of installation and commissioning of the HTBs consigned to other four stations revealed that though the infrastructure had been created at all the four stations by September 2013, yet the equipment could be commissioned only at MCEME. The workshops at Delhi Cantt and Ahmednagar are awaiting installation, whereas at Jaisalmer the equipment has not been commissioned despite being installed in the workshop.

Thus, four HTBs procured at a cost of ₹2.23 crore could not be put to use (January 2015) ever since their procurement in November 2010 due to delay in creation of requisite infrastructure and in installation/commissioning of the equipment. The purpose of procurement was thereby defeated.

The case was referred to Ministry in January 2015; their reply was awaited; (September 2015)

3.7 Avoidable expenditure in procurement of Hi-Lo Beds.

Indecisiveness in having a Comprehensive Annual Maintenance Contract in procurement of Hi-Lo beds in the first call led to retendering, which had resulted in extra expenditure of ₹63 lakh in procurement of 1406 beds.

The Defence Procurement Manual (DPM-2009) stipulates that in case of Medical Equipment where five years warranty/guarantee is provided for, firms may be asked to quote Comprehensive Annual Maintenance Contract (CAMC) rates for five years on expiry of warranty period and these are to be loaded in Comparative Statement of tenders and taken into consideration while deciding the L-1 vendor. DPM further provides that evaluation criterion would be clearly indicated in the Request for proposal (RFP) in such cases.

The Director General, Armed Forces Medical Services (DGAFMS) invited (November 2011) open tenders duly incorporating above provisions on CAMC in the tender documents for procurement of 1406 Hi-Lo Beds as these were qualified as Medical equipment. The response was received from nine firms (December 2011) and out of which three firms were technically accepted (January 2012) by Technical Evaluation Committee (TEC). Out of the three technically qualified firms, only one firm namely M/s Surgicon Mediquip Pvt Ltd had quoted inclusive of CAMC at ₹5.31 crore and M/s Carevel System quoted lowest rate at ₹3.93 crore without CAMC. As the price bids did not meet the requirement of RFP/DPM about CAMC, retendering was resorted to in July 2012. This time response from fourteen firms was received. Out of these, three firms were found technically acceptable by the TEC.

M/s Hi-tech Metal & Medical Equipment Pvt Ltd was found the lowest (L-1) with quoted rates of ₹5.38 crore (including CAMC with spares) and ₹4.77 crore (without CAMC) in both the situations. M/s Dustech Engineers quoted ₹5.75 crore including CAMC and ₹5.10 crore without CAMC. M/s Janak Health Care quoted ₹8.49 crore including CAMC and ₹7.43 crore without CAMC. The Cost Negotiation Committee (CNC) meeting held on 2nd November 2012 with the technically qualified firms, however, recommended removal of the

CAMC clause from the Acceptance of Tender (AT) on the grounds that Armed Forces Medical Store Depots (AFMSDs) were the initial and ultimate consignee and beds were to be issued to various units in periphery as such repairs would not be required. The CNC decided exclusion of CAMC clause in violation of the provision of DPM.

The DGAFMS placed Acceptance of Tender in December 2012 on M/s Hi-tech Metal & Medical Equipments Pvt Ltd, New Delhi for supply of 1406 beds at a negotiated cost of ₹4.56 crore (excluding CAMC charges) to be delivered within 60 days *i.e.* upto 16.02.2013. However, the beds were supplied by the firm by April 2013.

While in the 2nd call, the rates of M/s Hi-tech Metal & Medical Equipment Pvt Ltd was accepted at ₹4.56 crore without CAMC in violation of provision of DPM yet in the first call lowest tender of M/s Carevel System for ₹3.93 crore was rejected due to non-quoting the CAMC rates. This resulted in extra expenditure of ₹63 lakh.

To an audit query (January 2013) regarding retendering due to non-quoting rates for CAMC by the lowest firm as per DPM provisions and accepting lowest rate in second call without CAMC, the DGAFMS stated (May 2013) that CAMC charges were waived off by the CNC after due deliberation wherein it was decided that concluding CAMC after warranty period would be futile and irrelevant as beds were to be distributed across the country. The reply is not acceptable as the CNC did not have powers to waive off the CAMC charges. CAMC waiver should have been obtained at the time of the first call from the Ministry to avoid excess expenditure.

Besides violation of DPM provisions Hi-Lo Beds were purchased at higher rates resulting in extra expenditure of ₹63 lakh.

In reply (July 2015), the Ministry accepted the audit observations and asked the DGAFMS to fix responsibility for the lapses.

3.8 Recoveries, savings and amendment of annual accounts at the instance of Audit

Based on our observations, the audited entities had recovered overpaid pay and allowances, sundry charges and recovered electricity charges, cancelled irregular works sanctions and amended annual accounts, having a net effect of ₹11.70 crore.

During the course of audit, we observed several instances of irregular payments, under/non-recovery of charges, issue of irregular sanctions and accounting errors. Acting on the audit observations, the audited entities took corrective action, the net effect of which is summarised below:

Recoveries

The check of records of Defence Research and Development Organisation, Principal Controllers of Defence Accounts, Military Engineer Services (MES), Canteen Stores Department (CSD) HQ *etc.* revealed instances of irregular payment of pay and allowances, electricity duty and taxes, sundry charges *etc.* amounting to ₹7.02 crore. On being pointed out, the entities concerned recovered the irregular payments.

Savings

Various sanctioning authorities such as the Sub-Area HQ of the Army, Station HQ, Corps HQ, *etc.* cancelled irregular administrative approvals to works. The net result of these actions was a saving of a total of ₹1.65 crore.

Amendment of annual accounts

When we pointed out instances of excess collection of Octroi and Value Added Taxes (VAT) which were not CSD Revenue, the CSD corrected the annual accounts by transferring the excess amount to General Reserve Fund. The net effect of these corrections was ₹3.03 crore.

The case was referred to the Ministry in April 2015; their reply was awaited (September 2015).

CHAPTER IV : WORKS AND MILITARY ENGINEER SERVICES

4.1 Loss due to excess payment and short recovery of electricity charges

While the Garrison Engineer (GE) is responsible to enforce pre-check on the electricity bills before making payment to Electricity supply agencies, we found that due to failure on the part of the GEs in exercising the requisite checks and in adhering to the approved electricity tariff, an excess payment of ₹24.54 crore was made by the GEs selected for audit. The GEs also failed to effect recovery of electricity charges worth ₹23.66 crore from the paying consumers, including private parties, which was mainly due to short recovery of energy and fixed charges, delay in floating of bills, defective meters, etc. These lapses of excess payment and short recovery underscore the inadequacy of internal controls in MES.

4.1.1 Introduction

The Military Engineer Services (MES) is responsible for the technical management of the electric supply system on its charge. For supply to the Military areas or Cantonment areas, electric energy is obtained by the MES in bulk from the State Electricity Boards (SEBs) or a company (supply agency) for which necessary agreement or memorandum of terms is entered into by the MES with the supply agency. Before payment to the supply agency for bulk supply of electricity as per the applicable tariff, Garrison Engineer (GE) concerned is required to enforce pre-checks on the bills through the concerned Accounts Officer³⁵ (GE). For making payment to SEBs/ supply agencies, GEs receive budget allotment under tariff head. The allotment and expenditure under the tariff head for the years 2011-12 to 2013-14 in respect of 30 GEs responsible for payment is indicated in **Annexure-X**. In MES, Barrack Stores Officer (BSO) and Accounts Officer (GE)/(BSO) functioning under GEs dealing with the revenue work are responsible for correct recovery of electricity charges from the paying consumers *i.e.* service personnel, defence civilians, messes, Cantonment Board, private parties, etc., as per instructions issued by Engineer-in-Chief (E-in-Cs) Branch, IHQ of MoD (Army) from time to time. Free electric supply is made by MES to other than married (OTM) accommodation, Defence installations, street lights in Military Stations, Administrative offices of the Armed Forces and MES installations, etc.

³⁵Accounts officer Garrison Engineer (AO GE) is from Defence Accounts Department and attached to engineer office as Accountant to maintain certain accounts and as primary auditor.

4.1.2 Scope of Audit

We carried out a scrutiny during September 2014 to November 2014 of the records related to payment made to Supply Agencies and recovery of electricity charges in 44 GEs³⁶ including BSO at 30 military stations for the three years period from 2011-12 to 2013-14. Similar cases noticed during the normal audit of other GEs over and above those selected have also been included.

4.1.3 Audit Findings

We noticed that out of 44 selected GEs, 25 GEs had made excess payment amounting to ₹24.54 crore to the Electricity Supply Agencies due to wrong billing by the supply agencies, inflated Contracted Maximum Demand (CMD) and penalty/surcharges paid due to non maintenance of required Power Factor³⁷ (PF), etc. Further 41 of the 44 selected GEs failed to recover electricity charges amounting to ₹23.66 crore from the paying consumers on account of non/short recovery of fixed charges, electricity duty, meter rent, fuel surcharge etc. The cases are discussed in the succeeding paragraphs:

4.1.3.1 Excess payment to State Electricity Boards/Electric Supply Agencies due to wrong billing

As per electricity Act 2003, State Electricity Regulatory Commission (SERC) is the competent authority to determine the tariff for various categories of consumers within the State. The electricity tariff includes energy charges³⁸, fixed charges³⁹, electricity duty⁴⁰, Octroi⁴¹, meter rent⁴², fuel surcharge⁴³, power factor surcharge⁴⁴, rebate on High Tension (HT) bulk

³⁶1. GE (Utility) Meerut, 2. GE (North) Meerut, 3. GE (South) Meerut, 4. GE Roorkee, 5. GE (Clement Town) Dehradun, 6. GE (Military Collage of Telecommunication Engineer) Mhow, 7. GE (East) Bareilly, 8. GE (Army) Suratgarh, 9. GE Chandigarh, 10. GE (South) Jaipur, 11. GE (East) Jalandhar, 12. GE (CME) Dapodi, Pune, 13. GE (I) R&D Pashan, Pune, 14. GE (North) MEG Centre, Bangalore, 15. GE (R&D) (East), Bangalore, 16. GE (I) R&D, RCI, Hyderabad, 17. GE (Army) Ahmedabad, 18. GE (East) Lucknow, 19. GE (I) R&D Kanpur, 20. GE Kanpur, 21. GE (West) Jabalpur, 22. GE (East) Jabalpur, 23. GE (East) Allahabad, 24. GE Jhansi 25. GE Babina, 26. GE Guwahati, 27. GE Shillong, 28. GE Dipatoli, 29. GE (Central) Kolkatta, 30. GE Alipore, 31. GE Binnaguri, 32. GE Missamari, 33. GE (South) Udhampur, 34. GE (North) Udhampur, 35. GE (U) Udhampur, 36. GE (North) Mamun, 37. GE Yol Cantt., 38. GE Satwari, 39. GE (Utility) Delhi Cantt, 40. GE (West) Delhi Cantt, 41. GE (South) Delhi Cantt, 42. GE (Central) Delhi Cantt, 43. GE New Delhi, 44. GE (Base Hospital) Delhi Cantt

³⁷**Power Factor**- is defined as the ratio expressed in percentage of total kilowatt hours to the total kilowatt ampere hours recorded during the billing month.

³⁸**Energy charges** – It is the cost of energy consumed by the consumer as per tariff rate.

³⁹**Fixed charges** –It is levied to recover the cost of infrastructure created for distribution of electric supply. It is cost recovered per month in addition to energy charges as per load sanctioned on a connection to consumer. Fixed charges are payable in each month irrespective of whether any energy is consumed or not.

⁴⁰**Electricity duty** – Charges levied by the State on production/supply of electricity in the State in accordance with a law in force.

⁴¹**Octroi** - It is a charge levied by the State on the consumption of electricity in a particular area in accordance with the law in force.

⁴²**Meter rent** – In case electric meter is provided by the Electric supply agency, rent is recovered on the basis of type of meter installed.

⁴³**Fuel surcharge** – To adjust the variation in cost of fuel used in production of electricity, additional charges are levied on energy charges by the electric supply agency.

⁴⁴**Power factor surcharge** – Charges recovered on account of adjustment of distribution loss of energy. If the average power factor of the consumer falls below a specified percentage, the consumer shall, in

supply,⁴⁵ etc. Payment of monthly electricity bills, calls for special attention of the GE to ensure correctness of the bills. Cases of excess/avoidable payment made by the GE due to wrong billing by the electricity supply agencies are given below:

(A) *Excess payment due to incorrect application of tariff schedule*

Every State Electricity Board notifies from time to time its tariff. The bulk supply Tariff is applicable to MES, CPWD, Institutions, Hospitals, Private Colonies, Group Housing Societies and other similar establishments for further distribution to various residential and non residential buildings.

We observed that out of 30 military stations, at 12 stations⁴⁶, State Electricity Boards/Electricity supply agencies had floated bills at tariff rates higher than those applicable to MES under the approved tariff schedule. The bills were paid by the concerned GEs, without checking the correctness of the tariff, which resulted in an excess payment of ₹11.85 crore during past three years as shown in **Annexure-XI**.

In their replies (April 2013 to August 2015) all the GEs had stated that matter had been taken up with the supply agencies for application of correct tariff schedule and refund of excess charges, which was awaited as of August 2015.

(B) *Overpayment due to incorrect levy of fixed charges*

- As per the tariff of Uttar Pradesh Power Corporation Limited (UPPCL), for all consumers, billable demand during the month shall be the actual maximum demand or 75 per cent of the contracted load (CMD) whichever is higher. In GE Jhansi, the actual demand was less than 75 per cent of the CMD in respect of three service connections but the electric supply agency had charged fixed charges on CMD instead of 75 per cent of CMD, which resulted in overpayment of ₹29.66 lakh during April 2011 to March 2014. On being pointed out by Audit (October 2014), GE Jhansi in October 2014 stated that liaison was being made with Dakshinanchal Vidyut Vitran Nigam Limited (DVVNL) Jhansi for revision of agreement so that CMD might be revised which was still awaited (August 2015).
- As per the tariff of Himachal Pradesh State Electricity Board Limited, (HPSEB) Schedule of Electricity Tariff, in case of Bulk Supply, demand charges would be levied on the actual maximum recorded demand in a month in any 30 minute interval or 90 per cent of the

addition to energy charges, pay additional charges, known as power factor surcharge, on the total amount of bill under the head 'energy charges'.

⁴⁵**Rebate on High Tension (HT) bulk supply** - The electric loss in distribution is reduced in case of high supply voltage. The HT supply is made on different supply voltage viz. 33 KV, 66 KV, 132KV and 220 KV. In case a consumer at his request availing supply at a voltage higher than the standard supply voltage as specified under relevant category, a rebate in the rate / amount of energy charges is allowed by the electric supply agency, if mentioned in tariff order.

⁴⁶Mhow (MP), Saharanpur (UP), Purkazi (UP), Babugarh (UP), Dabathuwa (UP), Dehradun (UK), Tawi(Sangroor) Udhampur, Dapodi(Pune), Pashan (Pune), Kanpur, Pachmari (MP) and Dwarka (Delhi).

contracted demand, whichever is higher. We observed that during the period April 2011 to March 2014 no record of the actual maximum recorded demand was maintained, but GE Yol Cantt had made payment of demand charges on contracted demand to the HPSEB instead of, 90 per cent of the contract demand. This had resulted in overpayment of ₹19.68 lakh by the GE to HPSEB towards demand charges during the above period.

(C) *Irregular payment of Electricity Duty (ED)/Electricity Tax (ET)*

As per Article 287 of the Constitution of India, no law of a State shall impose or authorize the imposition of a tax on the consumption or sale of electricity which is consumed by the Government of India. As such, ED was not leviable on energy consumed by the Government. However, two GEs had paid ED/ET to the tune of ₹70.58 lakh to the electric supply agencies on energy consumed by the government as shown in **Table-23** below:

Table-23: Showing GE wise amount of ED/ET paid

Sl.	Name of GE	Period	Amount (₹ in lakh)
1	GE Chandigarh	04/2011 to 03/2014	58.76
2	GE, New Delhi	04/2011 to 03/2014	11.82
	Total		70.58

On being pointed out in audit (June 2014) the GE Chandigarh in June 2014 stated that case for refund/adjustment of the amount of ED paid would be taken up with the electricity supply agencies, which however, was not taken up till July 2015. GE New Delhi took up the case with New Delhi Municipal Council (NDMC) in November 2014 but NDMC refused to refund the electricity tax amount on the plea that NDMC levied tax under NDMC act 1994 and it was not State legislation. The reply furnished by GE was not acceptable as imposition of ED/ET was in contravention of Article 287 of Constitution of India. The amount of ED/ET paid was yet to be recovered as of August 2015.

(D) *Irregular payments of Octroi Charges*

As per Article 287 of the Constitution of India, Defence establishments are exempted from paying of taxes on the electricity supplied. We, however, observed that Punjab State Power Corporation Limited (PSPCL) had irregularly levied Octroi charges in the monthly bills for electricity supply made to Jalandhar Cantt., The GE (East) Jalandhar Cantt had paid a sum of ₹2.70 crore to the PSPCL on this account from January 2000 to July 2012. Payment of octroi charges was however not made after July 2012. Similarly, GE Chandigarh had made irregular payment of Octroi charges of ₹3.18 lakh from April 2011 to July 2012 to the PSPCL for electricity supply to 'K' Area.

GE (East) Jalandhar intimated in July 2014 that the matter was being pursued with PSPCL for refund and GE Chandigarh in June 2014 intimated that the

matter for adjustment of the amount would be taken up with the PSPCL. The fact remained that a sum of ₹2.73 crore was irregularly paid by the GEs on account of Octroi and the same was still to be refunded.

(E) *Non- availing of rebate on HT supply*

To compensate the transmission/transformation losses, State electricity boards/supply agencies provide rebate on bulk electric supply at 11 KV/33KV/66KV/132 KV as prescribed in their tariff.

We observed that two GEs had not availed admissible rebate in monthly bills and paid excess amount of ₹ 1.24 crore to the SEB/supply agencies. The cases are discussed below:

- As per Jaipur Vidyut Vitran Nigam Limited (JVVNL) tariff 2011, for contract Demand above 1500 KVA and upto 5000 KVA standard prescribed Voltage Supply is 33 KV for which three *per cent* rebate is allowed. GE (South) Jaipur was drawing supply at 33 KV with contracted demand of 5000 KVA but no rebate was availed. Thus, excess payment of ₹99.63 lakh was made to JVVNL during 04/2011 to 03/2014. GE stated (August 2014) that case had already been taken up with JVVNL for refund/adjustment which was yet to be made (August 2015).
- Similarly GE Yol, received electric energy on 33 KVA from HPSEB against the Standard Supply, voltage of 11 KVA from April 2011 to March 2014, but failed to avail three *per cent* rebate resulting in excess payment of ₹24.40 lakh to HPSEB.

We also observed that GE Gurdaspur could not avail the rebate of ₹52.08 lakh due to non-reduction of CMD realistically. The case is discussed as follows;

- In Punjab State, the PSPCL provides HT rebate at the rates of three *per cent* to all the existing consumers (prior to 01April 2010) getting supply at a higher voltage than the specified in conditions of supply *i.e.* against contracted demand upto 4000 KVA supply to be taken at 11 KV. It was observed(October 2014) that GE Gurdaspur was drawing supply at 66 KV with contracted demand of 7095 KW but the actual maximum demand during the period April 2011 to March 2014 remained between 1597 KW to 2929 KW *i.e.* 3661 KVA (2929/0.8) for which admissible supply voltage was 11 KV. Had the contracted demand been realistically reduced by GE for 4000 KVA, rebate of three *per cent* amounting to ₹52.08 lakh for the period from January 2010 to March 2013 could have been obtained towards supply at higher voltage.

(F) *Non adjustment of interest on security deposit*

As per provisions of the Uttar Pradesh Electricity Regulatory Commission's Electricity Supply Code-2005 (3rd Amendment made in August/September 2006), the licensee shall pay interest on Security Deposit to the consumers at

bank rate as on 1 April of applicable financial year by way of credit in the bill of the consumer in the months of April, or May or June as per the applicable billing cycle. We observed that two Garrison Engineers viz. GE Babina and GE Jhansi paid an avoidable amount of ₹56.90 lakh to UPPCL during the period 2011-12 to 2013-14 due to non adjustment of interest on security deposits in the bills by electric supply agency. On this being pointed out in audit GE Babina (September 2014) and GE Jhansi (October 2014) stated that the interest would be recovered in the forthcoming bills, which was still (August 2015) awaited.

4.1.3.2 Avoidable payment of demand/ fixed charges due to inflated Contracted Maximum Demand in agreements

E-in-C's Branch, AHQ in July 2005 issued instructions that, the contracted maximum demand (CMD)⁴⁷ reflected in the agreement should be based on realistic assessments and should be commensurate with the actual maximum demand of the station. Inflated CMD results in infructuous payments of fixed charges on minimum billable demand, which is generally 75 per cent of CMD. Similarly, under-estimated CMD may result in payment of penal charges for drawl of excess demand. In case of variation in both, the GE should timely get the revised agreement executed.

Out of 30 stations, we noticed cases at 13 stations wherein the contracted demand was in excess of the present requirement which resulted in avoidable payment of minimum demand/fixed charges of ₹3.98 crore to the supply agencies by 13 GEs, details of which are given in **Annexure –XII**.

By way of illustration, three important cases regarding avoidable payment of fixed charges are discussed below:

- The existing CMD for Dabathuwa Military Station (Meerut) was 378 KVA. In September 2009, requirement for creation of infrastructure for the Defence Communication Node (DCN) at the station was felt for which upgradation of electric load from 378 KVA to 1600 KVA was required. The project for provision of infrastructure for DCN was sanctioned by the Ministry in March 2010 and execution thereof was started in December 2011, which was to be completed by January 2014. Even prior to execution of the infrastructure for DCN, the GE in January 2011 requested the electric supply agency for upgradation of the load at Dabathuwa upto 1600 KVA and deposited ₹44.46 lakh in January 2012 for enhancement of the load. The electric supply agency levied demand charges for 1200 KVA load (75 per cent of 1600 KVA) in the monthly electricity bills from October 2012 to December 2013 instead of 283.5 KVA (75 per cent of 378 KVA), which were paid by the GE without any agreement of enhanced load. However, the actual billable demand of the station was below the contracted load of 378 KVA due to non-completion of infrastructure for DCN project. Thus, an unwarranted

⁴⁷**Contracted maximum demand (CMD)/Contracted load:** It is the maximum demand of supply for which a contract is concluded between the consumer and the electric supply agency for delivery at the point of supply at a specific rate.

payment of demand charges of ₹40.44 lakh had been made to the electric supply agency from October 2012 to December 2013.

- GE Suratgarh had made avoidable payment of fixed charges to the tune of ₹93.25 lakh for the period from April 2009 to March 2013 due to incorrect contract demand shown in the electric bills by Jodhpur Vidhyut Vitran Nigam Ltd (JVVNL). We observed that though the CMD was for 2600 KVA, yet JVVNL had been charging fixed charges for 4600 KVA. Chief Engineer, Bathinda Zone admitted (November 2014) the erroneous payment of ₹93.25 lakh, out of which ₹29.46 lakh were adjusted in the electricity bill of May 2014. It was further stated that the case for adjustment of balance amount would be taken up with the electric supplying agency. The adjustment of balance overpaid amount of ₹63.79 lakh was still awaited.
- Similarly, GE(East) Jabalpur made an agreement (July 2011) with Madhya Pradesh Purva Kshetra Vidhyut Vitran Company for supply of electricity with CMD as 1700 KVA in anticipation of the additional requirement for modernization of Central Ordnance Depot (COD) Jabalpur. Audit noticed that since the modernization work of the COD could not be completed, the actual recorded demand during April 2013 to March 2014 except for July 2013 remained less than 50 per cent of the CMD. Thus, due to unrealistic CMD an avoidable payment of fixed charges of ₹37.53 lakh was made by the GE during the year 2013-14. GE intimated (August 2015) that case for reduction of demand to 750 KVA had been taken up.

4.1.3.3 Avoidable payment of penalty/surcharge

Consumers are required to maintain the minimum average PF prescribed (0.85 to 0.90) by the respective State Electricity Regulatory Commission to avoid payment of surcharge/penalty. E-in-C Branch, Army Headquarters, New Delhi in June 2004 had fixed the target for bulk supply consumers to maintain PF at 0.95 and above to avail the incentives for higher PF besides avoidance of penal charges for low PF.

We observed in eight GEs, including one selected GE and other seven GEs located in Punjab State had not maintained the PF 0.90 as prescribed by PSPSCL at takeover points of bulk electric supply. Consequently, surcharge amounting to ₹92.69 lakh had to be paid by them during the period April 2010 to March 2014.

4.1.3.4 Avoidable payment of surcharge due to delay in enhancement of contracted load

GE (I) R&D, RCI, Hyderabad in March 2011 paid an amount of ₹92.72 lakh to Andhra Pradesh Central Power Distribution Company Ltd (APTRANSCO) to enhance the existing CMD of 10 Mega Volt Ampere (MVA) to 14 MVA. However, the GE applied (February 2013) for revising the CMD from 10 MVA to 12 MVA keeping in view the previous year's energy consumption, which was implemented in June 2013. However during the intervening

period, avoidable penal charges amounting to ₹90.46 lakh was paid by the GE due to delay of two years in enhancement of the contracted load. On being pointed out by Audit (August 2014), GE (I) R&D stated (October 2014) that an amount of ₹92.72 lakh was deposited to APTRANSCO for releasing of additional four MVA expecting that electric power demand would increase shortly but requirement of RCI had not been increased as expected.

4.1.3.5 Loss of rebate due to delay in opening of letter of credit (LC)

As per Delhi Electricity Regularity Commission (DERC) order of March 2007 to establish payment security mechanism the electric generation company, M/s Pragati Power Corporation Limited, (PPCL) and electric transmission company Delhi Transco Limited (DTL) provide two *per cent* rebate on the monthly bills on opening of LC by the distribution licensee as per terms and condition of their agreements.

MES had been given a status of deemed licensee in Delhi. GE (Utility) Electric Supply, Delhi Cantt., is the nodal agency for maintenance and distribution of external electric supply to entire Delhi Cantt., including the units and establishments of Air Force and DRDO. Due to the delay in execution of agreements/LC with the electric generation/transmission companies, GE (Utility) Electric Supply Delhi Cantt., could not obtain two *per cent* rebate (₹61.74 lakh) in the monthly bills for the period from April 2011 to March 2014, as discussed below:

- MES was receiving 25 MW electricity from PPCL, Bawana, Delhi since December 2011. However, Power Purchase Agreement (PPA) was signed only on 10 September 2012 although the Ministry had approved it in December 2011. LC required for getting two *per cent* rebate was opened in August 2013, which was valid upto December 2013. Due to the delay in signing of the PPA and opening of LC, rebate of ₹22.53 lakh could not be obtained by MES resulting in loss to that extent.
- DTL was responsible for transmission of electricity in Delhi and all the distributors including MES were required to sign Bulk Power Transmission Agreement (BPTA) with them. The DTL also offered a rebate of two *per cent* on its monthly bills, provided the payment was made through an LC. The GE (Utility) Electric Supply Delhi Cantt., without signing the BPTA paid ₹19.60 crore to the DTL on account of transmission charges from April 2011 to March 2014 on which rebate of two *per cent* amounting to ₹39.21 lakh could not be obtained because of non opening of LC resulting in loss to the Government. On being pointed out by Audit in August 2014, GE (Utility) Delhi Cantt., intimated in November 2014 that the case for signing of BPTA between MES and DTL was already under progress with Ministry and hence opening of LC could be possible only after signing of BPTA between both the parties. Thus non-signing of BPTA and consequently non opening of LC had resulted in loss of ₹39.21 lakh to the State. The BPTA was still to be signed (August 2015).

4.1.4 Non/short recovery of electricity charges

The Ministry in October 2005 fixed free electricity for Officers, Junior Commissioned Officers (JCOs) and Other Ranks (ORs) at 100 units per month with effect from 1 November 2005. E-in-C Branch Army HQ had instructed in November 2005 and October 2006 that in addition to electricity charges over and above the free ceiling, fixed charges, meter rent and electricity taxes were also recoverable from all domestic paying consumers at the same rates at which general public living in adjoining colonies were being charged by the civil authorities. The procedure laid down for recovery of electricity charges from the paying consumers includes recording of meter reading by meter readers of MES, submission of return of recoveries⁴⁸ (R/R) by MES revenue staff to AO (GE) and floating of bills by AO (GE) to the concerned Pay and Accounts Officers (PAOs) of units for recovery from the Individual Running Ledger Account (IRLA) and to watch the acknowledgements for receipt of bills by the PAOs.

We noticed cases of non/short recovery of fixed charges, energy charges, meter rent, electricity duty, regulatory surcharge and other taxes causing revenue loss of ₹23.66 crore to the State as discussed below:

4.1.4.1 Non/short-recovery of fixed charges (FC)

The State Electricity Board/Electric Supply Agencies are charging fixed charges based on electric load (bulk supply) in the bills at the rates notified in the applicable tariff schedule. Fixed charges are to be recovered from all the domestic paying consumers at the same rates at which general public living in adjoining colonies being charged by the civil authorities. At 10 Military Stations, fixed charges amounting to ₹2.45 crore was not recovered/short recovered from the domestic consumers from their monthly bills by 12GEs as shown in **Annexure-XIII**.

GE (East)Bareilly, and GE (I) R&D Kanpur accepted the fact and stated that recovery of fixed charges would be made at correct rate in future. Other 10 GEs did not furnish any reply (August 2015).

- Apart from the above mentioned cases, GE (North) and GE (South) Meerut Cantt. had also not recovered the fixed charges from the paying consumers upto June 2011. It was only at the instance of audit that GEs had started to effect recovery from July 2011 onwards. We worked out the unrecovered amount from December 2004 to June 2011 which summed up to ₹5.27 crore and ₹3.93 crore respectively.

4.1.4.2 Delay in floating of bills of paying consumers

The GE is responsible for prompt realization of revenue. The return of recoveries (electric) showing the electricity charges to be recovered from each

⁴⁸**Return of Recoveries (Electric)**- This record shows electricity charges due from various individuals which are to be billed by the accounts office, MES. It will also show the consolidated amount due from consumers paying to the MES.

paying consumer is to be submitted by the BSO to the AO (GE) monthly, for floating the bills.

We noticed that bills for recovery of energy charges were not submitted timely by the BSO resulting in non-recovery of substantial amount of revenue. A few cases are discussed below:

- Three GEs⁴⁹ located in Northern Command and one GE⁵⁰ in Western Command did not float the electricity bills for the occupied accommodation, with the result an amount of ₹2.84 crore was outstanding for the years 2011-12 to 2013-14. GE (North) Udhampur and GE Mamun (September 2014) stated that action was in hand to float the bills. No reply was furnished by GE Nagrota and GE (South) Udhampur (August 2015).
- At Ahmedabad station, return of recoveries had not been floated during 2011-12 to 2013-14 in respect of JCOs/ORs by the BSO, GE (Army) Ahmedabad. It was only after a gap of three financial years that bill for ₹44.91 lakh was floated in August 2014. The GE replied (September 2014) that due to non-availability of meter reader, the delay had occurred. Similarly, GE (I) R&D RCI, Hyderabad, had not been floating return of recovery against 135 residential accommodations allotted to JCOs/ORs. The recovery was awaited (August 2015).

4.1.4.3 Non-recovery of meter rent

As per Army HQ, E-in-Cs Branch, New Delhi letter of November 2005, meter rent is to be recovered from all the domestic paying consumers at the same rate at which general public living in adjoining colonies being charged by the civil authorities. We observed that meter rent amounting to ₹92.62 lakh had not been recovered from the domestic consumers by the four GEs although the same was being recovered from the general public by the civil authorities as per applicable tariff. Further, one GE had under-recovered the amount of meter rent to the extent of ₹15.87 lakh by not applying the revised rates. Cases of this nature are given in **Annexure-XIV**.

On this being pointed out by Audit, all the GEs, except GE (East) Jabalpur, accepted the facts and stated (June 2014 to October 2014) that necessary action to recover the arrears would be taken, which was awaited as of August 2015.

4.1.4.4 Short recovery of Electricity Duty (ED)

The UPPCL revised the ED from ₹0.09 per unit to 5 per cent of electric charges (energy + fixed charges) with effect from September 2012. GE Babina had not recovered the ED at revised rates from the domestic consumers from October 2012 to March 2014, resulting in short recovery of ₹16.36 lakh. GE Babina agreed to issue the supplementary bill for recovery. Similarly GE

⁴⁹ GE Nagrota, GE (North) Udhampur and GE (South) Udhampur.

⁵⁰ GE (North) Mamun.

Jhansi had not recovered the ED at revised rates resulting in less recovery to the extent of ₹10.79 lakh for the period October 2012 to March 2014. On being pointed out by Audit, GE Jhansi stated (October 2014) that no orders for recovery of revised rates were received by them, however, recovery at the revised rates would be made, which was awaited as of August 2015.

4.1.4.5 Non/short recovery of energy charges

BSO and AO (GE) are required to recover electricity charges from the paying consumers at correct rates as specified in the tariff from time to time. We observed non/short recovery of ₹3.56 crore on account of energy charges from the domestic consumers, messes, institutes, private parties, etc., as commented below:

Domestic Consumers

- UPPCL revised the rates of energy charges and fixed charges for all consumers with effect from 10 June 2013. However, GE (East) Lucknow implemented the revised rates of energy and fixed charges with effect from April 2014 for various category of consumers. Thus, non-implementation of the revised rates from the effective date resulted in short recovery of ₹16.17 lakh from July 2013 to March 2014 from the domestic consumers.
- As per MoD letter of December 1998, the rates of electricity applicable at a particular station will be obtained by MES from the SEBs/supply agencies and also ensure subsequent changes if any from time to time. The West Bengal Energy Regulatory Commission (WBERC) revised the tariff in December 2012 with effect from 1st April 2012 with minimum increase in tariff by ₹1.10 per unit. However, GE (N) Binaguri did not effect the revised rates from 1st April 2012, which resulted in short realization of revenue to the tune of ₹65.19 lakh for the period 01 April 2012 to 31 March 2014. On being pointed out, GE agreed with the audit contention and stated that due to non receipt of tariff, the revised rates were not affected. GE's response is not acceptable as it is the responsibility of MES to obtain the revision in electricity charges from SEB.
- As per Regulation of Military Engineering Services (RMES), the responsibility for preparation of Return of Recoveries rests with the BSO. At Alipore station, due to unserviceability of electric meters in JCO's/ORs married accommodation, energy charges were to be recovered based on the electricity units fixed by the Board of Officers held in September 2003. On the pretext of shortage of meter reader and non posting of BSO, energy charges bills could not be raised in GE Alipore area, which resulted in non-realization of revenue to the tune of ₹25.22 lakh for the period from 01 April 2011 to 31 December 2012, which was awaited as of August 2015.

Messes/Institutes

- At Babina Military Station, electricity charges amounting to ₹1.29 crore for the period from April 2011 to March 2014 had not been recovered from the officers messes on account of ACs (120) and coolers installed without electric meters. While accepting the fact, the GE stated in September 2014 that the matter had been taken up with the Station HQ for recovery, which was still awaited.
- GE Satwari did not recover the energy charges based on the units fixed by the Board of Officers for ACs installed in two Officers' Mess/Officers' Institute, which had resulted in non recovery of ₹9.85 lakh for the period from 1 April 2011 to 31 March 2014, which was awaited as of August 2015.

Private Parties

The Ministry in December 1998 ordered that the recovery of electricity charges from the private consumers was to be made at the "All-in-Cost"⁵¹ rates of the preceding year. However the GEs, as well as AO GE as a primary auditor, did not adhere to the Ministry's orders for recovery of electricity charges at "All-in-Cost" rates, which resulted in under-recovery of electricity charges of ₹ 1.11 crore from the private parties as discussed below:

- GE (Base Hospital) Delhi Cantt. had recovered energy charges at the rate of ₹5.08 per unit from the Army College of Medical Sciences, Delhi Cantt. and medical hostel (Private consumers) from November 2012 to July 2014. However, as per "All-in-Cost" rates of previous years, rates applicable for the years 2012-13 and 2013-14 were ₹5.15 and ₹6.70 per unit respectively. This had resulted in under recovery of ₹26 lakh out of which GE (Base Hospital) had recovered an amount of ₹17.54 lakh from Army College of Medical Sciences in February 2015 and the balance amount of ₹8.46 lakh was yet (August 2015) to be recovered.
- Army Public School, Nehru Road, Lucknow alongwith Hostel was constructed in the year 2000 but no electric meter was installed by the MES in the school to record the consumption of electricity. We observed that no bill was floated by the GE (East) Lucknow to the school. Audit worked out the amount for consumption of electricity by the school at "All-in-Cost" rate as ₹9.80 lakh for the period 2011-12 to 2013-14, which was not recovered by the GE as of August 2015.
- Similarly, at Jabalpur, Army Public School No. 2 was running since April 2001 by Army Welfare Education Society but electricity charges were not recovered from the school from April 2001 to September 2013. The BSO (West) Jabalpur replied in October 2014 that return of

⁵¹**All-in-Cost-** All-in-Cost of electricity is worked out by dividing the total all in cost of the operation of the installation concerned, by the total quantity of energy actually supplied *per annum*.

recovery for the arrears amount of ₹5.66 lakh had been raised. Recovery of ₹5.66 lakh was still awaited (August 2015).

- GE Satwari and GE (Kangra Hills) Yol did not apply the applicable 'All-in-Cost' rates of electricity while floating bills on private parties like Cantonment Board, Military Farm, Shops *etc.*, which had resulted in under-recovery of ₹14.96 lakh during the period from 2011-12 to 2013-14. Recovery of ₹14.96 lakh was awaited as of August 2015.
- GE (W) and GE (E) Jabalpur had not floated bills on private consumers like Army Wives Welfare Association (AWWA), Banks, cable network, Canteen Store Department canteens, *etc.*, for the years 2011-12 to 2013-14, resulting in substantial loss to the Government. In the absence of returns of recoveries, the quantum of loss could not be arrived at. No reply was furnished by the GEs.
- Six GEs⁵² under Southern Command had not recovered electricity charges at 'All-in-Cost' rates from private parties such as shops, AWWA, ATMs, Wet canteen during 2011-12 to 2013-14. This had resulted in short recovery of electricity charges of ₹67.49 lakh. Four GEs *viz.* (GE (Army), Ahmedabad, GE (CME), Kirkee, Pune, GE(I) R&D (East), Bangalore and GE (Army), Trivandrum replied that due to delay in finalization of 'All-in-Cost' rate, the recovery could not be made at correct rates and agreed to recover the amount from the consumers. No reply was given by the remaining two GEs as of August 2015.
- GE Ahmedabad charged domestic rates on electric units (1,21,241) consumed by Gaurav Senani Bhawan, a private party from June 2011 to April 2014 instead of 'All-in-Cost' rates, resulting in short-recovery of ₹4.18 lakh. The GE accepted the under-recovery and floated the bills in September 2014 for recovery of ₹4.18 lakh, which was awaited as of August 2015.

4.1.4.6 Defective Meters

Section 55 of Electricity Act 2003 provides that no unmetered supply should be given to any building/consumer, even if the electricity is to be given free. As per Standing Operating Procedure (SOP) on recovery of excess consumption of electricity issued by the E-in-C's Branch in June 2008, non-functional meter should be replaced within two months.

We observed that at Lucknow, Jabalpur, Babina, Binaguri, Alipore (Kolkata) and Delhi Cantt. stations, defective meters were not made functional for the last three years. In Delhi Cantt., against 13060 quarters, electric meters in respect of 5943 quarters (46 *per cent*) were defective. The extent of defective meters was maximum with GE (East) at 75 *per cent*. Similarly, at Babina, 66 *per cent* and at Jabalpur, 20 *per cent* electric meters were defective

⁵² GE(N) Santacruz, GE (Army) Ahmedabad, GE E/M, Secunderabad, GE (CME), Kirkee, Pune, GE (I), R&D, (East), Bangalore and GE (Army)) Trivandrum.

for two years. Electricity charges were recovered from the consumers by some of the GEs based on the average units fixed by the Station Board of Officers more than three years back. In the absence of functional meters, actual excess consumption of electric units could not be worked out and therefore, loss of revenue could not be quantified. Hence, the supply of unmetered electricity at these stations was in violation of Electricity Act and the E-in-C's SOP on the subject. On being pointed out by Audit, GE (West) Jabalpur stated in October 2014 that defective meters were being replaced with electronic meters. GE (E/M) Base Hospital, Delhi Cantt. stated in November 2014 that process of declaring unserviceable/defective meters Beyond Economic Repair was in hand. No reply was furnished by other GEs, as of August 2015. The reply, however, cannot justify supply of unmetered electricity to such a large number of quarters.

4.1.4.7 Non recovery of other charges

(a) Regulatory Surcharge

- UPPCL introduced regulatory surcharge on energy charges with effect from June 2013 to be applicable till 31 March 2014 to all consumers. But the same was not recovered from the paying consumers by GE (East) Lucknow and GE Babina resulting in under recovery of ₹9.02 Lakh from June 2013 to March 2014. The GEs confirmed (August 2014) the under recovery and agreed to recover the same shortly, which was awaited as of August 2015.

(b) Fuel Surcharge

- Madhya Pradesh State Electricity Board introduced Fuel Cost Adjustment (FCA) as part of energy charges with effect from 10 April 2012 but the same was not recovered by the BSO (West) Jabalpur from the service personnel and defence civilians. The BSO in October 2014 stated that the amount of under recovery on account of FCA was ₹11.80 lakh from May 2012 to March 2014, which would require recovery.
- Five GEs⁵³ under Southern Command had not recovered, Fuel Adjustment Charges (FAC) *etc.* from the paying consumers during 2011-12 to 2013-14 resulting in less recovery of revenue to the tune of ₹3.60 crore. On being pointed out by Audit, two GEs⁵⁴ agreed to charge the FAC from the paying consumers. No reply was furnished by other GEs (August 2015).

Conclusion

Thus, due to lack of internal control mechanism and monitoring in MES towards payment and recovery of electricity charges, an excess payment of ₹24.54 crore had been made to the electricity supply agencies and revenue to the tune of ₹23.66 crore was short recovered from the consumers. In addition,

⁵³ GE (EM)/BSO (S) Secunderabad, GE (Army) Ahmedabad, GE(I) R&D RCI Hyderabad, GE (CME), Dapodi Pune and GE (N) Santacruz.

⁵⁴ GE(CME), Dapodi, Pune and GE (Army) Ahmedabad.

electricity bills were not being floated to the consumers timely resulting in substantial loss of revenue.

The matter was referred to the Ministry of Defence in May 2015; their reply was awaited (September 2015).

4.2 Inadequate monitoring of execution of a project

Inadequate monitoring of execution of work by the Engineers for Indian Military Academy (IMA), Dehradun resulted in non-completion of main building work costing ₹22.75 crore. The delay of five years had not only deprived the Gentlemen cadets of proper training with modern facilities but also held up the other training projects valuing ₹2.50 crore.

Defence Works Procedure-2007 emphasises for effective monitoring of execution of works to ensure timely and cost effective completion of the project.

We noticed during audit of Chief Engineer (CE) Bareilly Zone (July 2014) and Indian Military Academy (IMA) Dehradun (Sep 2014) that due to inadequate monitoring of a project, the execution of works was delayed for five years, resulting in non-establishment of users projects of training needs. The case is discussed below:-

IMA Dehradun is a premier Military training establishment and imparts pre-commission training to the Gentlemen Cadets (GC). For smooth conduct of service and academic training for GC of IMA, Government of India, Ministry of Defence (MoD), in October 2006 sanctioned a work for construction of Training Team and Academic Block (TAB) at IMA Dehradun at an estimated cost of ₹21.40 crore, which was revised to ₹ 23.97 crore in December 2007 due to increase in Market Variation and Difference in Cost of Stores (MV&DCS). The project comprised of construction of class rooms, lecture halls, sand model rooms, computer lab for GC and office accommodation for training team and academic department along with allied services.

The CE Bareilly Zone concluded contract in December 2007 with M/s Villayati Ram Mittal Pvt. Ltd., New Delhi for ₹22.75 crore for construction of main building works *i.e.* construction of TAB. The date of commencement and completion of works was 5th January 2008 and 4th January 2010 respectively. The contractor could not complete the work by due date and progress of work as of July 2010 was only 43 *per cent*. Despite tardy progress of the work, extensions of time were granted by the CE, more than three times. The contractor could not accelerate the progress of work and the contract was finally cancelled at the risk and cost of the defaulting contractor in August 2011 at 50.51 *per cent* progress. The contractor, however, approached the Engineer in Chief at Army Headquarters in September 2011 and committed to complete the work by 31 August 2012. Based on this commitment, the E-in-C directed the CE to revoke the contract with a condition that monthly

progress of at least 5 per cent be achieved by the contractor. Cancellation of the contract was accordingly revoked by the CE in October 2011 and contractor was allowed to continue to complete the work by August 2012. The contractor could not progress the work diligently and the monthly progress of 5 per cent was not adhered to. Despite the continued delay and failure in achieving the committed targets, the CE gave repeated extensions of time, up to December 2013. The contract was ultimately again cancelled in March 2014, at the risk and cost of defaulting contractor at 77 per cent progress. Total payment of ₹20.41 crore (89.71 per cent) including ₹3.20 crore on account of escalation was made to the defaulting contractor. The amount of escalation paid included a component of ₹2.78 crore which pertained to the period beyond the originally approved schedule for completion of work and was therefore avoidable. To complete the remaining (23 per cent) work, a contract was concluded in January 2015 for ₹10.78 crore with M/s Nidhi Constructions, Dehradun at the risk and cost of the defaulting contractor with period of completion up to February 2016.

Delay of five years in execution of work had not only deprived the GC undergoing training at IMA of proper training with modern facilities but also resulted in deterioration of the incomplete TAB building. We also observed that projects sanctioned/contracted from various grants of IMA since 2012-13 such as Automation of TAB (₹75 Lakh), Digital Sand Model Room (₹58.50 Lakh), surveillance lab (₹70 lakh), Language Learning lab (₹47 lakh) amounting to ₹2.50 crore were also held up due to non-completion of TAB, which had adversely affected the training needs of the GC, defeating the main objective of keeping pace with world class training Institutions. Four subsidiary civil works⁵⁵ for the TAB building constructed in April 2010 at a cost of ₹1.67 crore could not be fully utilised for the intended purpose in the absence of the main building.

Thus, due to inadequate monitoring of the work and granting of abnormal extensions of time without diligent progress of work by the contractor, the construction of TAB building was delayed for five years even after payment of ₹20.41 crore (89.71 per cent) to the contractor. The other related projects sanctioned/contracted for ₹2.50 crore for effective training of the GC were also held up in the absence of TAB building, affecting the training being imparted to the cadets.

The case was referred to Ministry in January 2015; their reply was awaited; (September 2015)

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- (1) Construction of Cycle Stand
- (2) Construction of Car Parking Shed
- (3) Construction of Generator Room
- (4) Construction of Guard Room

4.3 Non-utilisation of Assets

Missiles storage shed constructed in August 2008 at a cost of ₹2.29 crore could not be utilised for the purpose as Air conditioning system could not be provided in the shed.

As per scales of accommodation, air-conditioned accommodation for storage of missiles is authorized. Further, Defence Works Procedure stipulates that since the time is of essence, the completion period stipulated in the administrative approval will not be exceeded as far as possible.

We noticed (July 2014) in Chief Engineer 31 Zone that missiles shed constructed in 2008 at a cost of ₹2.29 crore was lying unutilized for seven years due to non-provision of Air conditioning.

The case is discussed below:-

A Board of Officers held in April 2000 recommended construction of three air conditioned missile sheds with allied facilities at an Infantry Division Sector. Ministry of Defence (Ministry) in November 2001 accepted the necessity for construction of above accommodation and accorded sanction for construction of one air conditioned missile shed at Khalsar in phase-I for 35 Ammunition Point (AP) at an estimated cost of ₹2.91 crore. The work was to be completed in three working seasons *i.e.* by 2004.

Chief Engineer Srinagar Zone (CESZ) concluded a contract agreement in June 2003 for execution of building work, excluding air conditioning, at a cost of ₹1.93 crore and the work of storage shed was completed in August 2008 at a cost of ₹2.29 crore. However, air-conditioning work was not contracted although as per sanction, missile sheds were to be provided with heating as well as cooling system. The CESZ initiated a case in August 2011 for obtaining revised sanction by incorporating the Air conditioning as per climate condition of the station. Accordingly the Ministry accorded revised sanction in October 2012 for ₹3.61 crore. For execution of Air conditioning/Heating work, CESZ concluded a contract agreement (December 2013) for ₹1.25 crore. Progress of the contract was 25 *per cent* (Feb 2015). In the absence of air-conditioning the missiles shed could not be utilized for storage of missiles as of February 2015.

In response to an audit query (July 2014) regarding non-provision of air conditioning in missile shed resulting in non-utilization of the same, the CESZ replied (July 2014) that air conditioning/air heating part was kept in abeyance as initial provision in the job was based on thumb rule calculation which after detailed preparations of drawing and inside environment condition, required to be amended through revision in admin approval. The reply was not tenable as engineers are technically competent to decide the type of air-conditioning system according to environmental condition of the station and had sufficient time to obtain revised sanction before conclusion of the contract for building work. Evidently there was a lack of planning in execution of the project.

The issue regarding effect of operational efficiency due to non-completion of missile shed with complete facility of heating as well as air-conditioning was raised by Audit (May 2015) with user (35 AP). It was replied (May 2015) that the drawl plan of missile had been affected as the missile were held at another location (31 AP) at distance of 110 km crossing highest motorable pass involves much time in transit.

Thus by not making proper planning for provision of Air-conditioning while contract for construction of missile shed was being concluded, the assets created at a cost of ₹2.29 crore were lying unutilized since August 2008. This has affected operational preparedness as in shifting of missiles from holding unit on behalf of 35 AP involves huge time delay in transit.

The case was referred to Ministry in April 2015; their reply was awaited (September 2015).

4.4 Blockage of government money due to conclusion of contracts without availability of site

Chief Engineer, Jabalpur Zone, Jabalpur concluded contracts without availability of clear site, which was not only in contravention of the codal provisions but also resulted in payment of ₹1.68 crore without execution of work.

Military Engineer Services, Manual of Contracts-2007 prescribes that before acceptance of tender a certificate shall be obtained from Garrison Engineer (GE) to the effect that a clear site, free from all encumbrances, is available for all works. Military Land Manual and Cantonment Land Administration Rules 1937 stipulate that land which is actually used or occupied by Military Authorities for the purpose of rifle ranges are class 'A'-1 land.

We noticed during audit of GE Ramgarh in December 2013 that in contravention of the codal provisions Chief Engineer Jabalpur Zone (CEJZ), Jabalpur concluded two contracts for ₹12.27 crore for construction of Baffle Range at Ramgarh Cantt. without availability of clear site. Such conclusion of contract eventually resulted in blockage of government money of ₹1.68 crore. The case is discussed below:-

Based on the recommendation of Board of Officers (BOO) held in October 2001, Ministry of Defence (MoD), in March 2004, accorded sanction for construction of Baffle Range at Ramgarh Cantt. on existing class 'A'-1 defence land for ₹2.44 crore, which was subsequently revised in February 2006 to ₹4.26 crore. Though the layout of Baffle Range met technical requirements set by Terminal Ballistic Research Laboratory (TBRL), it was changed by the Station commander, Ramgarh Cantt. due to land dispute. The alternative site suggested by Station commander for construction of Baffle Range was approved (April 2007) by TBRL, though the same was located on

(B-4⁵⁶ land). Revised administrative approval was accorded by MoD in May 2010 for ₹9.65 crore for construction of Baffle range. Further the Ministry issued corrigendum to the Administrative approval in November 2012 for ₹12.36 crore.

Class 'A'-1 defence land is prerequisite for construction of Baffle Range, a case for conversion of 'B'-4 land to 'A'-1 land was initiated by Station Headquarters in September 2010 but sanction of the Government was still awaited of May 2015. However, overlooking the fact that clear 'A'-1 defence land was not available and a case for conversion of 'B'-4 land into 'A'-1 land was still under process, CEJZ Jabalpur concluded contract in February 2012 for provision of compound wall and gate for ₹1.29 crore. The work was commenced in March 2012 to be completed in March 2013. Another contract was concluded in November 2012 by the CEJZ for construction of Baffle range for ₹10.98 crore. As per the work order issued (January 2013) the work commenced in January 2013 and was to be completed in July 2014. Accordingly, the contractors commenced preparatory works and procured steel for which payments were made to the tune of ₹ 1.68 crore. The Station Commander in January 2013 directed the GE to stop the work pending receipt of MoD sanction for conversion from 'B'-4 land to 'A'-1 land. The work was stand still since January 2013. Statement of Case for foreclosure of the contracts was processed in June 2014 and decision was pending as of December 2014. An expenditure of ₹1.68 crore had been incurred on the work towards payment made to the contractors on account of procurement of steel. GE intimated to audit that the utilization of steel (₹1.68 crore) which was lying at site as of December 2014 would be decided after foreclosure of the work.

Thus, the case revealed that the Station commander, Ramgarh Cantt., obtained revised administrative approval for Baffle Range in May 2010 on 'B'-4 land but sanction of the Ministry for its conversion to 'A'-1 land could not be obtained till yet (May 2015). The CEJZ concluded contracts without ensuring availability of site free from all encumbrances, which not only violated the codal provisions but also had resulted in blockage of government money to the tune of ₹1.68 crore.

The case was referred to the Ministry in January 2015; their reply was awaited (September 2015).

4.5 Infertuous expenditure due to procurement of substandard pipes

Procurement of defective pipes led to execution of substandard work. Consequently firefighting infrastructure created at a cost of ₹2.33 crore had to be abandoned rendering entire expenditure infertuous.

Ministry of Defence (Ministry) accorded sanction in March 2003 for construction of 20 numbers of Explosive Store Houses (ESH) for storage of

⁵⁶ B-4 Land: Vacant land that not included in any other class such as Churches, Cemeteries, Communal grave yards.

ammunition at Bharatpur for ₹32.85 crore which was revised to ₹35.32 crore in March 2007. The sanction, inter alia, catered for firefighting works of ₹2.30 crore, comprising of supply, laying and connecting of 'Cast Iron (CI) class B pipes' for fire hydrants. Chief Engineer, Jaipur Zone (CEJZ) concluded a contract in November 2004 for ₹42.92 lakh for laying of pipeline using Ductile Iron (DI) pipes. The DI pipes were to be issued by the department under schedule 'B' of the Contract. The work commenced in December 2004 and was to be completed in December 2005, the same was however not completed as of August 2015. In the meantime work for construction of ESH was completed in December 2005.

As DI pipes were not on rate contract (RC), specifications were changed to CI pipes by the CEJZ. The CEJZ accordingly placed Supply Order for CI pipes (for ₹2.13 crore) on three DGS&D approved firms viz M/s Kejriwal Castings, M/s Dharam Engg Co. Batala and M/s Arko Pipegrams Jalandhar. The pipes were supplied by these firms between June 2005 and June 2007.

However, the pipes received from M/s Dharam Engg. Co. Batala and M/s Kejriwal Casting were sent for independent testing by the Garrison Engineer, Bharatpur to verify the quality. The samples, however failed in Hydraulic Test. Hence whole lot was rejected by Board of Officers in June 2005 & July 2005. However, on the directions of CWE Jaipur the samples were again sent to National Test House, Ghaziabad, which as per the Technical Board of Officers even lacked necessary fixture for Hydraulic Test. The samples were passed in September 2005. Accordingly, all the supplies were accepted at firm's premises.

The Pipes were issued to the contractor, however in April 2009, the contractor intimated that the pipes issued by the department were of 'Inferior quality' and major quantity of 100mm diameter pipes were damaged, having holes and cracked. The CEJZ instructed CWE Jaipur in June 2009 to personally look into the matter and directed Assistant Garrison Engineer (Independent), Bharatpur to recheck all the issued pipes through joint inspection. A Board of Officer was held at AGE (I) Bharatpur and HQrs CWE Jaipur on 14 November 2011 to investigate reasons for leakage and bursting or splitting of pipes at their flanges. Board attributed the probable causes of failure of pipes to 'selection of wrong types of pipes', manufacturing defects and improper planning. In February 2012, Audit highlighted the usage of substandard pipes in the work. And it was consequent to that the Zonal CE took the matter with the Command CE to get the matter investigated through a Court of Inquiry.

Head Quarters CE South Western Command convened Technical Board of Officers (TBO) in March 2012 to ascertain reasons and for suggesting remedial measures. TBO found that 'material and workmanship of pipes were very poor', which was major reason for all problems. TBO has finally concluded (July 2014) that existing scheme of firefighting could not be modified and made operational and hence fresh scheme had to be prepared. The Court of Inquiry however, was under progress (April 2015) to establish the accountability for procurement of substandard pipes.

The case therefore reveals that due to procurement of sub-standard pipes the expenditure of ₹2.33 crore incurred so far on the firefighting work had become infructuous. Further no alternative arrangement for fire-fighting is in place and additional liability for laying fresh scheme for fire-fighting works remained to be implemented.

The case was referred to the Ministry in February 2015; their reply was awaited (September 2015).

CHAPTER V: BORDER ROADS ORGANISATION

5.1 Avoidable expenditure due to acceptance of contract at higher rates

Director General Border Roads could not accord approval to lowest tender due to delay in concurrence by the Integrated Financial Adviser (IFA) within the validity period. The contract was concluded at a higher rate after third call which resulted in extra expenditure of ₹1.89 crore.

Ministry of Road Transport and Highways in November 2007 revised administrative and financial powers delegated in Border Roads Organization (BRO) which empowered Additional Director General Border Roads (ADGBR) to approve execution of work through contracts in consultation with Integrated Financial Advisor (IFA) Border Roads (BR), where cost of the work is beyond ₹5 crore. Contracts for such works are to be accepted by Chief Engineer (CE) Project. DGBR in May 2011 increased the validity period of tender from 60 days to 120 days from the date of opening of the tenders.

In December 2011, DGBR accorded administrative approval and expenditure sanction for provision of surfacing works on road Katra-Reasi Class-9 to National Highway Double Lane specifications from Km 13.00 to Km 24.188 at an estimated cost of ₹8.60 crore including works valuing ₹6.08 crore required to be executed through contract.

To execute the work, CE (P) Sampark issued tender documents on 15 March 2012 and seven quoted tenders were received on 31 March 2012. The price bids of five tenderers were opened on 20 April 2012 and M/s New Jehlum Construction Company was found the lowest with bidding price of ₹5.80 crore with a validity upto 18 August 2012. As the quoted amount exceeded ₹5 crore, the case was sent to DGBR for approval of ADGBR on 12 May 2012. ADGBR could not accord his approval within the validity period of tender due to certain queries raised and recommendation for retendering by IFA.

Retendering was resorted to in February 2013 against which price bid was opened on 17 May 2013. M/s Jai Laxmi Stone Crusher was found L1 with quoted amount of ₹5.62 crore. The validity of tender was upto 14 September 2013. The case was submitted to DGBR for approval on 27 May 2013. On 1 August 2013, IFA (BR) advised DGBR and CE (P) to negotiate with L1 to explore possibility of reduction in rates. CE (P) replied on 6 August 2013 that as per Central Vigilance Commission guidelines, there should be no post tender negotiation with L1 and sought advice in this regard. On 12 September 2013 IFA returned the proposal and sought confirmation from CFA that rates were reasonable and could be accepted without further negotiation with L1. The tender validity expired on 14 September 2013. The tender could not be accepted within validity period on flawed reasons *i.e.* post tender negotiation *etc.*, with L1.

Consequently, the CE (P) had to re-invite the tender for the work in October 2013. The rates of ₹7.60 crore quoted by M/s Jai Laxmi Stone Crusher on 18 November 2013 were found lowest, which were further reduced to ₹7.51 crore by the firm after negotiation. The case was sent to DGBR for approval in February 2014 for which approval was received in March 2014. The contract was concluded by the CE (P) with the firm for ₹7.51 crore in March 2015, which were higher by ₹1.89 crore than that of L-I rates during 2nd call. The work order was placed on 2 April 2014 with date of completion as 1 October 2014. The work was under execution and the progress of the work was 72.88 per cent as of January 2015.

In reply to Audit query, CE (P) stated (October 2014) that contract was accepted at higher rates due to increase in the cost of bitumen and non-extension of validity period by the tenderer during 2nd call. The reply furnished was not acceptable as the percentage increase in rates in respect of bitumen and Emulsion prevailing at the time of 3rd call was 12.25 per cent and 10.52 per cent respectively with reference to 2nd call, whereas increase in the amount of the contract was 33.63 per cent.

The case thus reveals that the delay in according approval by ADGBR during 1st call and during 2nd call due to indecision in the acceptance of the lowest tender, had resulted in re-tendering for the 3rd time which entailed avoidable extra expenditure of ₹1.89 crore, which would require regularization.

The matter was referred to Ministry in January 2015; their reply is awaited (September 2015).

5.2 Under Recovery of Service Tax from the Contractors

As per notification of Govt. of Jammu & Kashmir Service Tax had not been recovered on the gross value of works in five contracts concluded by the Chief Engineer (Project) Vijayak, which had resulted in under recovery of ₹1.06 crore from the contractors.

Government of Jammu & Kashmir (J&K) in March 2007 and in March 2010 issued notifications imposing service tax on works contract at the rate of 10 per cent and surcharge equal to five per cent of the amount of service tax. The Government further clarified in January, 2014 that service tax and surcharge under Jammu & Kashmir General Sales Tax Act, 1962 has to be recovered from the Contractor on the gross value of the contract. It was also clarified by Joint Controller of Defence Accounts (Border Road) Chandigarh in January 2014 that service tax shall be charged on the whole value of the contract irrespective of the source of procurement of materials for the execution of works contract.

We noticed during the audit of Chief Engineer (Project) Vijayak (CE) in September 2014 that the CE had concluded five contracts with two firms during 2012-13 and 2013-14 for re-surfacing of different roads in his area of Command. However, service tax and surcharge at the rate of 10.5 per cent was recovered from the contractors on the amount of work done less cost of stores

issued under Schedule 'B' of the contracts instead of on the entire value of the contracts. This had resulted in under recovery of service tax to the tune of ₹1.06 crore from the contractors.

On this being pointed out in audit the CE in September 2014 stated that orders of 2007 of J&K state had been revised during 2010 which was applicable to the said contracts and linking of all cases with orders of 2007 regarding applicability of service tax was not appropriate. They further stated that appropriate action would be taken in due course of time based on the policies on the subject matter. The contention of the CE is not tenable as notification of 2007 of J&K state regarding imposing of service tax on works contract is still applicable. In the notification of 2010, only rates of service tax were revised from eightpercent to 10 percent. It had also been clarified by the State Government in January 2014 that service tax and surcharge had to be recovered from the contractor on the gross value of the contract.

Recovery of ₹1.06 crore from the contractors on account of service tax was yet (December 2014) to be made.

The case was referred to the Ministry in January 2015; their reply was awaited (September 2015).

5.3 Delay in procurement of Water Truck resulted in extra expenditure

Delay in decision making to select the type of trucks to be procured led to extra expenditure of ₹81 lakh due to revision of rate.

Border Road Development Board (BRDB) in June 2010 approved Annual Procurement Plan (APP) for the year 2010-11 of Headquarters Director General Border Roads (HQDGBR) for procurement of Vehicles/Equipments/Plants which included procurement of 52 Water Trucks 9KL (Truck). The two DG S&D Rate Contract (RC) suppliers viz. M/s Tata Motors Limited and M/s Ashok Leyland Ltd quoted ₹8.52 lakh and ₹8.84 lakh for each truck respectively with validity of rates upto 30th June 2010. The DGBR was already holding 519 Tata trucks and nine Ashok Leyland trucks and thus M/s Tata Motors Ltd was the leading supplier of the trucks.

HQ DGBR initiated a case in June 2010 with BRDB to procure the 52 trucks through M/s Ashok Leyland at a total cost of ₹5.74 crore (including transportation charges) on the ground of timely supply of water trucks to Projects to complete their work targets in time as the firm *i.e.* M/s Tata Motors Ltd. had to supply 99 trucks by July 2010 against earlier Supply Order of March 2010 under APP for the year 2009-10, but they had not started delivery (June 2010). While examining the proposal, BRDB in June 2010 directed HQ DGBR to re-submit the case through Integrated Financial Advisor (Boarder Roads) who had objected to procure the Water Trucks from M/S Ashok Leyland being costlier. Thus, HQ DGBR revised their proposal on the last date of validity of RC *i.e.* on 30.6.2010 in favour of M/s Tata Motors, but the same could not be approved by BRDB on 30.6.2010. The RC got expired on

30.06.2010, but it was further extended up to 30.9.2010 in July 2010 by DGS&D.

Contrary to their own decision HQ DGBR in August 2010 again proposed to procure the vehicles from M/s Ashok Leyland which was not approved by the BRDB on the grounds that this involved extra expenditure of ₹16.35 lakh. Thereafter, HQ DGBR on 30.9.2010 *i.e.* last date of validity of RC changed their decision and revised their proposal to procure the 52 trucks from M/s Tata Motors but this time it was not approved for procurement by BRDB for want of justification of the quantity.

In October 2010 DGS&D awarded a fresh RC for the same truck to M/s Tata Motors Ltd. for the period from 14.10.2010 to 30.09.2012 with increased rates of ₹9.76 lakh as against earlier rates of ₹8.52 lakh for each truck. In November 2010, HQ DGBR again initiated a case for procurement of 52 trucks at a total cost of ₹6.43 crore through M/s Tata Motors Ltd. Subsequently, in December 2010 the requirement was enhanced to 82 water trucks by adding 30 more water trucks sanctioned by BRDB in December 2010 for creation of bank of cutting edge equipment in BRO for the construction of Indo China Border Roads (ICBR). Finally, BRDB in February 2011 approved the proposal and a Supply Order for procurement of 82 trucks was placed on M/s Tata Motors Ltd. at a total cost of ₹10.14 crore. The firm completed the delivery by July 2012.

Thus, HQ DGBR were not firm on their decision to select the type of trucks to be procured and changed their choice twice. The proposal remained under correspondence between DGBR & BRDB and opportunity of procurement of water trucks in the extended validity of previous rate contract could not be availed, resulting in an extra expenditure of ₹81 lakh in procurement of 52 trucks at higher rates.

The case was referred to Ministry in March 2015; their reply was awaited (September 2015).

CHAPTER-VI :DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION

6.1 Project Management in Terminal Ballistics Research Laboratory Chandigarh

Out of 28 projects selected for audit, 24 projects including two staff and 22 R&D projects were completed by TBRL. We however observed that against the two staff projects, parameters as per qualitative requirements of Army were not completely achieved. Out of the remaining 22 completed R&D projects, success against the prescribed objectives, in qualitative and quantitative terms was achieved only in 10 projects. These projects were however still to be translated into deliverables. In the remaining 12 completed projects, the objectives were only partly achieved.

6.1.1 Introduction

Terminal Ballistics Research Laboratory (TBRL) is a Defence Research and Development Organisation (DRDO) laboratory (Lab) located in Chandigarh. The Lab is functioning under the technical control of the Director General Missiles and Strategic System (MSS) since September 2013 and is headed by a Director. The Lab conducts basic and applied research in the fields of high explosives processing, detonics and shock waves dynamics blast and damage immunity, lethality & fragmentation, defeat of armour and performance of warheads and other armament systems apart from performance evaluation of armour defeating projectiles and immunity profiles. The research project programme of the Lab has been classified into four main categories:

- i. **Staff project/Mission Mode project (SL/MM):** Staff projects are high priority projects based on well-defined user-requirements in terms of Qualitative Requirement (QR). The objectives, deliverables and time frame in respect of these projects are clearly spelt out in the sanction. These projects are expected to culminate in the induction of the systems in the Services within a specified time frame.
- ii. **Technology Demonstration project (TD):** TD projects are planned in the areas where user's requirement is known but the technology is not yet matured for taking up a Staff project with well-defined cost and time frame. TD projects form basis of taking up user oriented future projects and are expected to be converted into deliverables in three to five years.
- iii. **Research and Development project (R&D):** R&D projects are general competence build up projects in a given area of research or to solve specific problems arising out of or having a bearing on Staff projects.
- iv. **Infrastructure (IF):** IF projects are taken up to create typically advanced test and qualification facilities

6.1.2 Scope of Audit

The Research & Development (R&D) projects of the Lab involve long gestation period to develop critical technologies and products as such the projects undertaken during the period of 15 years from 1998 to 2013 were covered in the scope of Audit. A total of 36 projects were undertaken by TBRL during the period January 1998 to December 2013. Since no Staff projects had been taken up by the Lab during this period, we included two Staff projects undertaken prior to 1998 which were subsequently developed through R&D and TD projects, in the scope of Audit.

Out of the 38 projects, (category wise breakup given in the **Table-24** below), 24 projects were completed and 14 were in progress. Audit examination was carried out in respect of 28 projects, the probable date of completion (PDC) of which was up to March 2014. The selection included 24 completed and four in progress projects. The **Table-24** below summarizes the selection of projects by Audit:

Table-24

Total No. of projects		Staff	R&D	TD	IF	Total
	Undertaken	2	23	9	4	38
	In progress	0	3	8	3	14
Selection	In progress			3	1	4
	Completed	2	20	1	1	24
	Total	2	20	4	2	28

6.1.3 Audit Findings

6.1.3.1 Non achievement of Objectives

All types of DRDO projects are taken up for execution by the Lab after being sanctioned by the competent financial authority within their delegated financial powers. The sanction *inter-alia* mentions and enumerates the objectives of the project. Hence these objectives become a benchmark to assess the success of the project.

Audit examined the overall success rate of the projects undertaken by the Lab during the period covered in the scope of audit. Success of completed projects was assessed against the objectives defined for each project. Audit examination revealed that all the objectives as enumerated in the sanction had been fully achieved only in 10 out of the 24 completed projects. In case of the remaining 14 projects the objectives were partially achieved *i.e.* with limited qualitative success. Thus, the success rate in achieving the objectives of the projects was only 42 percent.

Type-wise success of the projects further show that in case of the two staff projects, the objectives were not fully achieved in either of the projects. The projects were closed only after part achievement of objectives. Similarly, in case of R&D projects, the achievement of objectives was only in case of nine out of twenty projects *i.e.* 45 percent.

The details are summarized in **Table-25** below:

Table-25

Type of project	No. of projects (No)	Objective fully achieved (No)	Objective partially achieved (No)	%age of fully successful projects
Staff projects/MM	2	0	2	00
R&D	R&D-12	4	8	33
	Study/trials/evaluation-8	5	3	63
TD	1	1	-	100
IF	1	-	1	00
Total	24	10 (42%)	14 (58%)	

(A) *Staff projects*

We observed that despite clear Qualitative Requirement (QR) of the user and well defined objectives for the project, the Staff projects undertaken by the Lab were closed by the Director of the Lab after declaring them successful though the QR and objective of the project were found not to have been fully achieved during the trials/manufacturing stage. Therefore, infact both the selected staff projects were short closed for want of desirable quality, after part productionisation and further use of the ammunition banned. The failure in successful achievement of objectives in these projects is summarized as follows:

(i) *Development of multimode grenade*

The work for development of multimode grenade to replace the existing grenade by a lighter version having enhanced capabilities, was assigned to TBRL in 1989 at a sanctioned cost of ₹98 lakh with the objective of achieving a delay time of fuze for multimode grenade between 3.5 and 4.5 seconds. The first user trial was conducted in December 1997 although the PDC of the project was over in June 1997. On the basis of successful user trials, a project for Transfer of Technology (ToT) to Ordnance Factory Board (OFB) was sanctioned by DRDO at cost of ₹19 lakh for production of grenade in May 1998. The project on ToT was completed in May 2000 with the recommendation that a new project be taken up for extended user's trials. Accordingly, Ministry of Defence (MoD) sanctioned (June 2000) another project for manufacturing of 2000 grenades after extended user trials at a cost of ₹24.8 lakh. The project was closed by TBRL in June 2003 after declaring it successful. As per the closure report the users had achieved 95 per cent reliability in their trials. There was, however no specific mention about the time delay in the closure report.

In March 2010, MoD placed supply order on OFB to arrange supply of 10 lakh grenades at a total cost of ₹193.80 crore. But after receipt of only 35,000 grenades costing ₹6.78 crore, Army intimated TBRL (November 2011) that the detonating time delay of the grenade was ranging between 2.5 and 5.0

seconds against required/specified delay of 3.5 to 4.5 seconds. As the delaytime was an operational requirement and could not be relaxed, Army imposed ban on use of grenades in November 2011 and progress on the production of grenades is at a standstill as of September 2014. Since TBRL was Authority Holding Sealed Particulars (AHSP) for production upto first 10 lakh grenades, it was the responsibility of the Lab to ensure that the user's requirement was fully met, till production of such quantity. However, due to non-achieving of the desired delay of 3.5 seconds to 4.5 seconds, TBRL failed to develop the lighter version of the grenade with enhanced capability even after lapse of nearly 25 years and incurring an expenditure of ₹8.20 crore.

Ministry in their reply (August 2015) to the draft report accepted the limitation and stated that it was not possible to get 100 *per cent* of grenades functioning between 3.5 second and 4.5 second and therefore a case for waiver of 0.5 second has been sent to Competent Authority for approval. It was further stated that TBRL was making efforts to resolve the issue of delay time by involving private industry.

Notwithstanding the reply, the fact remains that TBRL failed to achieve the delay time as stipulated in GSQR and therefore could not meet the requirement of the Army.

(ii) *Development of Bund Blasting Device*

Project on "Design & Development of Bund Blasting Device (BBD)" was undertaken in February 1991 by TBRL, based on GSQR No.573, with PDC of June 1991 revised to December 1994.

The User trials of the BBD developed by TBRL were carried out in 1994 but dimensions of cut achieved (9x5.5x2m) after blasting the bund was less than that desired as per GSQR (8x4x2.5m). In addition, weight of BBD was 22.5 kg against the GSQR requirement of 15 to 20 kg. Despite the limited achievements, the project was closed with recommendation by the User trial team to introduce the device into service until an improved version was developed and tested. Against total requirement of Army of 2880 numbers, a supply order for 1440 numbers was placed on TBRL by the Ministry, in December 2004. The supplies were delivered by TBRL by 2007-08. As performance of device could not be improved in the present version, TBRL was asked by Integrated Headquarters of Ministry of Defence (Army) in November 2009 to try to achieve required parameter through improved version of MK-II.

Accordingly, a project for "Performance Enhancement of BBD" was undertaken by TBRL in June 2010, at a cost of ₹48 lakh, with PDC of 18 months (*i.e.* upto December 2011) which was revised to 30 June 2013. The project was closed successfully by TBRL in June 2013 at a cost of ₹20.37 lakh though evaluation trials are yet to be carried out by Director General Quality Assurance (July 2015).

TBRL could not develop the device of required specifications even after 24 years despite the objective of providing BBD within six months.

Ministry in their reply (August 2015) accepted that against the dimension cut of 2.5m as per the GSQR, only 2m cut was achieved during the trials. Despite this limitation, BBD Mk-I was accepted by users with minor deviation. It was further stated that while BBD Mk-II designed under second project met most of the physical/operational characteristics yet the final user trials are awaited.

The acceptance of BBD Mk-I by the users was however not absolute as only part quantity was procured to meet the urgent requirement, pending development and testing of improved version.

(B) Utilisation of technology developed through R&D/TD projects

Out of the 22 completed R&D/TD projects selected in audit, eight projects were on Study/Trial evaluation, whereas one project each was on TD and IF. We observed in eight out of 12 R&D projects that technologies have not been developed as per the specific objective laid down in sanction of the projects. These projects could not therefore be converted into TD/MM projects. In addition, technologies developed through one completed TD project could also not be used as feeder technology for future or imminent Mission Mode projects due to non-achievement of the objectives. While the failure in achieving the objectives in two R&D projects have been discussed in Para No.3.1.1.1 earlier, the cases on the remaining six projects are summarized as follows:

(i) Development of multi P-charge and futuristic shaped charge warhead

A project was sanctioned by DRDO, in June 1998 at a cost of ₹4.62 crore with PDC of 4 ½ year for “Development of multi P-charge⁵⁷ and futuristic shaped charge warheads” to upgrade the Explosively Formed Penetrator (EFP) based warhead performance to 0.8-1.0D.

Penetration of the warhead was to be tested in Rolled Homogeneous Armour (RHA) to demonstrate the indigenously developed medium caliber HEAT based warhead and to demonstrate the feasibility of multi P-charge and multi stage shaped charge warhead. TBRL completed the technical work of project in May 2000. We observed from the records that the maximum penetration of 700mm only was achieved in forged steel target. In RHA, the penetration was 0.6D (50mm) with 85mm diameter warhead and 0.5D with 50mm diameter warhead. Thus, the desired penetration of 0.8 – 1.0D penetration in RHA was not achieved as was the objective of the project. The project was closed with limited achievement after incurring ₹4.62 crore.

In the closure report finalized by TBRL, it was stated that the State of the Art technology in various schemes had been established by way of achieving the near set goals and therefore it was recommended to take up the development scheme based on shaped charge based warhead separately for different

⁵⁷ P-charge- Projectile charge.

applications. This was despite the fact that no specific requirement had been raised by the users for production of the same.

DRDO Headquarters accordingly sanctioned three different R&D projects for establishment of shaped charge based warheads for futuristic high energy shaped warheads, as discussed below.

Ministry in their reply to the draft audit report stated (August 2015) that the project was undertaken with an aim to improve their understanding of shaped charge related technologies and also to improve performance of EFP. The reply was however silent about testing the penetration in mild steel instead of RHA, which formed the main objective of the project.

- **Establishment of shaped charge based Anti-ship and Anti-submarine warheads and Anti-armour technology**

This project, with the aim to defeat the protection offered to Main Battle Tanks (MBTs), ships, submarine, aerial targets, was taken up by TBRL in October 2003 at a cost of ₹4.95 crore with PDC of 54 months (*i.e.* March 2008). Project was closed in April 2008 at a cost of ₹4.70 crore after development of prototype design of the shaped charge and multi P-charge based warhead without stating the achievement against desired penetration level of the same. The project was made a feeder project for development of technology for design of futuristic high energy shaped charge warheads. In the absence of any mention about the specific level of penetration, the success rate of the project could not be ascertained in audit.

Ministry replied (August 2015) that technology was developed and demonstrated through experimental trials enabling to design shaped charge warheads. However the reply is silent about the specific achievement made in the project and its success in terms of the objectives of the project.

- **Development of technology for the design of futuristic high energy shaped charge warhead**

In February 2009, a TD project was taken up by TBRL at a cost of ₹13.70 crore with PDC of 60 months. Under the project, technology for design of high energy shaped charge warhead to defeat deep buried Command and Control bunkers, double hull submarines and design of high energy multi-P charge based warheads for defeat of naval ship and aerial targets were to be developed. One of the objective was to penetrate 4.5 meter in multi layer target like Triple Reinforced Cement Concrete (TRCC)/Compact earth, as clarified by the Lab in August 2008 (before sanction of project). Despite the limited success of the project, Chairman Executive Review Committee of XIth plan projects however recommended closure of project (January 2014), after achieving penetration of 3m in Plain Cement Concrete (PCC) target as against penetration of 4.5m in TRCC. This was a significant lapse on the part of Executive Committee. In reply to audit query as to how the test was qualified as successful when the penetration was only 3m in PCC against 4.5m TRCC, it was stated that a separate project has been taken up under 12th Plan to achieve higher penetration *i.e.* up to 4.5m in RCC. Thus, even though the

objectives were not fully achieved, the project was declared as successful by Executive Committee.

Audit observed that to achieve the penetration level of 4.5 m TRCC, another TD project (TD-13/TBR-655) was taken up by TBRL in December 2013 for “Development of technology for design of shaped charge based multi stage warhead system to defeat hardened deep buried targets”. The PDC of the project is December 2018.

Ministry in their reply (August 2015) stated that multi EFP technology was developed to the extent that war heads were designed as per required specification which were used successfully in number of flight tests of interceptor missiles under programme AD of RCI Hyderabad. The reply therefore substantiates the audit finding that the technology developed was used as feeder technology and to achieve the specified penetration levels, a separate project was taken up.

Thus, even after undertaking two R&D projects and one TD project and after a lapse of 16 years, technology developed could not be converted into Staff/MM project due to non-achieving of desired objectives. Fourth project for shaped charge application is still in progress as TD project.

(ii) Design and development of Bunker Buster

The objectives of the project were to develop specific weapon technology for design and development of bunker buster capable of penetrating and destroying hardened bunkers/deep buried structures. Ministry sanctioned a project in March 2004 for ‘Design and Development of Bunker Buster’ at a cost of ₹4.90 crore with PDC of 48 months subsequently revised to 60 months from date of sanction.

Though the project was closed in March 2009 at a cost of ₹1.42 crore, yet the issue regarding translation of developed technology into production was not done even after four years (April 2009 to November 2013) of completion of the project. TBRL ascribed the reasons (November 2014) for delay to pending financial closure of the project. It was also stated that it was a feeder project whereby the technology developed is being used in current running 12th Plan project (TBR-655) sanctioned in December 2013 with PDC of December 2018. Hence the technology developed in the previous project was not used for more than five years in the subsequent project which caused an overall delay in use of technology developed for conversion into product.

Ministry in their reply (August 2015) stated that the technology developed was subject to detailed feasibility studies, decision aid for technology evaluation (DATE) analysis and formulation of project proposals prior to undertaking a feeder technology demonstration project. The fact however remains that since the subject project had been taken up as a feeder project, the activities like feasibility study, DATE analysis etc should have been carried out before successful completion of this project.

(iii) Development of slapper detonators

To develop the technology for development of slapper detonator, MoD sanctioned a project at a cost of ₹4.29 crore with PDC of 42 months from date of issue of sanction in November 2002.

The objective of the project was to develop slapper detonators device for sophisticated weapon system to make the system at par with devices used by advanced countries. After development of technology the same was to be transferred to production factories for integration with future weapon system. The project was closed on 30 November 2006 as successfully completed. On Audit query regarding utilization of the technology developed for incorporation in weapon system, TBRL replied (December 2014) that the detonator developed under the project achieved higher voltage than desired voltage level. Thus to bring down the voltage level, a TD project (TBR-1249) was taken up with PDC of November 2015. Thus TBRL did not make proper study of voltage matching of detonator with warhead before taking up the project. The objectives framed for the project were therefore inaccurate.

Hence, after development of technology, the same could not be transferred to production factories due to non-achievement of the desired voltage level for integrating the same with weapon system even after eight years of completion of the project.

(iv) Development of Technology for initiating devices

The objective of the project was to develop laser ordnance initiator for single point initiation and multi point initiation and subsequent transfer of technology to the production agencies for integration with the weapon system, after successful development. To achieve the objective, the project for 'Development of Technology for initiating devices' was sanctioned in November 2002 at a cost of ₹4.76 crore with PDC of 4 years from date of sanction, which was subsequently revised to 5 years. Single point initiation by laser technology was achieved in the project but multi point initiation could not be achieved as the laser system which was to be imported could not be received in time even in extended period of the project upto November 2007. However, the project was closed by Director TBRL as successful in November 2007, based on initiation of multi target by splitting the beam and by simultaneously firing number of laser diodes.

On audit query regarding transfer of Laser Ordnance Initiator system to production agencies for integration with weapon system as envisaged in the objective of the project, TBRL replied (December 2014) that the project was R&D and Laser Ordnance Initiation System (LOIS) developed under this is a Lab model and for development of field setup, subsequent TD project (TBR-1249) has been taken up in November 2008 with PDC of May 2014 which was extended to November 2015.

Thus the objective of development of laser initiator technology and its transfer to the production agencies for integration with the weapon system could not be achieved in the project. Notwithstanding the same, the project was closed as successful.

In reply, Ministry stated that this is a future generation technology towards development of precision, safe and miniature detonator mainly for secret strategic application. Notwithstanding the reply, the fact remains that technology developed has no application as on date.

(v) *Design & development of multipurpose fuze long delay*

Director, TBRL, Chandigarh sanctioned R&D project “Design & development of multipurpose fuze with long delay” in January 1998 with PDC of 18 months (June 1999). This project was in continuation of earlier staff project on ‘Design and Development of General Purpose Anti-personal Grenade’ sanctioned in August 1989, which was closed in June 1997 after successfully achieving acceptable qualitative level. The objective of the R&D project was to modify the time delay of the existing fuze developed under staff project from 5 seconds delay to 7 seconds delay required for rifle grenades. During four trials held between 1997 and 1999, the fuzes used in rifle grenade failed to meet the parameters. Hence it was decided by users to foreclose the project in October 2000. Thus, the project for development of fuze for rifle grenade did not achieve the desired objectives.

Ministry in their reply (August 2015) stated that the desired delay for which TBRL was responsible was successfully achieved. The fact however remains that the success was actually achieved only in Hand grenade. In case of Rifle grenade the parameters could not be met, which caused the Army to close the Project on Multi mode grenade (Rifle) in October 2000.

6.1.4 Time overrun in R&D/TD/IF Projects

For planning of new projects, feasibility study, availability of resources, probable date of completion (PDC) and execution plan form the main criteria. To review the overall progress of the projects, all projects have an integrated review and monitoring mechanism approved by the Competent Authority at the time of sanctioning the project.

We observed that while each project has a defined PDC, yet out of 24 completed projects, 14 projects (58 per cent) were delayed. The delay ranged between 8 months and 54 months. Age wise analysis of the delayed projects is summarised in the **Table-26** below:

Table-26

Total No. of projects	No of projects delayed	Period of delay				
		Upto one year	One to two years	Two to three years	Three to four years	Four to five years
24	14	6	5	1	1	1

In reply the Ministry stated that projects are considered closed once the PDC/extended PDC is over. However it takes some time before it is administratively closed. The Ministry contested the above mentioned period of delay, stating that while the projects were physically completed, the administrative closure was delayed. This contention of the Ministry is not

tenable, as a project is considered closed only after closure of all activities linked with it.

Ministry however attributed the delay to non-materialization of supply orders of “dual use items” for which technology is denied to the Lab.

6.1.5 Future utilization of technology developed

The Closure Reports of the projects undertaken do not mention the future utilization of technology developed/results achieved. This issue was raised in Audit to examine the use of technology developed. In response to audit query, Director TBRL confirmed (December 2014) that the same is not mentioned in the closure report, and stated that as some of the projects are of strategic nature, and are for advancement of systems already developed, the usability of techniques developed are furnished to user/Director General (Headquarters). Given the low success rate in achievement of objectives, as discussed earlier in the report, proposed utilization of the technology developed/results achieved should be mentioned in Closure Report for transparency.

Conclusion

- Staff projects are undertaken on the basis of well defined QR projected by the user. The objective of these projects is to culminate in the induction of the systems in the Services within a specified time frame. However TBRL did not undertake any staff project in the last 15 years. Two staff projects undertaken prior to 1998, which was subsequently developed through R&D and TD projects in 2000 and 2010, were still awaiting successful productionisation. The reason for non-productionisation and eventual induction of technology in the Service was the failure of TBRL in achieving the prescribed quality parameters.
- R&D and TD projects are expected to eventually find application in Staff projects. Such projects have the potential of creating a certain extent of intellectual property that is patentable. However, most of the R&D/TD projects, undertaken by TBRL during the last 15 years could not be converted into staff projects due to non-achievement of objectives. 11 out of 20 R&D projects, though closed after declaring them successful, had actually not achieved the prescribed objectives and were eventually used as feeder projects for subsequent projects.
- All projects have an integrated review and monitoring mechanism approved by the Competent Authority at the time of sanctioning the project for reviewing the overall progress of the projects. However, inspite of monitoring at various levels through Executive Committee, Project Monitoring Committee, 58 *per cent* projects got delayed mainly due to non-materialisation of supply orders which suggest improper planning and monitoring.

Matter was referred to Ministry (June 2015). Ministry’s reply received (August 2015) has been suitably incorporated.

6.2 Information Technology Audit of SAP Enterprise Resource Planning System at Research Centre Imarat, Hyderabad

The ERP system implemented at a cost of ₹15 crore in August 2011 after a delay of three years, was utilised partially due to incomplete mapping of business rules, inadequate usage of modules leading to manual intervention in generation of MIS report and decision making. The inventory data in the ERP system is incomplete as it was ported partially only from the legacy database. Further, the data in the ERP database have wrong codification. The Project System module was used only for procurement related activities integrated with Material Management module and not utilised for scheduling and monitoring of projects.

6.2.1 Introduction

Research Centre Imarat (RCI) Hyderabad, a laboratory of Defence Research and Development Organisation (DRDO) was established to design and develop state of the art technologies which will produce reliable indigenous weapon systems. It is pursuing research on navigation, control and guidance system, imaging infrared and radio frequency seekers, batteries and flight instrumentation technology areas. In March 2005, RCI initiated proposal for implementation of SAP ERP⁵⁸ system with the objectives of effectively managing the mega Research and Development (R&D) projects having a lot of uncertainties and challenges, reduce the project risk in terms of technical performance, schedule and cost, integrate the existing scientific software and utility software to protect the previous IT investment, integrate all the divisions of RCI, other research and educational institutions and various DRDO labs, integrate all the data for decision making and automate project monitoring and have on-line generation of various reports, including management information report. In September 2007, RCI engaged M/s Tata Consultancy Service (TCS) as prime contractor and M/s Computer Maintenance Corporation (CMC) as sub-contractor for setting up of a data centre and implementation of SAP ERP system on turnkey basis at a total cost of ₹14.91 crore. RCI has implemented 23 modules under ERP system in August 2011, after a delay of three years, from the envisaged schedule. The SAP ERP is made available to the users through web based portal and SAP GUI provided in the PCs/Thin Clients.

The audit reviewed business process re-engineering, hardware and software procurement, customisation and implementation of SAP ERP system during January to April 2015 and the data for the calendar year 2011 to 2014 was analysed. The Project System (PS) and Material Management (MM) module were selected. The PS module deals with preparation of project proposal, sanction, project scheduling to procurement and inventory management while MM module deals with planning, organising and controlling the flow of materials from their initial purchase through internal operations to the service point.

⁵⁸ SAP ERP is enterprise resource planning software developed by German Company SAP and incorporates all the key functions of an organisation.

6.2.2 Audit findings

6.2.2.1 Control Weaknesses

Adequate and appropriate IT controls ensure that adequate measures have been designed and are operated to minimise the exposure to various risks. IT control objectives relate to the confidentiality, integrity, and availability of data and the overall management of the IT function of the business enterprise.

(A) Physical Control

In order to prevent easy access to sensitive data maintained in RCI Data centre, provision was made in the contract for installation of access control devices like access control system, finger print reader, surveillance system (CCTV), magnetic door contact and controller. The responsibility of Data centre was entrusted to private parties including maintenance of access control system. However, we observed that the door was kept open for easy access to the data centre.

On seeking clarification regarding access control at the data centre, DRDO stated (August 2015) that the entry in the data centre room was not required for all the software maintenance/installation/administration staff, which could be done from outside the data centre at Command centre. The entry of maintenance team into data centre was controlled by the data centre in-charge and the movement of people was recorded by CCTV.

The reply is not acceptable in audit, since, there is free movement of personnel in the data centre and the system being followed by RCI is reactive rather than proactive. Further, log files of access control device were not maintained to monitor unauthorised access. Considering the confidentiality of data in the system relating to Research activities under taken by RCI in the field of Missiles and Defence sector equipment, weakness in the physical access control exposes the systems and data to unauthorised access.

(B) Logical and Authorisation control

Password policy

The system protection parameters from unauthorised access, their functions, the SAP standard settings and the recommended settings vis-à-vis actual settings at RCI were examined in audit. We observed that the period for expiry of the password and changing the password was not set in the system. Further, analysis of the profile parameters pertaining to password changes revealed that the users changing the password was minimal as out of 630 users, only 48 users have changed their password within 90 days, which is advisable for IT Security.

In reply to audit query, DRDO stated (August 2015) that ERP system of RCI is the first integrated automation system implemented in the organisation and bit complex to be used for naïve users. DRDO further stated that in order to make the use of ERP system simple for RCI employees, flexible password

policies has been defined which can be made slowly strict over a period of time. It was also stated that action will be taken up to implement frequent password changing policy. The reply confirms that even though four years have lapsed since Go-Live of the system the password policy has not been strengthened. This indicates that the present logical and authorisation control in the system are weak which compromises the IT Security of RCI.

Segregation of duties

Separation of duties occurs when one person provides a check on the activities of another and prevents one person from carrying out an activity from start to finish without the involvement of another person. Inadequate segregation of duties increases the risk of errors being made and remains undetected, chances of fraud and adoption of inappropriate unethical working practice. This can be achieved through the existence of and compliance with job descriptions. Notwithstanding the above,

- i. A developer was granted full access to PS Module, who could modify an existing programme in production, configure the production environment to limit monitoring, conceal irregular development practices and can modify data in tables and run programme using inappropriately modified data. Thus, entrusting all powers of PS module to a developer is contradictory to best practices of IT security.

On pointing out in audit, DRDO stated (August 2015) that these officials are not a User of the Module but all the problem resolutions specific to this module is addressed by these experts and they do not have any authorisation of financial/non-financial approval role.

- ii. As Integrated Financial Advisor (IFA) was not exploiting the facility extended to them, all the documents requiring IFA approval that were obtained on paper, were fed into the system by Director of Contracts and Material Management, RCI on behalf of IFA using his Username and Password. This leads to compromising best IT Security practices and would compromise the vital control over expenditure.

In reply DRDO stated (August 2015) that one official is doing approvals on behalf of IFA, once manual signature is done on the file. It was further added that once IFA starts using the ERP system, the referred step will not be required.

The reply is not tenable in audit as the above system indicates inadequate segregation of duties as officials are performing multiple roles leading to risk of data manipulation, irregular sanction of procurements.

(C) Internal Audit

The organisation of PCDA/CDA (R&D) is responsible for carrying out the Internal Audit of the accounts maintained by the DRDO. The internal audit's objective is to ensure that the accounting system and the mechanism are efficient and the accounting reports are accurate and to disclose all the

material facts. Further, this involved conducting a systematic examination of the records, systems and procedures and operation of an organisation as a service to the Executive. The internal audit of financial accounts of the R&D projects undertaken by these Laboratories/Establishments/Units is also conducted by CDA (R&D). In the process, the LAO does the linking, pairing, casting and checking closing/opening book balances.

We observed that module for discharging functions of internal audit was not incorporated in the ERP system, which would not only result in accounts remaining unaudited through ERP system but also in maintenance of manual records for the purpose of internal audit.

On being pointed out, DRDO stated (August 2015) that proactive involvement of CDA (R&D) was essential. It was further stated by DRDO that CDA can access the documents using ERP from their location if they want, on real time basis without waiting till month end and can take corrective measures. In addition, manual copy was generated through ERP for the last couple of years. However, CDA (R&D) in their reply stated that there is no 'Audit Module' incorporated in the system and they were not associated in implementation of the modules.

As such reply of DRDO is not tenable in audit, since audit module has not been incorporated in the ERP system as confirmed by CDA (R&D) despite lapse of four years from Go-live of the system.

6.2.2.2 Business Continuity and Disaster Recovery plan

The objective of Business continuity, disaster recovery plan and associated controls is to ensure that the organisation can still accomplish its mission and it would not lose the capability to process, retrieve and protect information maintained in the event of an interruption or disaster leading to temporary or permanent loss of computer facilities. We observed that RCI did not establish backup servers outside the data centre building or out of the same seismic zone, thus exposing to the risk of loss of data/continuity of business due to natural calamities.

In reply, DRDO stated (August 2015) that they would consider suitable place for safe storage of back up data. As regards disaster recovery and business continuity plan DRDO stated that the same would be implemented on receipt of financial sanction. The absence of well-defined and tested Business continuity and disaster recovery plan may pose threats to the very existence of the organisation in the event of disaster.

6.2.3 Material Management Module

Basic functionalities of MM module under SAP implementation at RCI, were maintaining Material Master and Vendor Master, Material procurement (demand, tender processing, TPC, supply orders, preparation of vouchers *etc.*), inventory management and material valuation.

6.2.3.1 Business Rules not mapped into the system

Business rules are abstractions of the policies and practices of a business organisation which define and control the structure, operation, and strategy of an organisation. The mapping of rules automates the action to be taken under specific conditions.

We observed that some of the Business Rules have not been correctly mapped in the Material Management module as detailed in the following paragraphs:

(A) Non-mapping of fields

Audit requisitioned details pertaining to 64 fields relating to procurement of stores, subsequent to implementation of SAP ERP in RCI. The data requisitioned was to assess the process flow, compliance to the procurement rules, time taken to obtain the sanction till placement of supply order and its materialisation. However, RCI in their reply stated that the data relating to 21 fields could not be generated through ERP system, which included, the availability of funds, date by which stores were required, financial sanction, issue of EDEC/CDEC, TDS, amount of liquidated damages for delayed delivery, date of issue of stores to users, final payment voucher No and date, among others.

On seeking clarification in audit, DRDO stated (August 2015) that some of the transactions are carried outside the system viz., CDEC/EDEC, TDS, amount of LD and efforts would be continued in implementation regarding the process that needed to be mapped. It was also stated that as and when ERP is implemented across DRDO and CDA module will be effectively in use, all these transactions will be available in system.

The reply is not acceptable in audit since this indicated that the procurement process is still not fully automated despite implementation of SAP ERP system in August 2011, thereby defeating the very intention of digitising the entire procurement process.

(B) Tender Process and Authorisation control -Demand initiation

DRDO Purchase Management Manual 2006 stipulated authority/level for initiation of Demands for procurement of stores against projects, build-up, maintenance and general use. Extraction of the records revealed that 3392 demands valuing ₹15.11 crore were initiated by officials of the rank below Scientist 'C', who were not authorised to initiate Demands. On being pointed out in audit, DRDO stated (August 2015) that the additional authorisation was given to few employees based on the Technology Director's request who duly approved the demand in those cases and the system would be corrected as per rules. The reply is not tenable in audit as the present system of demand initiation is not as per rules.

(C) Booking of Capital expenditure under Revenue

As per para 5.6 of Store Management Guidelines for DRDO, non consumable items costing more than ₹10 lakh and having a life of seven years are to be

categorised as Capital items. However, in 381 cases valuing ₹34.75 crore where the cost of the item was less than ₹10 lakh, were demanded under Capital Head. Four of the supply orders for annual maintenance for ₹31.48 lakh were also demanded under Capital Head. Further, no field was catered in the system to capture the life of the store to verify the correctness of the nature of booking.

On being pointed out in audit, DRDO stated (August 2015) that the cases where the cost was less than ₹10 lakh has been booked under capital because they had shelf life more than seven years.

The reply is not tenable in audit as the Stores Management Guidelines stipulates condition of cost and seven years of life for Capital expenditure.

(D) Acceptance of tenders without approval of Stores Procurement Committee (SPC)

Para 4.4 of DRDO purchase manual stipulated that demands in excess of ₹ one lakh were to be processed with the approval of SPC. Audit however, observed that in 137 cases valuing ₹12.38 crore, where the estimated cost of the item was more than ₹ one lakh, the demands were processed without the approval of SPC. DRDO replied (August 2015) that presently all the cases above ₹ one lakh were routed through SPC.

The reply is not tenable in audit, as DRDO is silent about mapping of rules in the system.

(E) Non recording of collection of tender fees from non-registered vendors

As per para 7.4.5 of DRDO Purchase Management manual, tender fees was to be realised from non-registered vendors. It was observed that in 232 cases wherein the amount of tender fee involved was ₹1.08 lakh, the field to record receipt of tender fee was kept blank. On raising the issue in audit, it was stated that the tender fees was received from all non-registered vendors through Demand Drafts and manually recorded in the register. Further it was stated that DRDO was planning collection of tender fee through payment gateway on e-procurement platform.

The reply is not tenable in audit, as the details regarding actual collection of tender fee was not entered in the designated field even after receipt of the amount. The rules regarding collection of tender fees were not captured in MM Module. This indicates that rules for issue of tenders have not been mapped in the system which may lead to issue of tender free of cost.

6.2.3.2 Validation Control

Information technology system may have in-built controls to automatically check that the input data is accurate and valid. In the SAP R/3 System, all input values are validated by a program or against tables or master files except some types of validations which are not standardised but such programme could be created to validate transactions specific to the organisation. The

validation function enables to check values and ranges of values as they are being entered in the system thus ensuring that only valid data is entered and processed.

(A) *Material Master*

In SAP system when a new material is procured, a master record is created. There should be a unique Material Code Number for the material thereby avoiding duplication. It is used as a central source for retrieving the material specific data. The Material Master Record for a material would be created only once across all the Directorates (Plants).

This information was to be stored in individual Material Master Records in two categories one in 'descriptive nature' with information content such as name, size, or dimension. Another category of the data to perform a price control function. As such, every material would have a single master record created, which means all the information pertaining to material e.g. Purchasing, Inventory, Accounting, Quality etc., would be maintained in a single record, thereby redundancy was avoided.

In this context, during the test check of the Material Master functions, the following points were noticed in audit:-

- The Material master contained 64226 items out of which 6311 items have 19336 material codes. Even, the material code number was not unique as the same material code number was repeated two to 43 times.
- The Unit of measurement was not correctly captured for items like filter oil and coolant. The unit of measurement for Machinery was "Box" instead of "Number". For items that were to be measured as "litre" were counted as "number".

Misrepresentation of items would result in incorrect reporting of the Quantity of Stock held in the stores, leading to likelihood of ordering the item despite holding the same in stock or otherwise.

On being pointed out in audit, DRDO replied (August 2015) that necessary action would be taken to rectify the above mentioned errors.

(B) *Material coding*

Under Material Master, RCI adopted codification logic based on the North Atlantic Treaty Organisation (NATO) codification standards, wherein, the code consisted of 18 digits, including two hyphens. The first two digits represented 'Industry Sector', second two digits represented 'Material type', third two digits represented 'Main category' of material and the fourth two digits indicated 'Sub Category' of the items. The last eight digits represented unique material code number for a specific item. Analysis of the material master records revealed that the material coding had deviated from the standards set, thereby undermining the correctness and completeness.

- The first two digits that represent “Industry” should range from 01 to 12. However, the coding was assigned beyond this range.
- Text characters were used instead of digits.
- Under material type, consumables were classified under the code for “Non-consumables” and vice-versa. There were mis-classification under main category and sub-category items viz., under ‘Weapons’, items such as Wet Canteen, LPG spares and ‘Computer printer Cartridges’ and Computer Printers were classified under ‘Cartridges’ of ‘Ammunition & Explosives’.

On being pointed out in audit, DRDO replied (August 2015) that necessary action would be taken to rectify the above mentioned errors.

Search by using wrongly coded material master would result in mis-reporting that may lead to under/over provisioning of stores. As RCI is dealing with explosive stores also, there is likely hood of the same landing in unsecured storage location.

(C) Payment more than the order value

Out of 4578 cases, in 144 cases valuing ₹35.03 crore, the system reflected that the actual payment made was amounting to ₹38.96 crore, which is ₹3.93 crore more than the supply order value. This indicated that there was no link between the supply order value and the total payment made to the vendors. Moreover, there was no indication regarding revision of the sanctioned amount in the data given. On being queried in audit, DRDO stated (August 2015) that in the mentioned 144 cases payment made was more than the supply order value due to exchange rate variation, tax structure revision, etc. It was also stated that ERP will not allow excess payment without proper additional financial sanction and same is enrolled and processed through ERP.

The reply is not tenable in audit as DRDO in reply regarding ‘non-mapping of fields’ had stated that transactions like CDEC/EDEC, Financial sanction etc. are carried out outside the system. This indicates that the controls in the system to restrict the payment within the supply order value does not exist and consequent poor validation check.

(D) Down payment more than the order value

As reflected in the system, in 16 cases worth ₹6.53 crore ‘the down payment’ made was ₹7.74 crore, which is ₹1.22 crore more than the supply order value. This indicated that there was no link between the order value and the actual payment. On being pointed out in audit, DRDO stated (August 2015) that the same was due to errors occurred during transition from manual system to ERP and there was no over payment. Legacy supply orders were created in the system for making the balance payment but entire amount was booked against the supply order. It was further stated that actual payment is always linked with the order value and this in turn is linked to the financial sanction. The reply of DRDO is not tenable in audit as the system could not restrict the

down payment within the supply order value. Thus, there is a deficiency in control to restrict the down payments with reference to the supply order value, financial sanction, etc.

6.2.3.3 Transactions still being carried outside the system

(A) Accounting of Security Deposit

Para 7.11 of Purchase Management manual stipulated that qualified vendors shall deposit 'Security' equivalent to an amount not exceeding 10 per cent of the value of supply order before release of the order. The Deposit shall be made in favour of Controller of Defence Accounts (R&D) [CDA (R&D)] and will not be held in the Public Fund Account of the Lab/Establishment.

We observed that, the amount received as Earnest Money Deposit / Security Deposit / Performance Guarantee in the form of Demand Draft was handed over to Finance Section by Directorate of Contracts and Material Management (DCMM), RCI. The Demand Drafts were then deposited in the Public Fund Cash Book of RCI which was then converted into Fixed Deposit (FD) in the name of RCI. The Fixed Deposit Receipts (FDR) was kept in the safe custody of Accounts Officer. Upon maturity, the FDR was encashed and the amount so realised was credited into Public Fund Cash Book. The amount due to the contractor was then refunded and the interest received was credited to the Government through Military Receivable Order. As of February 2015, a sum of ₹84.68 lakh was held with RCI under various FDRs, the oldest being of the year 2005. There was no field in the ERP to indicate the trail of the amount of Security Deposits received from the vendors in the MM Module as the same is transacted offline. On being pointed out in audit DRDO stated that the matter has been referred to CDA for clarification.

The above practice being followed was incorrect and susceptible to misappropriation as the same was kept outside Public Fund Cash Book during the tenure of FD and the same is not reflected in assets and liability statement. In addition, the interest earned from these FDs could be mis-utilised as security deposit is not intended to generate income to the Government. Hence, the Security Deposit needed to be deposited with CDA and necessary fields may be incorporated in the ERP for its audit trail.

(B) Non-computerisation of Vouchers

With the introduction of ERP it was expected to generate various types of vouchers in respect of stores viz. Receipt Voucher, Issue Voucher, External Issue Vouchers, etc through system. However, we observed that vouchers were being raised manually instead of through ERP. On being pointed out, DRDO stated (August 2015) that after completion of the stock verification, execution of the various types of vouchers would be maintained in ERP. This indicated that the MM Module is partially complete even after four years of Go-Live.

6.2.3.4 Non utilisation of the system for Decision making

IT systems are used as a tool for effective and faster decision making by providing complete and reliable data to the management for the decision making. We observed in the following instances that ERP system is still not being effectively employed for decision making process.

(A) Vendor Registration

RCI issued 10084 limited tenders to various vendors. Analysis of the Supply order process revealed that the 47.50 per cent of the vendors did not respond, 55 vendors who received the tenders never responded and action was not taken to de-register/black list such vendors as stipulated under para 3.4 of the DRDO Purchase Management.

On flagging the above issues in audit, DRDO replied (August 2015) that ERP system automatically generates warning letter to the vendors who did not respond to the limited tenders. As regards vendors who never responded, DRDO stated that a report will be handed over to vendor registration committee for necessary action as per provision of Purchase Management Manual 2006.

The reply is not tenable in audit as Para 3.4(b) of the manual stipulated that if the firm fails or neglects to respond to three consecutive invitations to tender within the range of products for which it is registered, the vendor shall be removed from approved list of suppliers. The vendor registration committee did not utilise this data proactively in blacklisting/blocking such unresponsive vendors.

6.2.3.5 Inaccurate and Unreliable data

Data reliability is a state that exists when data is sufficiently complete, relevant and valid. Master data is a crucial element of a business such as products, raw materials, vendors etc. The presence of unreliable data impact the ability to make timely decision and to manage operational performance.

(A) Vendor Master

Vendor Master is one of the basic requirements of MM module. Vendors are the business partners who will be supporting with the supply of material or services. All the vendors would be maintained in the system with unique code numbers. Business transactions were to be posted to various accounts and managed using the data in the Vendor Master.

Vendors were required to submit mandatory information to the lab during registration viz., Application Date, Vendor Name, Registration type, Address, Telephone No., Fax Number, e-mail id, Vendor upper limit, etc. We observed that :

- The database does not reflect the correct number of vendors. Vendor master contained 2680 vendor names, which included 270 duplicate vendor Name records.

- In respect of 105 vendors, the Material category was not available in Material Master and in respect of 13 vendors the material for which the vendor had registered was missing. In respect of 94 vendors, mandatory field, address, was blank and in respect of 95 vendors, addresses were repeated. This may lead to non-issue of tenders to these vendors and issue of tenders to wrong vendors.
- Against 768 vendors the upper monetary limit for supply of material was 'zero'. This would result in issue of orders to incompetent vendors.
- Bank Account Number was not available for 1900 vendors and eight vendors were with duplicate Bank account numbers. This would defeat the ECS mode of payments adopted by DRDO. Duplicate bank account number may result in payment to wrong vendor.

On pointing out the above, DRDO stated (August 2015) that the above discrepancies were due to wrong categorisation of vendors due to wrong selection from the dropdown lists, data entry mistake, non-availability of information on vendors, etc. It was also stated that corrective action wherever necessary will be initiated and the ERP vendor database is being replaced / updated through e-procurement platform which would ensure validity of vendor database. The reply is not acceptable in audit, since the Supply orders were placed against these vendors, without complying with the stipulated conditions. Moreover, DRDO did not capture the complete information of vendors as required for business transactions in ERP. The input control could not prevent entry of duplicate Bank Account Numbers and fictitious numbers. Therefore, the data in the present form was not reliable and the automation envisaged by implementing the ERP was deficient.

(B) Incomplete porting of Inventory Legacy data

Prior to implementation of SAP ERP, inventory was maintained in MILMAN software and the same was to be brought forward. However, we observed that from the legacy data, 13887 items with positive balance in the stock were not brought forward to the SAP ERP system. Total value of stores remaining unaccounted in ERP was to the tune of ₹848.74 crore.

On being pointed out in audit, DRDO stated (August 2015) that the Stock taking board was formed by the Director RCI to validate the inventory. Based on their recommendations legacy inventory data would be uploaded to ERP. This proves that the database in the ERP system was incomplete and unreliable.

(C) Inventory Holding

In SAP, inventory held under a Directorate was shown as Plant and the place where the material was physically held was shown as storage location. Further, no item with multiple material code number was expected to be held. However, in respect of 1985 items valuing ₹471.15 crore, there was duplication in description of the item, within the same Plant and within the same storage location. Holding the same item under different Inventory code concealed the actual quantity held by the Division.

In respect of 51 items, storage locations, which needed to be confined within a plant was spilling over to other Plants and in respect of 773 items, Inventory Holder names was shown as 'DO NOT USE'.

On raising the above issues in audit, DRDO stated (August 2015) that stock taking board is under progress and after completion of the stock taking the finalised list will be verified and updated into the system. As regards spill over of storage location DRDO stated that due to reorganisation some of the storage location became part of the different plant. This indicates the present database is inaccurate and not reliable. Further stores available with RCI would not be available for use until the reorganisation of storage locations is completed as well as system deficiencies is rectified.

(D) Period of holding of Retention money

Para 7.23 of DRDO purchase manual stipulated for retention of 10 per cent of the supply order amount towards risk coverage during warranty period. The period of holding of retention money ranged from 0 days to 1787 days. This indicated that no standard procedure was followed. Further, the conditions regarding warranty in the supply order was not captured on the data base so as to reflect the correct period of guarantee required for the product.

On being pointed out in audit, DRDO stated(August 2015) that the system was having provision to enrol these details. It was further stated that the retention money might have been paid manually through CDA (R&D) and the same is not reflected in the system and effective use of CDA (R&D) module will ensure online payment related updates in ERP system.

This indicates that there is no linkage between DRDO and CDA (R&D) regarding release of retention money thereby resulting in DRDO maintaining incomplete database. This may result in early release of retention money and the same would not be monitored through the system till CDA (R&D) utilises the system.

(E) Incomplete details of Bank Guarantee

The data maintained by RCI on Performance Bank Guarantee (PBG) was scrutinised and it was observed that vital information viz., date of completion/installation of the item / machinery, inspection document No, date, date of acceptance of the item, BG No and date, amount of PBG retained, validity of PBG and extended validity of PBG were not captured. On being queried in audit, DRDO stated (August 2015) that the System was having the provision to record the details of Bank Guarantee which was enrolled at the time of preparation of Supply Order. All the details observed in audit are available in manual form of records and the same will be recorded into ERP system.

The absence of such data indicates weakness in the controls in securing the interest of the DRDO in case of contractor violating the warranty conditions mentioned in the contract.

6.2.4 Project Systems (PS) Module

The SAP PS module optimises the business processes from project planning through project progress analysis. The Project System Module manages the mega R&D projects with a lot of uncertainties and challenges effectively, reduces the project risk in terms of technical performance, schedule and cost, and integrates the existing scientific software, data and utility software to protect the previous IT investment for decision making. It also automates project monitoring and have on-line generation of various reports, including management information report.

6.2.4.1 Sub-optimal use of Project System module

DRDO project proposals includes Critical Path Method (CPM), Decision Aid for Technology Evaluation (DATE), Performance Evaluation Review Techniques (PERT) chart, Earned Value Analysis, Milestone Trend analysis and cost-benefit analysis. Funds for the project are allotted year-wise and Head wise and expenditure is monitored. Assets created are accounted under the Projects which are transferred to build-up after closure of the Project. On completion of the project a closure Report is also being prepared, indicating the results of the Project, financial position among others. The entire activity was to be mapped into PS Module. Accordingly the Business Blue Print (BBP) was framed to suit the above requirements of RCI.

RCI was executing 23 projects, including sub-projects, Memorandum of Understandings (MoU) valuing ₹1066.63 crore, which were at various stages of implementation. Audit scrutiny of the PS Module pertaining to ongoing projects revealed the following:

Out of 23 projects, details of six projects were available on the ERP system and the data in respect of remaining 17 projects were not maintained or partially maintained in the ERP system. Details of seven projects closed after the year 2012 were not available on ERP system, though as per BBP it was required to be maintained; Work Breakdown Structure (WBS) was available in respect of only one project; one of the Project offices had stated that technical documents were not loaded in the ERP due to its sensitive nature; Project procurement aspects was available in all the projects sanctioned after 2012. Further, test check of nine projects revealed that the percentage of PS module utilisation ranged from 12.5 to 81 *per cent*, as such, the Module was not fully utilised by the Project offices. In addition to this, functions such as, network activities, project structure, re-appropriation of funds, were stated to be 'in the process' of implementation.

On pointing out the above aspects in audit, DRDO stated (August 2015) that there is no shortfall in implementation of project management functionalities but the technical structure is not being used by many project groups. It was also stated that adoption of creating the technical structure and regular update of status in the system depending on the progress is required from the user side. Once it is done, ERP will certainly bring visibility, control and effectiveness leading to in time delivery of project. Further it was stated that the Project officers may not be aware/fully knowledgeable about the technical

aspects of PS Module. As regards classified projects it was stated that project offices would not be able to upload documents on the system pertaining to such projects due to its confidential nature.

Thus, the PS module is yet to be fully utilised by the Lab for effective management of projects. As such, the objectives envisaged before implementation of SAP ERP system could not be achieved even after four years of 'Go-live' of the PS Module.

6.2.4.2 Mis-match in Project Expenditure

Consequent on implementation of the Project System module in SAP ERP system, the mis-match in budget – expenditure figures generated at various levels of the organisation was to be minimal. We observed from the project expenditure figures generated at two levels of RCI *i.e.*, Monthly Expenditure Return (MER) of Planning and Production Group (PPG) and FICO Module were not in synchronisation with each other. The mis-match ranged from 1.83 *per cent* to 374.46 *per cent*. On being pointed out in audit, DRDO stated (August 2015) that the difference in expenditure figures was due to off-line payments made by the CDA and could be achieved only when CDA becomes fully online.

The reply indicates that the module was not being fully exploited even after four years of 'Go-Live'.

Conclusion

The ERP system that was installed in August 2011 after a delay of three years suffered from inadequate physical and logical access controls, input controls and validation checks. Further, incomplete mapping of all the business requirements and inadequate usage of the modules led to underutilisation of the ERP SAP solution. The inventory data ported in the system was incomplete, unreliable and inaccurate. These inadequacies resulted in incompatibility of the system to meet all business requirements, created risk of defective/delayed MIS reporting and decision-making leading to manual intervention. The underutilisation of the system implemented at a cost of ₹15 crore has compromised the basic objectives of leveraging information for improving operational efficiency, productivity and achieving higher user service and satisfaction.

CHAPTER-VII: ORDNANCE FACTORY ORGANISATION

7.1 Performance of Ordnance Factory Board

7.1.1 Introduction

7.1.1.1 Ordnance Factories are the oldest and largest organization in India's defence industry with a history that dates back to 1787. There are 41⁵⁸ Factories divided under five clusters or operating groups (**Table-27**) produce a range of arms, ammunitions, weapons, armoured & infantry combat vehicles and clothing items including parachutes for the defence services. They function under the Ordnance Factory Board which is under the administrative control of the Department of Defence Production of the Ministry of Defence of Government of India. The Board comprises a Chairman and eight members⁵⁹.

Table-27

Operating group	Number of factories
Ammunition & Explosives	10
Weapons, vehicles and equipment	10
Materials & Components	8
Armoured vehicles	6
Ordnance equipment group	5
Total	39
<i>Source : Annual Accounts of Ordnance Factories – 2013-14</i>	

7.1.1.2 The objectives of the Ordnance Factory Board⁶⁰ are:

- To supply quality arms, ammunition, tanks and equipment to armed forces;
- To modernise production facilities to improve quality;
- To absorb latest technology through Transfer of Technology⁶¹ and in-house Research & Development;
- To meet customer satisfaction and expand consumer base.

7.1.1.3 In addition, the policy objectives of the Government on Defence Production and Procurement, list the following objectives which have a bearing on the Ordnance Factory Board:

- To ensure expeditious procurement of the approved requirements of the armed forces, in terms of capabilities sought and timeframe prescribed by optimally utilizing the allocated budgetary resources;

⁵⁸ 2 OFs at Nalanda and Korwa are under construction. Beset with delays, the 2 OFs are yet to put into operation with scheduled date of coming into operation remaining uncertain.

⁵⁹ Members are in the rank of Addl. Secretaries, being of Finance, Personnel, Planning & Material Management, Projects & Engineering, Technical Services, material & components, weapons, vehicles & equipment, Ammunition & explosive, Armoured vehicles (Avadi) , Ordnance equipment (Kanpur)

⁶⁰ As enunciated in Mission and Vision Statement of Ordnance Factory Board

⁶¹ Transfer of Technology (ToT) from Defence Research & Development Organisation (DRDO) or from Original Equipment Manufacturers through contracts linked to purchases

- To achieve substantive self-reliance in design, development and production of military equipment/weapon systems/platforms required for defence in as early a time frame as possible;
- To enhance the potential of Small and Medium Enterprises in indigenization.

7.1.1.4 Our analysis of the performance of the Ordnance Factory Board during 2013-14 places it, where relevant, against the above objectives.

7.1.2 Performance of the Ordnance Factory Board

The data on key areas of management in the Ordnance Factory Board for the three years 2013-14 are summarized in **Table-28** below. **Annexure-XV** gives the details segregated across operating groups.

Table-28

(₹ in crore)

		Years			
		2011-12	2012-13	2013-14	Variation 2011-14 (percentage)
I Financial Performance					
1	Revenue expenditure	12141	11936	12834	6
2	Budget utilisation for revenue expenditure (in per cent)	97	99	98	1
3	Revenue receipts	12876	12553	12001	(-) 7
4	Budget revenue surplus/deficit	735	617	(-) 833 ⁶²	(-) 213
5	Cost of production (CoP)	15934	15973	15637	(-) 2
6	Value of issues	17273	17119	16122	(-) 7
7	Profit	1339	1146	485	(-) 64
8	Capital expenditure	279	349	465	67
9	Budget utilization (in per cent): capital expenditure	93	87	100	7
II Cost of Production: Components					
10	Cost of stores	10070	9746	9303	(-) 8
11	Cost of labour	1490	1617	1705	14
12	Overheads	4214	4393	4389	4
13	Other costs <i>i.e.</i> Direct Expenses	159	216	239	50
14	Overheads as percentage of CoP (12/5*100)	26	28	28	8
15	Labour cost as percentage of CoP (11/5*100)	9	10	11	22
III Inventory					
16	Stores-in-hand	5336	5604	5588	5
17	Work-in-progress (WIP)	2551	2999	3538	39
18	Stores-in-transit	538	682	854	59

⁶² Even though the appropriation account of Ordnance Factory Board for the year 2013-14 showed a deficit of ₹ 833 crore, the cost accounts of the Ordnance Factory Board showed a profit of ₹407 crore in issue of products to the indentors during 2013-14. This is because, the appropriation accounts reflects actual cash transactions that had taken place during the year whereas the cost accounts reflects the profit based on the actual sale value realized from the indentors and actual cost incurred by the factories in producing the items issued. The cost incurred may relate either to previous years or the current year.

19	Finished goods/components	1212	1206	1305	8
20	Inventory as percentage of CoP	60	66	72	20
21	WIP as percentage of CoP	16	19	22	38
IV Labour and Machinery					
22	Numbers of direct industrial employees (DIEs)	46568	47166	46206	(-) 1
23	Ratio of DIEs : Supervisory officers	1.41 :1	1.46:1	1.5:1	
24	Productivity (production per employee)	16,74,490	16,82,000	16,79,736	Static
25	Labour hour utilization (in per cent)	127	129	127	Nil
26	Machine hours available (in lakh hours)	1577	1603	1203	(-) 24
27	Machine hour utilization (in per cent)	78	76	73	(-) 6
V Issues: Indentor-wise					
28	Army	10027	9609	8609	(-) 14
29	Air Force & Navy	433	433	539	24
30	Other Defence Departments	192	138	147	(-) 23
31	Central Paramilitary Police Organizations (Ministry of Home Affairs)	826	831	782	(-) 53
32	Civil trade including Exports	913	963	1046	15
VI Research & Development (R&D)					
33	Expenditure on R&D	36	48	43	19
34	R&D expenditure as percentage of total revenue expenditure	0.30	0.40	0.34	13

Source : Budget & Expenditure Statement of OFB and Annual Accounts of Ordnance Factories

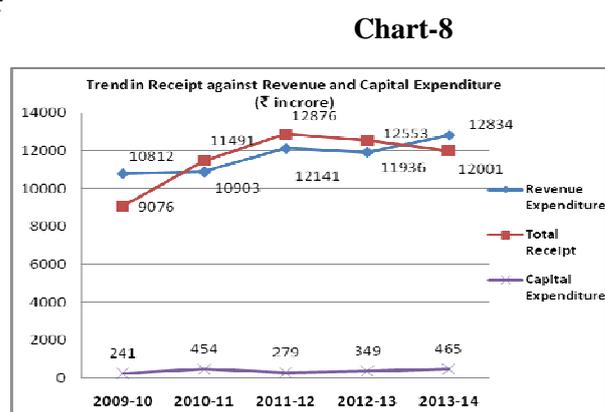
7.1.3 Financial performance

Trends in receipt and expenditure are illustrated in **Chart-8**.

Revenue expenditure & receipt

The Ordnance Factory Board receives budgetary grant under the Account head 2079 to meet its running expenses *i.e.*, the revenue expenditure. The grant was ₹12834 crore in 2013-14.

The same Account head: 2079 is operated for booking its expenses and its receipts⁶³ against issues to the Defence establishment. Another Account head 0079 records the receipts against sale of products to non-defence establishments (state police), in the open market or exports. The Ordnance Factory Board is



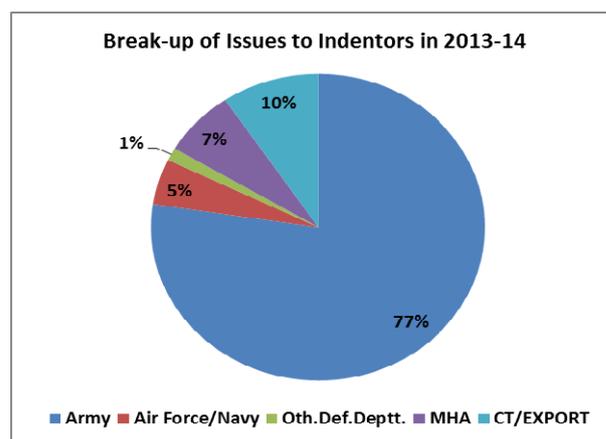
⁶³ The Board debits all its revenue expenditure to the Account head-2079. At the time of issue to the Defence establishment, there is (-) Debit to the Account.

allowed to recover the cost of manufacture while fixing the issue price of products with a provision to “limit the annual price increase up to eight *per cent* on overall basis with an emphasis to keep this to the minimum.”

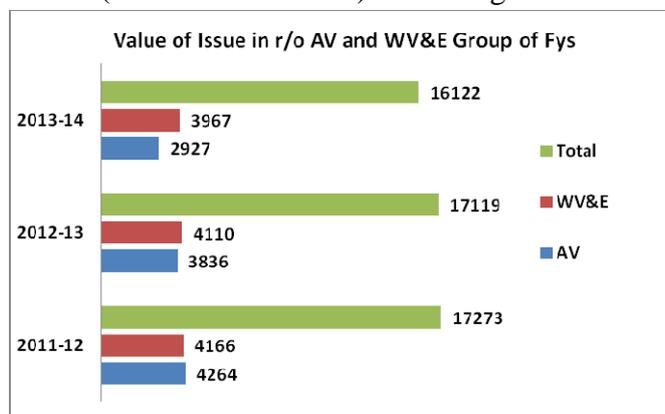
After peak production and issue in 2011-12, the value of issues declined by seven *per cent* over the period 2011-14. As a result, the profit came down (by 64 *per cent* over 2011-14) from ₹1339 crore in 2011-12 to ₹1146 crore in 2012-13 to ₹485 crore in 2013-14.

Chart-9

The Army is the major indenter for the products of the Ordnance Factories, accounting for nearly 77 *per cent* of the total issues during the year 2013-14 with Civil Trade and Export being a distant second at 10 *per cent*. The decline in value of issues by seven *per cent* during 2011-14 was mainly due to 14 *per cent* reduction in issues to the Army during the



period; there was fall in issues to Central Paramilitary Forces which form the second largest indenter. The two operating groups: WV&E (Weapons, Vehicles & Equipment), and AV (Armoured vehicles) which together account for 42 *per cent* of the production in the Ordnance Factory Board, registered a decline of 14 *per cent* in 2011-14. The AV group saw a 23 *per cent* decline in 2011-14 mainly because of halt in production of MBT Arjun in the absence of further indents from the



Army; and decline in issue of T-90 tanks. The production performance of operating groups is discussed in detail in **Paragraph 7.1.4**.

Our audit in 10 factories showed a persistent trend of overstatement of performance in the form of advance issue vouchers. Factories prepare “advance issue vouchers” whereby they raise demands for payment from the Army without physical issue of the stores. This practice followed in order to inflate the performance against targets, comes with attendant risks of accounting mistakes and distortions in production figures *viz.*, inflation of revenue receipts and of cost of production; of distortion value of work-in-progress. Taking cognizance of the risks, the Controller General of Defence Accounts (CGDA), New Delhi instructed all Controllers of Finance and

Accounts (Factories)⁶⁴ in October 2007, not to accept advance issue vouchers without despatch particulars. Despite the directive, the practice persisted in 2013-14 as shown in **Table-29**, with the incidence being particularly high in Ordnance Factory Badmal, Itarsi, Ordnance Clothing Factory Shahjahanpur and Ordnance Parachute Factory Kanpur.

Table-29*(₹ in crore)*

Factory	Value of advance vouchers in 2013-14	Total issues in 2013-14	Advance vouchers as percentage of total issues
Chemical Group of Factories: A&E group			
OF, Itarsi	60	234	26
OF, Bhandara	15	241	6
High Explosives Factory, Kirkee	6	145	4
Ordnance Factory Badmal	128	667	19
Weapon Group of Factories: WV&E group			
OF, Trichy	22	160	14
Field Gun Factory Kanpur	8	250	3
Gun and Shell Factory Cossipore	8	523	2
Armoured Vehicle:AV group			
Ordnance Factory Medak	9	534	2
Ordnance Equipment:OE group			
Ordnance Clothing Factory Shahjahanpur	58	351	17
Ordnance Parachute Factory Kanpur	34	166	20

Source : Annual Accounts of Ordnance Factories – 2013-14

Similar findings were reported in our compliance audit when issues were reported on items which had not even been produced. It was observed that 4221 Kg of Copper Nickel Alloy Tube valued at ₹55.5 lakh was reported as issued by Ordnance Factory Katni in 2013-14 although by the Factory's own admission, the item was not manufactured due to problems in the billet heater/extrusion press. Thus, the value of issues and the cost of production of Ordnance Factory Katni were overstated to that extent.

While the Ordnance Factory Board noted the audit observation for future compliance, Principal Controller of Accounts (Factories) Kolkata mentioned that branch Accounts Offices had been instructed not to accept issue vouchers without despatch details. The fact, however, remains that despite persistent audit observations, neither the Ordnance Factory Board nor the Principal Controller of Accounts (Factories) Kolkata took steps to curb the incorrect practice of booking issues without actual physical despatch of the products.

⁶⁴ Controller of Finance and Accounts (Factories) functions under the PCA (Factories) Kolkata for a group of factories on regional basis

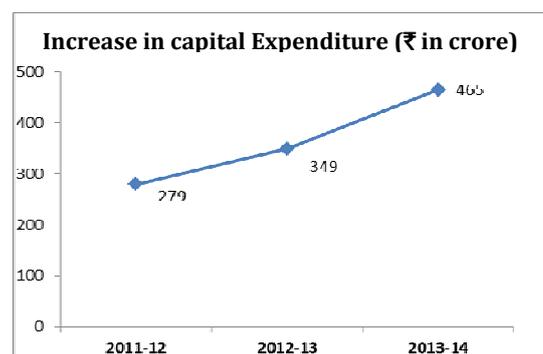
Revenue expenditure which had decreased marginally by two *per cent* in 2012-13, increased by eight *per cent* in 2013-14. Stores expenditure constituted 47 *per cent* of the total revenue expenditure; manufacturing expenditure constituted 36 *per cent* during 2013-14. Together the two components accounted for 83 *per cent* of the total revenue expenditure during 2013-14. Both the components registered an increase in 2013-14 by five *per cent* despite the fall in production in the year indicating a fall in rate of conversion of raw materials to products and their issue. This had a direct impact on inventory: work-in-progress increased by 39 *per cent* in 2013-14 over the levels in 2011-12. Inventory has been analysed in further detail in **Para 7.1.5.**

Capital expenditure

The Ordnance Factory Board also receives budgetary support for capital expenditure (Major Head 4076), also called the New Capital grant. This grant meets the expenditure on new projects including procurement of plant and machinery, for which ₹465 crore was spent in 2013-14. In addition, a separate fund called the Renewal and Replacement Fund (RR Fund) funds replacement of old machinery. Currently at ₹117 crore, the Fund has been created through yearly transfers from revenue grant⁶⁵.

Capital expenditure under New Capital grant represented only two to three *per cent* of the total expenditure of the Ordnance Factory Board over the years. There had been a 67 *per cent* increase in capital expenditure in 2013-14 over 2011-12 (**Chart-10**). However, slow progress on the two largest projects⁶⁶ in 2012-14 necessitates a strong intervention by the Ministry.

Chart-10



7.1.4 Production to meet the targets

The Ordnance Factory Board plans production in the factories on the basis of:

- **Requirements projected by the Forces:** Since 2011, the Army prepares a Five-year perspective (roll-on) plan for its needs of weaponry. This practice is yet to be adopted by the Air Force and Navy which provide such needs annually. However, the Ordnance Factory Board plans the production on the basis of firm orders (indents) placed by the defence forces.

⁶⁵ The amount transferred from Revenue grants (Major Head 2027) annually for the RR fund is equal to the annual depreciation of plant & machinery and rough expenditure for annual replacement.

⁶⁶ Ongoing projects being on establishment of Ordnance Factory Nalanda Project and Ordnance Factory Korwa, sanctioned in November 2001 and October 2007 with an outlay of ₹ 2160 crore and ₹ 408 crore respectively. As of September 2014, ₹ 878 crore was spent on the 2 projects.

- **Capacity** of the factories for production: The capacity of the feeder factories and that of the assembling factories (that assemble the final product for issue), together provide an assessment of the Ordnance Factory Board on its capacity to meet the requirements of the defence forces.

The production targets are fixed by Ordnance Factory Board in consultation with the defence forces. These targets are intimated to the factories: for final products and for feeder factories, which are then communicated by the Ordnance Factory Board to the factories.

Our analysis of principal items (of direct issue to the Forces) across operating groups revealed the Ordnance Factory Board's greatest challenge in the recent years: of fall in demand of its traditional product base. The results are summarized in **Table-30**. Particularly affected are the Armoured Vehicles Group and the Weapons Group. In the Ammunition Group, the demand has been sustained in few items that are not of the vintage group of ammunition: 84mm HEAT 551, 130mm RVC, 84mm Target Practice Tracer (TPT) Rockets and the relatively new item, Pinaka Rocket. But the traditional base of ammunition for vintage weapons has gone down.

Table-30

Item	2011-12	2012-13	2013-14	Variation over 2011-14
Armoured Vehicle Group				
T-90 Bhisma (IND)	75	85	35	(-) 53
MBT Arjun	14	9	0	(-) 100
Engine V46-6 (OH) for T-72 Ajeya	100	100	60	(-) 40
BMP (OE)	75	75	60	(-) 20
BMP (OH)	40	40	36	(-) 10
Weapon, Vehicle and Equipment Group				
84mm Rocket Launcher	1789	589	1000	(-) 44
Rifle 5.56mm INSAS	60000	18733	0	(-) 100
Pistol Auto 9mm	5000	2093	1000	(-) 80
81mm Mortar	471	338	25	(-) 95
105mm LFG	50	55	30	(-) 40
Ammunition and Explosive Group				
84mm HEAT 551	7000	7000	7000	0
130mm RVC	132000	140000	140000	(+) 6
Rocket Pinaka PF	1000	1000	1000	0
Rocket 84mm TPT	350000	400000	400000	(+) 14
81mm Mortar HE	650000	650000	635000	(-) 2
130mm FVC	20000	10000	12000	(-) 40

Item	2011-12	2012-13	2013-14	Variation over 2011-14
120mm FSAPDS	5000	5000	4000	(-) 20
84mm Illuminating	45000	40000	40000	(-) 11
81mm Mortar Illuminating	50000	40000	40000	(-) 20
51mm Illuminating	30000	23000	19000	(-) 37
105mm IFG Illuminating	5000	4000	4000	(-) 20
120mm Illuminating	2500	2000	2000	(-) 20
105mm IFG HESH Charge	15000	0	0	(-) 100
Mine AP NM 14	400000	300000	170000	(-) 58
Mine A/TK No 1A/2A	50000	17000	16000	(-) 68
Ordnance Equipment Group				
Jacket Combat Army Logo	550000	575000	667500	(+) 21
Trouser Combat Army Logo	550000	575000	667500	(+) 21
Boot High Ankle DVS	400000	280000	300000	(-) 25
Coat Combat Army Logo	115000	130000	160000	(+) 39
Shirt Men Angola Drab	372929	325000	264634	(-) 29
Blanket Barrack NG	390000	250000	90000	(-) 77
Cap FS Disruptive with Army Logo	350000	208000	145773	(-) 58
Fly Outer	20299	13050	13600	(-) 33
Short Plain Waive PV DD Khaki	450000	280000	400000	(-) 11
Jacket Wind Cheater	54000	24735	28766	(-) 47

Source : Database of Ministry's Indent placed on OFB

The Production Performance Report of the Ordnance Factory Board compiles target and achievement of all Ordnance Factories (**Table-31**). Despite the decline of 30 per cent in assigned workload (targets), the Factories continued to fall short of targets with only 57 per cent achievement of targets in 2013-14.

Table-31

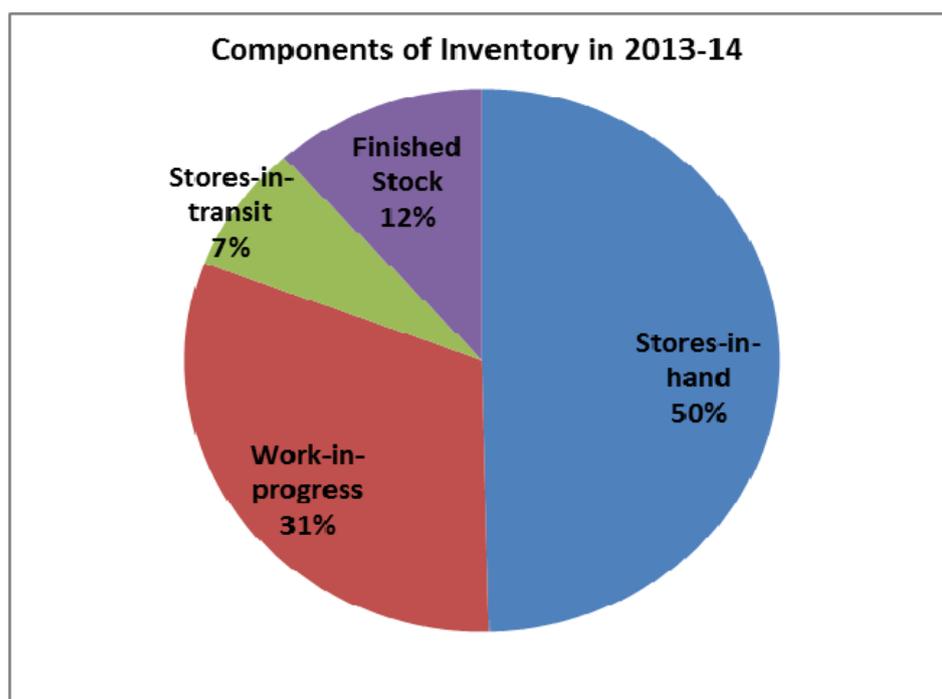
Year	Targets	Achievement	Percentage of shortfall
2011-12	547	195	64
2012-13	529	205	61
2013-14	382	163	57

Source : Production Performance Report of OFB for 2013-14

7.1.5 Inventory

The inventory holding in the Factories stood at ₹11285 crore in 2013-14, registering a marginal increase of eight *per cent* over the holding in 2012-13. The increase in holding and decline in production together have increased the level of inventory as a percentage of cost of production from 60 *per cent* in 2011-12 to 72 *per cent* in 2013-14. The high level of inventory in the Factories was a sign of inefficiency in stock holding practices and in application of funds (**Chart-11**).

Chart-11



Stores-in-hand

Store in hand (SIH or stock of raw material) at ₹5588 crore accounting for 50 *per cent* of the inventory holding, declined by ₹16 crore in 2013-14 as compared to 2012-13. Our audit on inventory management: 2010-13 had showed that 95 *per cent* of the SIH in the nine Factories exceeded the prescribed limits and that one-fifth of the SIH had become non-active *i.e.* not consumed at all during the current year. The Procurement Manual prescribes limits of stock holding to either six months' or four months' consumption, depending on the nature of factories. While the instructions allow factories to place procurement orders to meet the need for two years (plus 50 *per cent* option clause), a staggered delivery is envisaged to conform to budget allotment and shelf life of the stores, as well as maintain the levels of holding to the prescribed limits. But high holding of stores prevails in the Factories, with five factories⁶⁷ reporting excess holding of 147 days to 190 days as of 31 March 2014. On the one hand, inability to procure stores on time, stalls

⁶⁷ Ordnance Factory Katni, Ordnance Factory Chanda, Ordnance Factory Bhusawal, Gun and Shell Factory Cossipore and Ordnance Factory Trichy

production in Factories and on the other, excess holding on other stores blocks the capital, highlighting why the Ordnance Factory Board must place this issue on high priority.

The Ordnance Factory Board stated (August 2015) that in terms of the decision taken in the Ordnance Factory Board's meeting (27 February 2015) all the factories had been directed to bring down the inventory holding in terms of value by 15 *per cent* over the inventory holding as on March 2014 during 2015-16.

Finished Components and Stock

Finished components increased by ₹48 crore (five *per cent*) in 2013-14. The value of inventory holding in terms of days in respect of finished components for 2013-14 increased by 20 days over the previous year. The holding of Finished stock increased by ₹51 crore and as a result of which holding in terms of day's consumption had increased from three days in 2012-13 to five days in 2013-14.

The Principal Controller of Accounts (Factories) stated (August 2015) that branch accounts offices had been instructed to take up the matter with the factory management to keep the stock of component in a comfortable position. The latest position of stock of finished components was awaited.

Stores-in-Transit

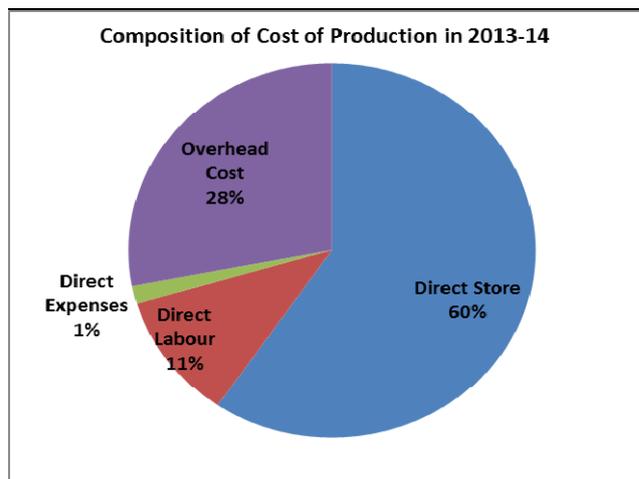
Stores in Transit (SIT) between the factories for the Ordnance Factory Board as a whole increased by ₹171 crore (25 *per cent*) in 2013-14 as compared to previous year. The value of SIT at Ordnance Factory Chanda (₹252 crore), Ordnance Factory Bolangir (₹141 crore) and Heavy Vehicles Factory Avadi (₹95 crore) constituted 30 *per cent*, 16 *per cent* and 11 *per cent* of the total value of SIT in the Ordnance Factory Board.

The pendency of huge stores in transit was attributed by the Principal Controller of Accounts (Factories) to non-acceptance by a Factory of the stores issued to it by a sister Factory due to defects or due to deviation from specifications. The reply was silent on action taken to carry out the reconciliation amongst the Factories to set right the high incidence of SIT.

7.1.6 Cost of Production

Stores account for 60 *per cent* of the cost of production in the Ordnance Factory Board. Overheads at 28 *per cent* of cost of production are particularly high in the Ordnance Factory Board as depicted in **Chart-12**.

Chart-12



The cost of production during 2013-14 at ₹ 15637 crore has remained nearly at the same level during 2011-14 as unit cost of production increased despite decline in production. The composition of costs varies across operating groups (**Annexure XV**) with the Armoured Vehicle Group and the Ammunition and Explosive (A&E) Group being most material intensive. The Ordnance Equipment Group which manufactures clothing and general purpose items was the most labour intensive among the Factories.

We observed that the high overheads are a consequence of high committed cost on a workforce that is not directly deployed for production. As a result, overheads are showing an increasing trend over the years with decline in production. Material and Components Group with some of the oldest factories of the Ordnance Factory Board and with falling production levels/low production base reported the highest levels of overheads: fixed overheads and variable overheads being 27 *per cent* and 11 *per cent* respectively, a total of 38 *per cent* being the overheads as percentage of the cost of production. Our analysis showed that the Fixed overheads were high in the Weapons Group of Factories

The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective to closely monitor abnormal fluctuations in cost. This was not, however, the case in the Factories with the two controls: Concurrent review by the Local Accounts Office and the Quarterly Financial Review, being weakened by structural deficiencies. As a result, the issue price of a product in a year had no correlation to its cost of production, leading to wide fluctuations in inter-year profit/loss.

For the Ordnance Factories to be competitive, they will have to exercise effective control over the cost of production, which presently is very high. The present structure and processes are not geared for such control, impacting the Ordnance Factory Board's ability to meet the new challenges when the defence sector is being opened for competition.

7.1.7 Our Audit Process

Our Audit process starts with the risk assessment of the organization as a whole and of each unit, based on expenditure incurred, criticality and complexity of activities, level of delegated financial powers, assessment of overall internal controls and concerns of stake holders. Previous Audit findings are also considered in this exercise. Based on the risk assessment, the frequency and extent of audit are decided. An annual audit plan is formulated to conduct audit on the basis of such risk assessment.

After completion of audit of each unit, Local Test Audit Reports (LTARs) containing audit findings are issued to the Head of the Unit. The units are requested to furnish replies to the audit findings within a month of receipt of the LTARs. Whenever the replies are received, audit findings are either settled or further action for compliance is advised. Important audit observations arising out of these LTARs are processed for inclusion in the audit reports which are submitted to the President of India under Article 151 of the Constitution of India. During 2013-14, audit of 42 units was carried out by employing 4008 party days. Our audit plan ensured that most significant units, which are vulnerable to risks, were covered within the available manpower resources.

We issued 36 LTARs consisting of 377 paragraphs during 2013-14. In addition, 516 LTARs consisting of 1727 paragraphs were outstanding as of 1 April 2013. Regular interaction with the units helped find satisfactory response on 65 LTARs consisting of 476 paragraphs. As of 31 March 2014 on 487 LTARs consisting of 1628 paragraphs, we are awaiting a response from the units.

This Report also highlights seven cases of infractions by Ordnance Factory Board, detected in audit, which involved substantial amount of funds. We also conducted two Performance Audits on Weapon group of Factories and Chemical group of Factories.

7.2 Production of Weapon Manufacturing Factories

Executive Summary

The Ordnance Factory Board (Board) is recognised as a manufacturer of small arms in which it has an established presence. The six weapon manufacturing factories *viz.* Rifle Factory Ishapore (RFI), Small Arms Factory Kanpur (SAF), Gun and Shell Factory Cossipore (GSF), Ordnance Factory Trichy (OFT), Field Gun Factory Kanpur (FGK) and Gun Carriage Factory Jabalpur (GCF) with the total cost of production of ₹5278 crore during 2011-12 to 2013-14 contributed to 11 *per cent* of the total cost of production in the Board.

Key Findings

The Ordnance Factories' production of weapons is meant mainly for meeting the needs of the Army; in turn, the reliance of the Army on the Factories is also substantial. Ministry of Home Affairs procure weapons for the Central Paramilitary Forces, but this forms a small part of the sale of weaponry from the Factories. With such a limited client base, a clear projection of requirement from the Army is a keystone to the performance of the Factories. The Army's Roll-on Plan: 2011-12 to 2015-16 projecting requirements for the next five years, aided the Board in short term planning. The Roll-on Plan covered strategic although few items, but revision of requirements mid-year create uncertainties which inhibit the Board in its strategic plans for capacity augmentation or diversification. During 2011-12 to 2013-14, the Board fixed targets less than the requirements projected by the clients. The Board communicated the targets to the Factories three months in advance but mid-year revisions were frequent, covering three to 14 of the sampled items, which are disruptive and do not constitute a good practice.

The Factories achieved the production targets at the level of 80 *per cent* and above in 38 instances (51 *per cent*) in 2011-12 to 2013-14. But in 21 instances (28 *per cent*), the achievement was less than 60 *per cent*. In all, the indentors' requirements were fully met in 16 of 75 instances. Total value of shortfall in issue of the selected weapons against the revised targets stood at ₹1479 crore during 2011-12 to 2013-14. Delays in receipt of input stores were the predominant cause for slippages across the Factories. However, the malpractice of advance issue vouchers whereby items were shown as issued although not physically issued, carried a risk of inflation of achievement of targets and of distortion of Accounts. The Factories justified the practice on the ground that these items were mainly those that were held up for want of transportation.

Delay in procurement of stores was a predominant factor that limited the Factories in full achievement of their targets. Three out of the six Factories placed 60 to 70 *per cent* of their supply orders in 2011-12 to 2013-14, within five months of identifying the requirement of stores. The remaining Factories could meet the timelines in three to 52 *per cent* of the supply orders. Compounding the delays in procurement from trade firms, was the inability of

sister Factories in meeting the requirements of forgings for manufacture of barrels for high-calibre weapons. In 51 *per cent* of the instances, the Factories completed the quality control of stores within the mandated 15 days. The Field Gun Factory Kanpur and Gun Carriage Factory Jabalpur reported the longest lead time, with 63 *per cent* of the instances crossing the 15-day time limit. This was attributed to stringent quality requirements on the products (forgings) although the Board accepted that a closer examination was required to plug the choking points. All the Factories reported high incidence of piece work profit to direct industrial employees which were not commensurate with the achievement of targets, indicating the need for a review.

The Factories have a well-established system of multi-tiered quality checks involving the Factory's own Quality Control (QC) sections and the Senior Quality Assurance Establishments (SQAE) attached to each Factory. But quality problems besiege the Factories with impact on cost, achievement of targets and above all, the reputation of the Board and its products. The internal quality control in respect of major items (Rifle 5.56mm, 7.62mm MAG) test-checked in audit was found inadequate. The incidence of "Return for Rectification" by the SQAE (although not mandated in the laid-down process) and rejection were high on certain products like 5.56mm rifle, 7.62mm MAG, 30mm cannon and spare barrel T-90. Defects such as variations in gauge dimensions fall in the realm of inspections by the Factory QC, which remained undetected and were raised at subsequent stages by SQAE.

The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective and fluctuations, especially in overheads are controlled. This was not, however, the case in the Factories. The weapon group of Factories operate on high overheads, particularly, the fixed overheads. The apportionment of the overheads over products was irrational, overloading it on some products, making them uneconomical. Ordnance Factories are generally focused on meeting the demand placed on them without due regard to cost control and reduction. The absence of competition and high cost of import coupled with the availability of assured funds with the indentors, created a situation in which the Armed Forces generally accepted the products from the Board regardless of the high issue prices.

The Board prepared a Perspective Plan 2007-08 to 2011-12 to provide the Armed Forces with "timely supply of state-of-the-art technology with greater value for money". The dreams of the Perspective Plan could not be translated into reality, with implementation marred by delays in decision making and in development of the new items. Even as the Board did not prepare a plan for the subsequent period, the environment has changed substantially. The Army prepared (2013) the Long Term Integrated Perspective Plan (LTIPP) covering a period of 15 years, but did not communicate the same to the Board. Hence, the Board was yet to formulate a plan to position itself as an important player. The Defence Procurement Procedure 2013 has also been approved to steer the goals of indigenisation but one in which the Board has to compete with other manufacturers.

Small Arms Factories were facing multiple challenges like declining demand from indentors and quality problems; poor response from clients for its new products; and delays in development and trials for new generation carbines. The increasing demand for medium calibre weapons is a positive sign for sustenance. The traditional weaponry in the high calibre range (81mm Mortar, 105mm LFG) is facing a downturn. Besides, delayed indigenisation and continued reliance on imports of certain assemblies posed a challenge to the Factories in meeting the demand.

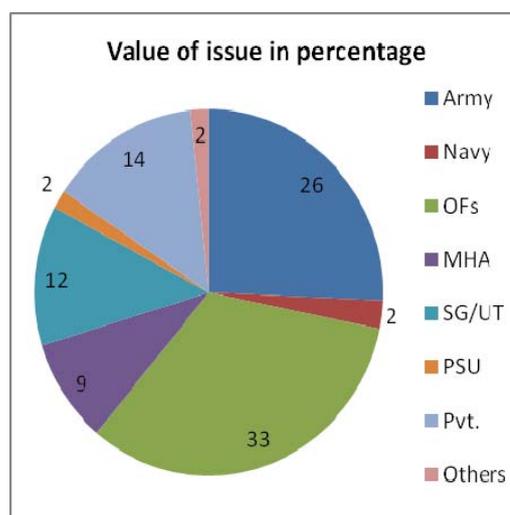
7.2.1 Introduction

7.2.1.1 The operating group

Ordnance Factories are segregated into five product-based Operating Groups. The weapons manufacturing Factories fall under Weapons, Vehicles and Equipment (WV&E) group. This group accounted for 23 *per cent* of the total cost of production in the Ordnance Factory Board (Board) during 2011-12 to 2013-14. The six weapon producing factories *viz.* Rifle Factory Ishapore (RFI), Small Arms Factory Kanpur (SAF), Gun and Shell Factory Cossipore (GSF), Ordnance Factory Trichy (OFT), Field Gun Factory Kanpur (FGK) and Gun Carriage Factory Jabalpur (GCF) with the total cost of production of ₹5278 crore during 2011-12 to 2013-14 contributed to 11 *per cent* of the cost of production in the Board.

The products cater primarily to the needs of the Armed Forces and the Ministry of Home Affairs⁶⁸ (MHA). These Factories also supply weapon components like Barrel and Ordnance to sister factories for assembly in armoured & combat vehicles. The value of issues of six weapon manufacturing Factories aggregated to ₹5722 crore⁶⁹ during 2011-12 to 2013-14. Indentor-wise distribution of issues by the weapon factories is depicted in **Chart-13**.

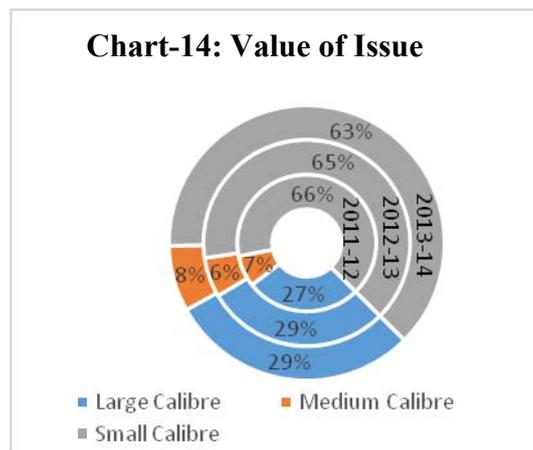
Chart-13



⁶⁸The weapons bought by MHA are for issue to the Central Paramilitary Forces and the State Police.

⁶⁹ The gap between value of issues and cost of production represents profit.

The Armed Forces rely almost exclusively on the Board for weapons. During 2011-12 to 2013-14, the import of weapons was only to the extent of ₹245 crore⁷⁰. The weapons are categorised as small arms, medium calibre and large calibre depending on the size of the barrel bore. The Board mainly catered to small arms (65 per cent of the total value of issues during 2011-12 to 2013-14), where the production is gradually declining to offer a larger share to the more costly and technology intensive large calibre weapons (Chart-14). However, despite a decline, the INSAS rifles 5.56mm have a pre-eminence in the Board's arsenal of small arms.



7.2.1.2 Organisational structure

The Member (Weapon, Vehicles and Equipment) in the Board is responsible for policy formulation, planning and supervision of this operating group. The Factories are headed by General Managers. Internal quality control in the Factories is looked after by Additional/Joint General Managers of the Factories.

Directorate General of Quality Assurance (DGQA), independent of the Board, provides quality assurance of the products. It discharges this function through its representatives at the Factories. The Principal Controller of Accounts (Factories) Kolkata [PCA (Factories)] is responsible for compilation of consolidated annual accounts, cost control along with an advisory role on finance. The PCA (Factories) performs its functions through the Local Accounts Offices (LAOs) attached with every Factory.

7.2.1.3 Why did we take up this audit?

In view of significance of weapon manufacturing Factories in providing strategic weapons to the Armed Forces and MHA, we decided that a comprehensive coverage with focus on the areas of production planning, performance, quality and cost control would add value to the Management and provide inputs for policy formulation in the Government and in the Parliament.

7.2.1.4 Scope of audit and sample audited

Our audit covered the performance of all six weapon manufacturing factories for three years: 2011-12 to 2013-14. We arrived at the audit findings after test

⁷⁰The imports were covering mainly Sub Machine Gun, Micro UZI 9mm Pistol with Silencer, Galil Sniper Rifle 7.62mm (Army), AK-103 Rifle, 9mm MP5A3 Rifles, KH-35 for IL-38 (Navy)

check of the records at the Board and six factories⁷¹, the Controllerates of Quality Assurance (Weapon and Small Arms) at Jabalpur and Ishapore, Senior Quality Assurance Establishments attached with those factories. Relevant matter relating to 2014-15 has been included wherever necessary.

We selected 25⁷² weapon items with cost of production of ₹2860 crore that together accounted for 79 per cent of total cost of production (₹3618 crore) during 2011-12 to 2013-14 relating to 68 weapon items in the product-line of the six factories. The selection was based on strategic use of the items by the Armed/Paramilitary Forces, diversity of client base and cost of production. The details of sample selected for examination are at **Annexure-XVI**.

7.2.1.5 Audit objectives

The aim of our audit is to form an opinion on the Board's ability to provide quality products on time to its clients, mainly the Armed Forces. The broad objectives of our audit, framed to address this audit question, were to seek an assurance that:

- *The Board fixed annual production targets for the Factories based on indentors' needs and the capacity of Factories, and the targets were met by the Factories on time;*
- *The Factories were able to marshal their resources timely to implement the production plan;*
- *Strong quality control measures ensured timely issue of quality weapons to indentors;*
- *The Factories instituted controls for a close watch on utilisation of funds as well as on cost of production and recovery of costs; and*
- *The Factories were geared to meet the perspective needs of the Armed Forces in order to reduce the dependence on imports.*

7.2.1.6 Audit criteria

We identified following sources to adopt the audit criteria for assurance on the audit objectives:

- ❖ Board's Procurement Manual 2010 (OFBPM), Standard Operating Procedure and DGOF Procedure Manual;
- ❖ Minutes of monthly Board meeting of the Board;
- ❖ Standing Orders (Tech) for Defence Quality Assurance organisation;
- ❖ Defence Accounts Department Office Manual Part-VI (DADOM); and
- ❖ Policies/Orders/instructions issued by the Ministry and the Board.

⁷¹Rifle Factory Ishapore, Small Arms Factory Kanpur, Gun and Shell Factory Cossipore, Ordnance Factory Trichy, Field Gun Factory Kanpur and Gun Carriage Factory Jabalpur

⁷² Small Arms : 12 items, Medium Calibre : 3 items, High Calibre : 10 items

7.2.1.7 Audit Methodology

After a preliminary study at the Board and four weapon manufacturing Factories, an entry conference was held in August 2014 wherein the scope, audit objectives and audit methodology were discussed and audit criteria were agreed upon. Detailed audit was carried out in the units selected for coverage as indicated in **Para 7.1.7** above during the period from July 2014 to December 2014 to evaluate the performance against the audit criteria. Field audit included examination of records, collection of information through issue of audit memos and questionnaires. Audit also analysed the data extracted from the computerised packages used in the Factories.

The draft report was issued to the Ministry and the Board in February 2015 and discussed in the Exit Conference held with the Board in May 2015. While the Board had furnished their responses in May 2015, the same from the Ministry was awaited (September 2015) even after lapse of stipulated time frame of six weeks for the reply. Responses of Board and deliberations during Exit Conference have been considered while finalising this report. Recommendations in the draft report were also accepted by the Board in their replies.

7.2.1.8 Acknowledgement

We acknowledge the co-operation received from the Chairman of the Board, Member of the Weapon, Vehicles and Equipment Division of the Board, Senior General Managers/General Managers and the Accounts Officers of the Factories and Senior Quality Assurance Establishments stationed at the six weapon manufacturing factories. Their inputs helped us plan our audit and provide a Report which we hope, will add value to the work of the Board and the Factories.

A list of abbreviation and glossary of terms used in this report are given in **Appendix-I** and **Appendix-II** respectively.

Audit findings

7.2.2 Towards Meeting the Requirements of Indentors

***Audit objective 1:** The Board fixed annual production targets for the Factories based on indentors' needs and the capacity of Factories, and the targets were met by the Factories on time.*

7.2.2.1 Target fixation with reference to client needs

The Army is the main indentor for the weapon items produced in the Factories. The concept of a 'five year roll-on-procurement plan' (2011-12 to 2015-16) was introduced in February 2011, which projects the multi-year

requirement⁷³ of the Army. However, it is the firm indent⁷⁴ received from the Army, which forms the basis for fixing production targets by the Board for the Factories.

The target for Ministry of Home Affairs (MHA) which procures weapons for the paramilitary forces, is fixed through an annual target fixation meeting held in November/December of the previous year. A roll-on-plan was received for the first time in 2010 which is, however, only an indicative wish-list.

Navy's requirements form a meagre part of product line (2 per cent of the total value of issues during 2011-12 to 2013-14). The annual indent for Navy is the only means for fixing targets by the Board⁷⁵. Audit was informed by the Board that the production target for private indentors is based on an assessment of the demand but being dynamic in nature, is not documented.

In its Special Board Meetings (July 2011/August 2012), the Board discussed the need for providing long term firm requirements by the clients which would provide adequate lead time for production. This issue was raised specifically with the Army, to consider placement of roll-on-indent for weapons, based on the Army's long term induction/de-induction plan of weapon systems, which would enable the Board to dovetail its modernisation and capacity augmentation plan with the Army's requirement.

7.2.2.2 Projection of requirements by the clients

The multi-year Roll-on Plan of the Army helps the Board in production planning. However, the projections in the Roll-on-Plan were 'tentative' and subject to change for increased requirement based on actual deficiencies emerged after Annual Provision Review by the Army. Accordingly, Army was to plan supplementary indents for increased requirements. We found that the Roll-on Plan of Army covered only 13 of the 21 weapon items manufactured by the Factories for the Army. The requirement for the remaining products was still being communicated only through indents from the Army.

Out of 11 items, issued directly to the Army and sampled in our audit, the Roll-on plan covered eight strategic items; the remaining three items were those which had faced uncertainties in production⁷⁶. In this connection we found that:

- In respect of four items viz., 5.56mm Rifle, 105mm Light Field Gun, 40mm UBGL and 9mm Pistol, the Factories (RFI, SAF, OFT and GCF)

⁷³The plan indicates the minimum essential requirement based on trends in wastage.

⁷⁴The indents represent a firm order. Technical Instructions (Director General Ordnance Services Technical Instruction 307 governing provision review of Class-'A' stores) require that the Army conducts Annual Provision Review in November each year, to assess its annual requirements against the availability of stock and issues pending from the Factories against past indents.

⁷⁵ except for AK-630 Gun being a major item, for which the Navy intimated its total requirement in December 2011.

⁷⁶These items included 5.56mm Rifle-Foldable butt, 5.56mm Light Gun Machine, 7.62mm Gun Machine. The production of 5.56mm Light Gun Machine and 7.62mm Medium Gun Machine had been stopped for a long time and re-started only during 2012-14. The bulk production clearance for 5.56mm Rifle-Foldable butt was given by the Army only in October 2012.

produced these items during 2011-12 to 2013-14 to liquidate the Army's indents lying outstanding as of 1 April 2011 with the Board. Consequently, the Board had not revised the targets significantly with reference to the Army's Roll-on Plan during 2011-12 to 2013-14. Moreover, the Army's requirement of 5.56mm rifle (fixed butt) and 9mm Pistol was declined and reduced to nil in 2013-14.

- With respect to other four items *viz.* 81mm Mortar, 84mm Rocket Launcher MK-III, Spare Barrel (T-72 tank) and Spare Barrel (T-90 tank), the Army increased the annual indented quantity by 80 to 172 *per cent* as compared to the quantity projected in the Roll-on Plan during 2011-12 to 2013-14 (**Annexure XVI-A**). Moreover, five out of eight indents relating to these items were received from the Army after the commencement of the year during the same period. But the Board did not revise the targets upwards given to the Factories (GCF and GSF), which were already facing capacity constraints.
- On the whole, the targets were fixed lower than the Army's requirements in 23 of 31 instances (11 items) during 2011-14 (**Annexure-XVII-A**).

We found that in the case of MHA also, the targets fixed for the years 2011-12 to 2013-14 in the Target Fixation Meetings and accepted by the Board, varied largely from the roll-on-plan (**Annexure XVI-B**) with reduction in targets in 83 *per cent* instances (six items) during Target Fixation Meetings (December 2010, November 2011 and November 2012). In particular, the Board objected (November 2012) to reduction of targets for three items (5.56mm Rifle, LMG and 9mm Carbine) in 2013-14 during Target Fixation Meeting as it would result in idling of capacity in small arms manufacturing Factories. The Board also expressed (July/August 2012) serious concern to the MHA regarding less/nil receipt of fund allocation from the MHA for 9mm Pistol Auto and Carbine (2012-13) as compared to the targets indicated in the target fixation meeting (November 2011). With the Armed Forces, payment for issues is made through book adjustment and hence not an important parameter while fixing the delivery schedule. This is not, however, the case for MHA, where late or non-receipt of payments became a critical factor that forced the factories to re-schedule deliveries against targets or revise the production targets itself.

The Board stated that the quantities under Roll-on-Plan were not covered through matching indents and in the absence of long-term requirements, the Factories could not strategically plan modernisation or diversification to optimally utilise their available capacity. All these factors adversely affect the capability to meet Customer's strategic needs on time.

7.2.2.3 *Target fixation with reference to capacity*

The Board fixes and communicates annual targets to the Factories, keeping in regard the client indents and the production capacity of the Factories.

Correlation of the indentors' requirements, production capacity⁷⁷ in the Factories and the annual targets revealed the following:

- When targets were fixed in excess of capacity, the Factories failed to meet the targets. This happened in 31 instances covering 17 items, where cumulative shortfalls over 2011-14 were observed for 16 items (spare Barrel T-72 being the exception). The shortfall was in the range of five to 71 per cent.
- The Board faced capacity constraints in 17⁷⁸ of 25 sampled items with the capacity in the Factories being lower than the requirements⁷⁹ of the indentors (**Annexure-XVIIA & Annexure-XVIIB**). Some of these were strategic weapons as shown in **Table-32**.

Table-32: Significance use of strategic weapons

Name of weapon	Significant use of the weapons
40mm Under Barrel Grenade Launcher	Fitted with INSAS Rifle used by infantry soldier to fire bullet & grenade from rifle & grenade launcher without changing firing posture.
T-90 Ordnance/ Spare Barrel T-90	Main armament of T-90 tank used by the armoured regiment of Indian Army.
AK-630 Gun	Main armament comprising six concentric 30mm Gun Barrels fitted with battle ships of Indian Navy and used as anti-aircraft and anti-missile defence.
105mm LFG	Light Field Gun used by artillery regiment of Indian Army.
84mm RL MK-III	Used as anti-tank weapon but also suited for attacking armoured personnel carriers, machine gun posts and troops in the open.
81mm Mortar	Light Weight Weapon to provide quick, accurate and heavy firepower in any phase of battle and all types of terrain including mountains.

- Targets for items were fixed lower than the client's needs particularly in those items for which the Factories had production problems, like 5.56mm Light Machine Gun (2011-12 to 2012-13) in which the production re-started after a hiatus of 10 years. Similarly, targets for spare barrel T-72 was fixed lower than capacity during 2011-12 to 2012-13 due to problems in sourcing forgings and priority given to the needs on T-90 barrel. However, Audit did not find mention of capacity shortage or production problems in the documents relating to target fixation or any communication to the indentors in this regard. It was also observed that on the same item, the gap between client indents and the targets was higher in the case of Army as compared to MHA. Some of these items were 5.56mm Rifle Fixed Butt and Foldable Butt, 81mm Mortar, 5.56mm LMG and Pistol Auto 9mm.

⁷⁷ Under the Board's direction (May 2010), two committees assessed (August 2010) the product-wise capacity of the selected weapon manufacturing factories. But subsequent capacity assessment was not done in five of the six sampled factories. Small Arms Factory, Kanpur assessed a reduced capacity keeping in view the available manpower in the Factory. We used the data provided by the Board on capacity for our analysis.

⁷⁸ Rifle 5.56mm (Fixed & Foldable Butt), Rifle 7.62mm, Gun machine 7.62mm, Pistol Auto 9mm, 40mm UBGL, AK-630 Gun, 105mm LFG, Spare Barrel T-72 & T-90, 81mm Mortar, 84mm RL, 0.32" Pistol, T-90 Ordnance, LMG 5.56mm, 12.7mm Prahari and 12.7mm AD Gun

⁷⁹Including outstanding dues against past indents

While accepting the audit observation, the Board highlighted (May 2015) specific constraints for certain items like 7.62mm MAG where production was being re-started after a hiatus of 12 years (1999-2000 to 2010-11) or 84mm RL, where the capacity of the foreign collaborator to supply barrels, was the limiting factor. The Board's reply was silent on the Board's failure to document the facts of the capacity shortage/ production problems during Target Fixation Meetings or to communicate the same to the indentors.

7.2.2.4 Capacity augmentation

Audit observed that weapon manufacturing Factories had been facing capacity shortages across the range of weapons in meeting annual indents (**Annexure-XVIIA**). However, the Chairman of the Board in its Special Board Meeting (August 2012) intimated that the Board had undertaken capacity augmentation only for large calibre weapons (LCW)⁸⁰ where the capacity was lower than current and future requirements as indicated in the Roll-on-Plan (2011-12 to 2015-16) and capacity data furnished by the Board to Audit.

Capacity augmentation for LCW at a total cost of ₹377 crore in four factories was sanctioned in March 2012 with due date of completion by March 2015. The four Factories were Metal & Steel Factory Ishapore, Field Gun Factory Kanpur, Ordnance Factory Kanpur and Gun Carriage Factory Jabalpur. As of December 2014, only ₹47 crore (12 per cent of sanctioned cost) had been spent with orders placed on 47 per cent of the equipment required as eight of 11 civil works required were still in the tendering stage.

While accepting the delays in execution of civil works and procurement of plant and machinery, OFB stated (May 2015) that LCW project was linked with the finalisation of 155/52 calibre Towed gun for which selection process was not yet completed by the Army.

The contention is not acceptable because implementation of LCW project is not linked solely with the finalisation of the 155mm Towed Gun as the scope of the LCW project covered also other items like T-90 Ordnance, T-72/T-90 Spare Barrel, 130/155mm up-gunning, 155mm (45 calibre) gun, etc. The Board's reply was silent on reasons for delays in augmentation of capacity of these two items which are in the regular product line.

7.2.2.5 Communication of targets to Factories

According to Paragraph 5.5.2 read with Annexure-I of Board's Procurement Manual 2010, time-frame required for the procurement process for input materials is six months. Maximum time required for procurement under Ministry's power. Hence, the Factories must receive targets at least six months before the production year (by September of the preceding year). The indents placed subsequently by the users are adjusted in a staggered manner through mid-term revision of targets, commensurate with the available capacity of the Factories.

⁸⁰ T-90 Ordnance, Spare Barrel T-72/T-90, 130/155mm up-gunning and 155mm Gun

We, however, found that timely communication from the Board to the factories was not received for all the years. There was two to three months' delay (by November-December of the preceding year) by the Board in communicating the targets to the Factories. Targets were further revised by the Board during the production year for three to 14 items during 2011-12 to 2013-14 (**Table-33**). But revisions of targets mid-year disrupted the production of 11 items as discussed in the succeeding paragraph.

We further analysed the reasons for revisions of targets. In 2011-12, the revisions were made on receipt of the Roll-on Plan from the Army which was for the first time introduced in February 2011; the Roll-on Plan projected requirements that varied from the annual indent received for the year. The revisions led to increase in target for five items and decrease in target for nine items. The targets revisions by the Board were fewer in 2012-13 with only increase of targets for one item (84mm Rocket Launcher) due to enhancement in requirements of Army and MHA and decrease for two items (Pistol Auto 9mm, Carbine 9mm). In 2013-14, the targets were increased for seven items mid-year which we found were not caused due to mid-year revisions in indents from the users. Targets for Rifle 7.62mm was increased on the request of the concerned Factory and for 40mm UBGL, the same was increased due to availability of sufficient indent and healthy production trend at OF Trichy. For remaining five items⁸¹, no specific reason was recorded by the Board while communicating increase in targets to the Factories.

Table-33: Comparison of original with revised targets in a year

<i>Year</i>	<i>Nature of revision</i>	<i>No. of items</i>
2011-12	<i>Increase in target</i>	5
	<i>Decrease in target</i>	9
	<i>Status quo</i>	11
	Total	25
2012-13	<i>Increase in target</i>	1
	<i>Decrease in target</i>	2
	<i>Status quo</i>	22
	Total	25
2013-14	<i>Increase in target</i>	7
	<i>Decrease in target</i>	1
	<i>Status quo</i>	17
	Total	25

Further we found from **Annexure-XVIIA and XVIIIB** that out of 13 instances of upward revision, the Factories could not meet the targeted quantity in respect of 11 instances (11 items); in five instances⁸², they could not even meet the original targets. The downward revision helped the Factories to meet the targets only in four instances but there were eight other instances⁸³ where the Factories could not achieve the targets despite the reduction.

The Board justified (May 2015) the revision of targets as necessitated by changes in client requirements, which our analysis showed was not always the case as discussed above.

⁸¹ 5.56mm Rifle fixed butt, LMG 5.56mm, Pistol Auto 9mm, Carbine 9mm, 12.7mm Prahari

⁸² 5.56mm Rifle (fixed butt), Rifle 7.62mm, Pistol Auto 9mm, 12.7mm Prahari, 84mm Rocket Launcher MK-III

⁸³ 5.56mm LFG, Pistol 9mm, Carbine 9mm, 12.7mm Prahari, 84mm Rocket Launcher, AK 630 Gun, T-90 Ordnance, Overhaul with new barrel

7.2.2.6 Achievement of targets

Table-34 illustrates the production performance of the Factories in 2011-14 against the targets fixed by the Board. Further details are at **Annexure-XVIIA and Annexure-XVIIB**.

Table-34: Year-wise production performance

Year	Production as percentage of revised targets : No. of items						Total No. of items	Value of Short-fall (₹ in crore)
	≥ 100	99-80	79-60	59-40	39-20	<20		
2011-12	8	8	4	2	2	1	25	199
2012-13	4	10	5	3	3	0	25	495
2013-14	4	4	7	4	5	1	25	785
Total	16	22	16	9	10	2	75	1479

As seen from the Table that on an average, the Factories achieved the production targets at the level of 80 *per cent* and above in 38 instances (51 *per cent*) in 2011-14. But in 21 instances (28 *per cent*), the achievement was less than 60 *per cent*. The Factories registered their best performance in 2011-12, with 16 items (64 *per cent*) achieving the targets by 80 *per cent* and above against only eight items (32 *per cent*) in 2013-14. In 2012-13 and 2013-14, the number of products with 100 *per cent* achievement of targets came down to four. However, there were shortfalls in production/ issue in the range of 21 to 100 *per cent* in 37 instances (49 *per cent*) comprising 22 items⁸⁴. Total value of shortfall in issue of the selected weapons against the revised targets stood at ₹1479 crore during 2011-14 with 294 *per cent* increase (₹586 crore) in 2013-14 over 2011-12 mainly due to shortfall in production/issue of six items⁸⁵.

Against 23 instances of fixing targets lower than the Army's requirements during 2011-12 to 2013-14 as discussed in **Paragraph 7.2.2.2**, the production was achieved at the level of 60 *per cent* and above in 13 instances (eight items) against the indented quantity. Production achievements were found far below the requirements of Army in respect of 5.56mm Rifle (Foldable Butt) for 2011-12 and 2012-13, Gun Machine 7.62mm for 2011-12 to 2013-14, 40mm UBGL for 2011-12 and 2012-13, 81mm Mortar for 2011-12 and 2012-13 and T-90 Spare Barrel for 2011-12 to 2013-14. Even the Board's targets could not be fully achieved in respect of 15 instances (nine items) *viz.* 5.56mm Foldable Butt (2011-12 and 2012-13), 5.56mm LMG (2013-14), Gun Machine 7.62mm (2012-13 and 2013-14), 40mm UBGL (2011-12 and 2012-13), 81mm Mortar (2012-13), 105mm LFG (2012-13 and 2013-14), 84mm Rocket Launcher (2012-13 and 2013-14), Spare Barrel T-72 (2013-14) and Spare Barrel T-90 (2012-13 and 2013-14).

⁸⁴ 5.56mm Rifle (Foldable Butt), 5.56mm Rifle (Fixed Butt), 5.56mm LMG, Gun Machine 7.62mm, Rifle 7.62mm, Pistol Auto 9mm, Carbine 9mm, 40mm UBGL, AK 630 Gun, 81mm Mortar, 84mm Rocket Launcher, 12.7mm Prahari, 12.7mm AD Gun, Final Gun Assembly of T-90 Tank, Spare Barrel T-72, Spare Barrel T-90, T-90 Ordnance, Overhaul with Old Barrel, Overhaul with New Barrel, 105mm LFG Ordnance, 0.315" Sporting Rifle, 105mm LFG with CES

⁸⁵ 84mm Rocket Launcher-2188 Nos-237 crore, 5.56mm Rifle fixed butt-28740 Nos-103 crore, 105mm LFG-41 Nos-107 crore, 12.7mm Prahari-100-29 crore, 5.56mm LMG-4671 Nos- 26 crore, AK 630 Gun-2Nos-14 crore.

We analysed the production performance against revised targets on main weapon items in each Factory, result of which are shown in **Annexure-XVIII A**. Delays in receipt of input stores are the predominant cause for slippages across the Factories as shown in **Annexure-XVIII B**. This issue is further analysed in **Paragraph-7.2.3** against audit objective 2.

While accepting the audit observation, the Board stated (May 2015) that they were making all out efforts to meet the users' requirements of upgraded weapons with existing resources in spite of constraints and simultaneously modernised its resources. It added that the limitations in achieving the targets in physical terms were due to alteration of priorities based on interaction with the users apart from constraints in arranging all input stores for all the products in time. With regard to MHA, budget limitations were a constraint. During the Exit Conference the Board pointed out that despite the limitations, it achieved an increase of ₹400 crore in issue of weaponry in 2014-15.

The contention is not acceptable since apart from delay in receipt of payments from MHA, there were considerable delays in procurement of input stores. During the Exit Conference, the Board assured that a strong message would be sent to the Factories in this regard. We also found that the internal control exercised by the Board to monitor the Factories' performance against targets was inadequate, as further discussed in detail in **Paragraph 7.2.2.8**.

7.2.2.7 Reliability of production data

According to Paragraphs 668 and 670 of Defence Accounts Department Office Manual Part-IV (DAD OM), the manufactured items are accepted after inspection and thereafter, the accepted items are brought on charge in the Production Ledger. Subsequently, those items, when issued to the indentors through production issue vouchers are priced with reference to OFB's firm price list and accordingly, debited to the relevant Services' head.

However, it was observed that Factories prepare "advance issue vouchers" whereby they raise demands for payment from the Army without physical issue of the stores. Taking cognizance of the risks of accounting irregularities (depiction of unrealistic profit in the accounts, distortion of cost of production and work-in-progress, disparity between value of issues and actual expenditure booked under manufacturing head, etc.) and distortion in production figures, the Controller General of Defence Accounts (CGDA), New Delhi instructed all Controllers of Finance and Accounts (Factories)⁸⁶ in October 2007, not to accept advance issue vouchers without despatch particulars.

We had commented on this issue in Para 6.1.4.1 of Compliance Audit Report No. 30 of 2013. Ministry, in their Action Taken Note, stated (March 2015) that close monitoring of item-wise/factory-wise production and issue *vis-à-vis* monthly/quarterly plans was done and all out efforts were made to avoid recurrence of such incidence. Despite this, we found that such practice continued in four out of six Factories checked for the selected items. During

⁸⁶Controller of Finance and Accounts (Factories) functions under the PCA (Factories) Kolkata for a group of factories on regional basis

2011-14, advance vouchers of ₹222 crore were prepared representing 10 per cent of the total issues of these Factories, as detailed in **Table-35** below:

Table-35: Factory-wise value of advance vouchers

Factory	Value of advance vouchers (₹ in crore)			
	2011-12	2012-13	2013-14	Total
Gun Carriage Factory, Jabalpur	79	57	0	136
Ordnance Factory, Trichy	14	33	22	70
Field Gun Factory Kanpur	0	0.5	8	8
Gun and Shell Factory Cossipore	0	0	8	8
Total spill-over issues	93	91	38	222
Total value of issues (Selected Items of four Factories)	838	763	697	2298
Percentage of spill-over issues to total issues	11	12	5	10

(Source: Database of Production Issue Vouchers and related gate pass)

The incidence of advance vouchers was highest in Gun Carriage Factory Jabalpur in 2011-12 and 2012-13. The Factory reported maximum value of issues (₹385 crore) in 2011-12, 21 per cent of the achievements represented an inflated figure which marginally came down to 19 per cent in 2012-13.

The Board stated that the vouchers were prepared only after complete manufacture of store and issue of inspection note by Quality Assurance Establishment, however, the despatch might be delayed due to reasons of economy in transportation to ensure full load for dispatch in each case. But the findings do not support the Board's claim as against target of 2012-13, Ordnance Factory Trichy and Gun Carriage Factory Jabalpur dispatched 12.7mm Gun and Spare Barrel T-90 to indentors up to November 2013, even though the items were shown as issued by March 2013.

The Board assured (May 2015) Audit during the Exit Conference that a serious view was taken of this issue and there was no spill-over issue in 2014-15.

7.2.2.8 *Internal control on achievement of targets*

The Planning Section in the Factory prepares the production plan and is required to monitor the pace of production. The Section collects the data on issues of products on daily basis and the Factory sends monthly production performance report to the Board. Monthly Production Review Meeting in the Factory is another tier of control. This meeting is attended by the General Manager and the heads of production shops as well as the Planning Section. Paragraph 4032 of the Board's Procedure Manual stipulates that the Factories should report to the Board the reasons for delayed production and issue of the products to indentors and action taken by the Factory to obviate causes of delay. We found that the meetings were conducted; the monthly reports were also prepared and sent to the Board. But five Factories (except Ordnance

Factory Trichy) did not report specific bottlenecks in production and instead, merely communicated the data on production and issue of items.

As per Ministry's order of February 1979, the Board is responsible for overall planning, monitoring and implementation of the production programme through the respective operating group and at the Board level, through monthly Board Meeting. Paragraph 4039 of the Board's Procedure Manual also stipulates that the Board is required to examine monthly progress reports of the Factories for suitable action taken in all cases where delivery schedule has not been maintained or is not likely to be maintained. We, however, found that the Board, in a routine manner, only instructed the General Managers of the Factories to make all out efforts for meeting the production targets. Even the minutes of the monthly Board meetings, did not indicate a threadbare discussion on the hold-outs in production.

The Board stated that the constraint in availability of input material and any other constraint in production were reported by the Factories through monthly reports to the Board. But we found that Factories' production performance/achievement report of March every year (2011-12 to 2013-14) lacked specifics, with only Ordnance Factory Trichy, highlighting the item-wise specific bottlenecks in production. Moreover, the reporting mechanism, being routine exercise, had not become effective to curb the malpractice of preparing advance issue vouchers by the Factories.

Conclusion

Army's Roll-on -Plan 2011-12 to 2015-16 projecting its requirements for the next five years, was a good practice that aided the Board in short term planning. However, indents received from the Army were not matching with the Army's Roll-on-Plan. MHA, an important buyer of weaponry, projected a Roll-on-plan in 2010. But its requirements were largely reduced in the annual target fixation meetings.

On 50 per cent of the items, the Army revised, in its subsequent indents, the requirements substantially from the projections in the Roll-on Plan. 60 per cent of the indents were received after commencement of the production year. But the Board did not revise the targets already given to the Factories.

The Board faced capacity constraints in 68 per cent of the items and hence, fixed lower targets than the Army's requirements for most of the items. However, the Board had taken up capacity augmentation project (₹377 crore) only for high calibre weapons with scheduled completion by March 2015. The project was yet to be completed as of August 2015.

The Board provided original target to the Factories in December/November of the previous year, giving only three months for advance planning by the Factories against six months time required for the procurement process for input materials. These targets were also revised mid-year which disrupted the production.

The Factories achieved the targets by 80 per cent and above for eight to 16 items during 2011-12 to 2013-14. But for five to 10 items, the achievement was less than 60 per cent. Delays in receipt of input stores are the predominant cause for slippages across the Factories. The indentors' requirements were fully met for four to eight items (in 16 of 75 instances) with reference to targets.

The malpractice of advance vouchers without actual physical issue continued in four Factories despite clear directions prohibiting it.

Recommendation 1: *The Ministry may support the Board's efforts for a comprehensive and firm commitment on the long term requirements for weaponry from the Army and Ministry of Home Affairs.*

Recommendation 2: *The practice of revision of targets mid-way through the production year by the Board is disruptive and may be resorted to, only in exceptional circumstances.*

Recommendation 3: *The Ministry may take effective measures to stop the practice of advance issue vouchers in the Factories so as to avoid distortion of accounts and production data.*

Response of audited entity on recommendations

The Board accepted the recommendations.

7.2.3 Marshalling resources for production

Audit Objective 2: *The Factories were able to marshal their resources timely to implement the production plan.*

On receipt of the targets from the Board, each Factory formulates the production plan. A key input are the resources to be deployed for the production: stores, labour and machines. It is important that the stores of the specified quality are procured on time and the labour and machines are used optimally.

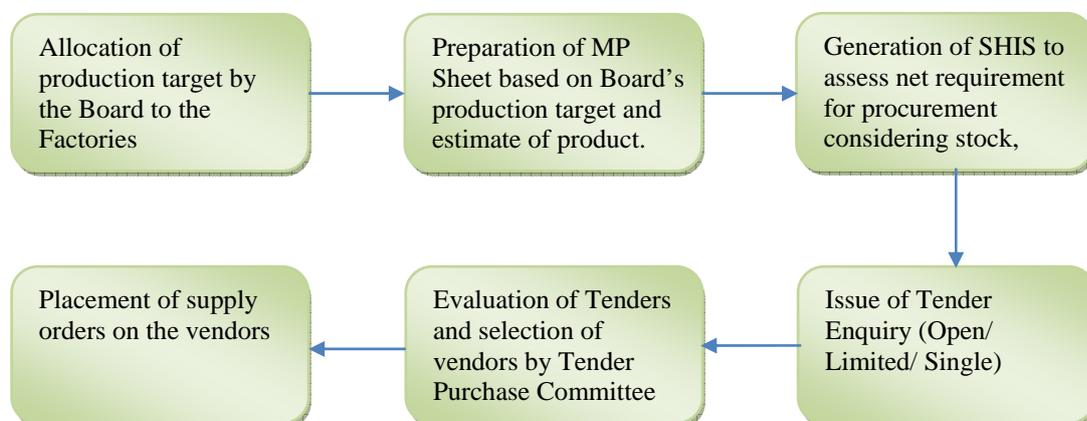
7.2.3.1 Timeliness in procurement of stores

According to Manual provisions⁸⁷, based on production targets allotted by the Board, the Factories are required to prepare Material Planning Sheet (MPS) which determines the quantum of materials required for each product. The MPS is sent to the Material Control Officer who issues the Stores Holder Inability Sheet (SHIS) to validate the estimation of procurement by the Planning Section. The SHIS forms the basis for initiating the procurement by the Stores Provisioning Section. A Tender Enquiry is issued to invite tenders from prospective suppliers. After evaluation of the tenders received from the potential suppliers by the Tender Evaluation/ Purchase Committee, competent

⁸⁷ Para 348 & 349 of Defence Accounts Department Office Manual Part-VI, Para 4.5.1, 4.6.1, 4.15.5, 4.15.6, 5.2.1 of Board's Procurement Manual 2010

authority decides to place supply orders on the selected vendors. The flow chart of procurement is given at **Chart-15**.

Chart-15: Flow Chart of Procurement



7.2.3.2 Procurement from trade sources

Paragraph 2.6.1 of the Board's Procurement Manual 2010 (OFBPM) stipulates that every individual in the chain of the procurement process is accountable for taking action in a specified time period so that the requirements of the indentors are met on time. Accordingly, a time limit⁸⁸ of two weeks is prescribed for issue of Tender Enquiry after preparation of the Stores Holders Inability Sheet (SHIS)⁸⁹. For Limited Tender Enquiry and Open Tender Enquiry, 15 and 19 weeks (approx five months) respectively are provided to complete the procurement action, reckoned from the date of initiation of the SHIS to placement of orders⁹⁰. We examined the timeliness in procurement during 2011-12 to 2013-14 in the sampled Factories, against the above benchmarks. Results of our examination are given in **Annexure XIX-A**. It was observed from the Annexure that:

- All the selected six Factories took inordinate time (1 to 8 months and beyond) against prescribed time of four weeks for issue of Tender Enquiry: 45 to 94 *per cent* of TEs were issued belatedly in five Factories (RFI, SAF, GSF, GCF and FGK) during 2011-12 to 2013-14.
- The time schedule for placing supply orders (after the receipt of the tenders) could be adhered only in 60-70 *per cent* of the supply orders in three Factories: Rifle Factory Ishapore, Small Arms Factory Kanpur and Gun & Shell Factory Cossipore. Gun Carriage Factory Jabalpur and Field Gun Factory Kanpur, whose products (Gun assembly for T-90 Tanks, Ordnance/Barrel for T-90 Tanks and 105mm LFG) mainly form components for the assembling Factories⁹¹, substantially delayed the

⁸⁸ Annexure-I read with paragraph 2.6.1 of OFBPM

⁸⁹ SHIS indicates total requirement, present stocks and dues, net requirement *etc.*

⁹⁰ Those orders within the power of General Manager of Factory

⁹¹ Heavy Vehicles Factory Avadi assembles T-90 tanks for which gun is supplied by Gun Carriage Factory Jabalpur, Gun Carriage Factory Jabalpur assembles Gun for which Ordnance/Barrel is supplied by Field Gun Factory Kanpur

placement of 97 per cent and 48 per cent orders respectively. While Ordnance Factory Trichy took more than five months in placing 69 per cent of the orders, Gun Carriage Factory Jabalpur took more than eight months to place supply orders in 68 per cent of the orders.

It was further observed that three Factories had delayed in placing 59 supply orders even after the due process had been completed and a vendor had been recommended by the Tender Purchase Committee (Table-36). Ordnance Factory Trichy was particularly tardy in this regard.

Table-36: Placement of orders after TPC approval

Time taken for placing supply order after TPC approval in days)	Number of orders			
	GCF	RFI	OFT	Total
Up to 15	9	7	8	24
15 -30	6	1	4	11
30-90	4	1	14	19
>90 days	1	0	4	5
Total	20	9	30	59

(Source: Supply orders data-base)

Delayed processing of procurement and finalisation of supply orders by the Factories adversely impacted on achieving the production targets. Illustrative cases of shortfall in production of end products linked with delayed procurement of related components are depicted in Table-37 below:

Table-37: Delayed procurement of components and shortfall in production of weapons

Name of component	Time taken in placement of orders (in days)	Name of end product (Factory)	Shortfall in production (in per cent)
Return spring, Contactor Assy., Electric Trigger Assy.	306, 252, 183	30mm Cannon (OFT)	17 (2011-12) 20 (2012-13)
Barrel extension,	174	40mm UBGL (OFT)	36 (2011-12) 13 (2012-13)
Steel round 38mm diameter	154	7.62mm Rifle (OFT)	22 (2011-12)
Foldable Butt, Grip, Guard Hand Assy.	210, 180, 210	5.56 Rifle Foldable (RFI)	62 (2011-12) 22 (2013-14)
Lanyard, Extractor, Hammer, Trigger, Locking Piece, Catch magazine	570, 600, 420, 390, 510, 210	Pistol Auto 9mm (RFI)	11 (2012-13) 48 (2013-14)

(Source: supply order database and production performance reports of factories)

The Factories (FGK, RFI & SAF) attributed the delays to insufficient number of vendors, time taken for price negotiation, shortage of manpower, frequent change in targets, dropping of tenders due to receipt of “freakish” rates quoted, lack of awareness of the vendors about e-procurement system, delay in capacity verification of the vendors etc. But the data on delays in placing orders even after the selection of the vendor is a strong indication of inefficiencies in the Factories that they will be served to recognise and correct.

The Board in its reply (May 2015) stated that:

- Open Tender Enquiry (OTE) cases took lot of time due to limitations of procurement procedure specified in the procurement manual. For Limited Tender Enquiry (LTE), the delay was due to receipt of single response/no response in the first attempt;
- The time taken in placement of supply orders in case of OTE could be substantially reduced once the process of capacity verification was delinked from the tendering process. Besides, the problem of non-availability of finance members in some of the factories also posed problems;
- Efforts were being made to reduce the time taken for issue of tender enquiries and placement of supply orders; and
- Delay in procurement had no real impact in achievement of targets.

Board's claim of no impact of delayed procurement of stores contradicted its own admission (against audit objective 1 on meeting targets) that arranging input stores was also a constraint in production.

During the Exit Conference (May 2015), these issues were discussed in detail. The Factories rely substantially on LTE and delays in issue of Tender Enquiry and in placement of supply orders even after the selection of the vendor in the Purchase Committee, are weaknesses in implementation of Rules rather than limitations in the Rules themselves. The Board took a strong view on tardiness in placing orders with the Chairman directing an investigation into the issue.

7.2.3.3 Procurement from sister factories

Apart from procuring the input materials from trade firms, weapon manufacturing Factories also source components from sister Factories. Field Gun Factory Kanpur and Ordnance Factory Kanpur receive various forgings from Metal and Steel Factory Ishapore for production of T-72/ T-90 barrels. Similarly, Gun Carriage Factory Jabalpur relies on Ordnance Factory Kanpur and Field Gun Factory Kanpur for T-90 and T-72 barrels required for production of guns.

It was observed that the production of barrels for the high calibre weapons: 105 mm Field Gun, T-72 and T-90 guns, was affected by the absence of capacity of the Annealing Furnace for metal forgings (particularly the improved "Pre-Yield Trial" forgings) in Metal and Steel Factory Ishapore. The capacity was only for 330 barrel PYT/forging, while the combined demand for barrels each year averaged to 490 during 2011-12 to 2013-14. Further, this Factory had also capacity constraints to manufacture Electro Slug Remelting (ESR)⁹² slugs (input steel) for their conversion into forgings. Hence, the Factory placed orders on a Defence Public Sector Undertaking viz. MIDHANI.

⁹²The electroslag remelting (ESR) process is used to remelt and refine steels and various super-alloys, to produce high-quality ingots

Against an annual requirement of 5592 MT of ESR slugs for all the high calibre barrels, the existing capacity (including the capacity in MIDHANI) was only 3000 MT. As a result, there were short-supplies of forgings from Metal and Steel Factory Ishapore to Field Gun Factory Kanpur and Ordnance Factory Kanpur for production of barrels. This, in turn resulted in short supply of barrels from Field Gun Factory Kanpur and Ordnance Factory Kanpur to Gun Carriage Factory Jabalpur, as detailed in **Annexure XIX-B**.

The Board stated (May 2015) stated that the constraints in arranging inputs of large calibre barrels arose from surge in requirement of Army for T-72 barrels, however all the requirement of large calibre weapons for Army were being met.

The contention is not acceptable as the Army's requirement of large calibre weapons were not met fully because there was shortfall in production of Spare barrel T-72 (2013-14), Spare barrel T-90 (2012-13 and 2013-14), 105mm LFG (2012-13 and 2013-14) as discussed in **Paragraph 7.2.2.6**.

7.2.3.4 Inspection of input materials

Quality control of input stores is critical to ensure the required specifications in weaponry. Paragraph 1.4 of the Board's Standard Operating Procedure stipulates that all materials are required to be inspected within 15 days for acceptance after their receipt in the Factory. It was observed that in 51 *per cent* of the instances, the Factories completed the quality control of stores within 15 days (**Annexure XIX-C**). As can be seen from the Annexure that in 27 *per cent* instances, they took 16 to 30 days for inspection of stores. It is noteworthy that there were 8775 instances (22 *per cent*) where the time taken exceeded one month. The Field Gun Factory Kanpur and Gun Carriage Factory Jabalpur reported the longest lead time, with 63 *per cent* of the instances crossing the 15-day time limit.

Field Gun Factory Kanpur informed (October 2014) Audit that the excess lead time beyond time limit of 15 days was because of the requirement of ultrasonic testing (for detecting bubbles/ cracks in barrels), sometimes twice, on forgings of T-72 and T-90 Barrels and its components.

The delays in inspection and taking charge of the input materials were attributed (September-October 2014) by the other Factories to:

- Delayed receipt of test certificates, pre-despatch inspection report and guarantee certificate from the suppliers (SAF);
- Limited infrastructure for inspection and delays in machining trials by the production shop (OFT);
- Average inspection time for input materials for 84mm Rocket Launcher and AK 630 Gun was 29 and 32 days respectively due to quality assurance and surveillance done by DGQA authority after completing the inspection by the Factory for final acceptance (GSF);

- Delayed receipt of test reports from outside laboratory, non-supply of sample materials for testing and time taken by the DGQA authority for testing of certain critical items (GCF).

The Board needs to take cognizance of specific practical constraints faced by different Factories in inspection of the input materials.

While explaining delays in inspection of input materials, the Board stated that the point raised by Audit was noted and instructions were being issued to the Factories to comply with the norms specified in the Standard Operating Procedure.

7.2.3.5 Internal control and monitoring of procurement

We examined the internal control and monitoring of procurement within the Factories as well as at the Board level and observed that:

- Five Factories (SAF, FGK, GCF, RFI and GSF) monitored progress of generation of Material Inward Slip (MIS) and its conversion to receipt voucher after inspection of the input materials through management information system. But no other periodical reports and returns were generated for monitoring timely receipt and inspection of stores. No systemic review was also done for timely issue of tender enquiries and placement of orders. Scrutiny of minutes of adhoc committee meetings held between the Factory managements and Internal Audit during 2011-12 to 2013-14 revealed that the issue of receipt/inspection of stores did not figure during discussion. Similarly, these issues were never discussed in the meetings of Unit Level Management Committee held between Factory management and Accounts Office except at Rifle Factory Ishapore.
- The Board had not put in place any mechanism for monitoring of positioning stores by the Factories at its level, nor was there any procedure for sending periodical reports and returns by the Factories to the Board regarding progress of procurement of stores with reference to production targets till 2012-13. Subsequently, while communicating production targets for 2013-14 to the Factories, the Board instructed the Factory managements to furnish fortnightly progress report on material procurement action. Despite inordinate delays in procurement process and inspection of input materials at the Factories, this issue was never discussed in the monthly Board Meetings to plug the holes.

The Board stated that several measures had been put in place. For instance, a weekly Input Material Review meeting was held under chairmanship of General Manager at Small Arms Factory, Kanpur. In the Field Gun Factory, the entire procurement activity was mapped on-line which got continuous attention of the management. Ordnance Factory Trichy claimed (August 2014) a day-to-day review of bottleneck items.

The contention is not acceptable because all the selected Factories did not generate periodical reports for monitoring timely receipt and inspection of

stores, nor did they create reports on timely issue of tender enquiry and placement of orders. The Board's reply was silent on inadequacy in monitoring at the Board level.

7.2.3.6 *Manpower utilisation*

Optimum and effective utilisation of manpower and machinery is essential to ensure the productivity in Factories so as to meet the production targets and minimise the cost for timely delivery of quality products to the indentors.

Direct Industrial Employees⁹³ (IEs) are engaged in production based on the workload in each production shop. The available Standard Man-hours (SMH) for each month are worked out based on number of direct IEs engaged in production for eight hours a day for 25 days in a month. The output SMH is determined based on the total quantity of each item manufactured during the month and the SMH required for all the items as per the labour estimate. The Piece Workers are given piece work profit as an incentive, based on their actual output SMH compared to the input SMH. Piece work profit is calculated⁹⁴ as a percentage of excess output SMH over the input SMH.

We examined as to how the Factories effectively marshalled the direct IEs for production activities for a sample period of 2013-14 at the selected Factories based on available SMH and output SMH data furnished by the Board. Accordingly, we plotted Factory-wise and month-wise actual output SMH (**Annexure-XX-A & B**) against the following two standards adopted by the Board for assessment of requirement of direct IEs:

- Manhours available with 10 *per cent* absenteeism; and
- Manhours available with 10 *per cent* absenteeism and 50 *per cent* piecework profit.

We found that all the Factories reported high incidence of piece work profit to direct IEs. Output SMH of these four Factories crossed the reasonable limit of maximum output SMH with 50 *per cent* piece work profit in good number of months in 2013-14; RFI- eight times, OFT- six times, SAF- 11 times, FGK- four times. We also charted (**Annexure-XX-B**) the trends in production and issue across the 12 months of 2013-14 in order to draw a correlation between utilisation of manpower and production. Despite substantial labour efficiency and output SMH, these Factories recorded shortfall in production (against targets) for 13 items by 3 to 81 *per cent* during 2013-14 as discussed in **Paragraph 7.2.2.6**. The persistent trend of high piece work profit of 50 *per cent* and above indicates that labour estimates were inflated which impacted the cost of production.

The Board stated that labour estimates prepared by proven industrial engineering method were not high. Proficiency of a worker engaged in a particular operation for a long period was one of the reasons for higher piece

93 Labourers directly engaged in production process involving machines and materials

94 Piece work profit percentage = $\{(\text{Output SMH} - \text{Input SMH}) / \text{Input SMH}\} \times 100$

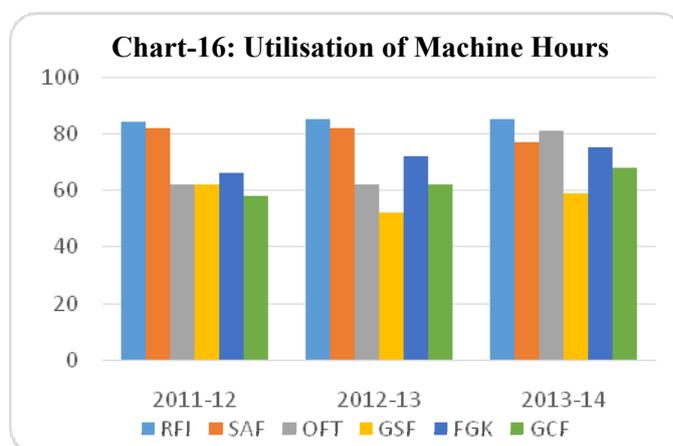
work earnings. In any case, the factories always met the allotted targets and there were no shortfalls.

The Board's reply is not acceptable because shortfalls in achievement of targets (ranging from three to 81 *per cent* for 13 items) were reported in RFI, SAF, FGK and OFT during 2013-14. Continuous trend of high piece work profit at 50 *per cent* or more was a strong indicator of inflated labour estimates which merits review as it ultimately resulted in increase in cost of production.

7.2.3.7 Utilisation of machine-hours

As per Ministry's order of February 1979, Ordnance Factories are required to utilise at least 80 *per cent* of their installed capacity. However, the Board revised (August 2013) the Manual for procurement of Plant and Machinery without the approval of the Ministry. Paragraph 3.2 of the Manual stipulates calculation of capacity based on 80 *per cent* efficiency each of machine and manpower *i.e.* overall 64 *per cent* efficiency.

The machine hour utilisation against availability of total machine hours at the six Factories during 2011-12 to 2013-14 is given in **Chart-16**. Declining trend of machine hour utilisation was found in Small Arms Factory Kanpur (82 to 77 *per cent*) and Gun and Shell Factory Cossipore (62 to



59 *per cent*) while upward trend was observed in Ordnance Factory Trichy (62 to 81 *per cent*), Field Gun Factory Kanpur (66 to 75 *per cent*) and Gun Carriage Factory Jabalpur (58 to 68 *per cent*). Utilisation of machine hours at Rifle Factory Ishapore was almost static at the level of 85 *per cent* during 2011-12 to 2013-14. Utilisation of machine hours was achieved at the level of 80 *per cent* and above only in six of 18 instances in three Factories (RFI-3, SAF-2 and OFT-1).

Conclusion

Delay in procurement of stores had impacted the Factories in achieving the targets placed by the Board. Three out of the six Factories placed 60 to 70 *per cent* of their supply orders in 2011-12 to 2013-14, within five months of identifying the requirement of stores. The remaining Factories could meet the timelines in 3 to 52 *per cent* of the supply orders. Gun Carriage Factory Jabalpur took more than eight months to place supply orders in 67 *per cent* of the orders. Ordnance Factory Trichy delayed placement of orders in 69 *per cent* instances. Compounding the inefficiencies in procurement from trade sources, was the inability of a sister Factory in meeting the requirements for

forgings for manufacture of barrels for high-calibre weapons at Field Gun Factory Kanpur.

We found that the Factories could not complete the quality control of stores within prescribed 15 days time in 40 to 63 per cent instances. It is noteworthy that in 22 per cent instances, time taken for inspection exceeded by one to three months and beyond.

All the Factories reported high piece-work profit. Even after exceeding the maximum labour hours available and with labour reported to have contributed 1.5 times its normative output within those hours through most of the year test checked (2013-14), the production did not meet the targets. This indicates that the labour estimates in production are inflated which allows space for high piece work profit payments.

Recommendation 4: *The Board may take cognizance of the tardiness in procurement and inspection of stores. The stipulated timeline of five months for placing orders may be reviewed to seek an achievable benchmark.*

Response of audited entity on recommendations

The Board accepted the recommendation. We were informed (May 2015) that the Board has approached the Ministry for special dispensation for procurement of exceptional items which are difficult to procure, powers to place long term contracts and streamline the procurement procedures.

7.2.4 Quality control and Quality Assurance

Audit Objective 3: *Strong quality control measures ensured timely issue of quality weapons to indentors.*

7.2.4.1 Quality control and assurance framework

Quality of weaponry is paramount as it ensures predictability in usage particularly in accuracy in firing as well as safety of the soldiers using it. We examined the performance of the Board in this regard particularly with reference to its internal controls on quality assurance.

Ordnance Factories follow a system of multilayer quality assurance before issue of final products to the indentors. The first tier of checks is by the Quality Control (QC) section of the Factory. The second tier is of the Senior Quality Assurance Establishment (SQA) attached to each Factory, representing the Directorate General of Quality Assurance (DGQA).

QC section of the Factory inspects and accepts the input materials/components on their receipt, it checks at designated control points during the manufacturing process. Paragraph 14 (d) of DGQA Standing Orders Technical Vol-II stipulates a requirement of 100 *per cent* quality control checks of the finished products by the Factories before their submission to the DGQA for quality assurance. The QC in the Factory can result in clearance for the items for inspection in DGQA's Quality Assurance or "Return for Rectification"

(RFR), by which the Factory's Production Shop is required to rectify the defects pointed by QC. However, the Board confirmed (May 2015) us that 100 *per cent* QC check is done for critical items/components.

DGQA carries out quality assurance (QA) inspection on the basis of sampling of the finished products⁹⁵ before issue to the indentors. DGQA is required to sentence the products either as 'accepted' or 'rejected'. Under the DGQA's Standing Orders (December 2010), 'Return for Rectification' (RFR) should not be awarded by the DGQA at final inspection stage; RFR being the responsibility of the Factory QC.

The Factories informed Audit that the QC is normally restricted to visual examination of the item and gauge measurements. The functional testing of the weapons by firing is done only in QA and RFR in QA, although not envisaged in the system, is inevitable.

The DGQA also issues "Quality Improvement Notes" for future reference, suggesting measures for quality improvement. These are issued on the basis of inspection at control points in the Production Shop (during production) or at the time of inspection of final products. The Factories are required to provide SQAE a feedback on implementation of these notes.

Although a multi-tiered structure for quality control and assurance is laid down and well-established in the Factories, the Board did not prescribe time limit for quality inspection by the Factory; the DGQA also did not fix a time frame for quality assurance inspection of the finished products. Our sample analysis revealed that in most Factories, the quality tests were completed within 15-30 days at each level: QC and QA.

7.2.4.2 *Quality control by Factories*

Quality Control section of the Factory is required to conduct 100 *per cent* inspection at hand functioning stage both for components and complete weapons. Different stages of inspection as stipulated in the Quality Audit Plan (QAP) for components are material verification, dimensional checking both at various control points and surveillance points, crack detection, checks of hardness/protective finish. Similarly, for complete weapon, the assembly stage inspection is carried out to verify protective finish, colour matching of all components, damage, gauging of dimensions, safety-fire and other technical parameters⁹⁶ and rifle assembly view records (RAVR) are accordingly generated.

We examined quality control (QC) activities for sampled months⁹⁷ during 2012-13 and 2013-14 in respect of:

- **5.56mm Rifle (Fixed Butt)** - complete weapon and its one major component *viz.* Breech Block at Rifle Factory Ishapore, and

⁹⁵In addition, DGQA tests

⁹⁶ Trigger pull, cover fitment, functioning of various parts/components.

⁹⁷June-July 2014 for complete weapon (Rifle 5.56mm) and January-March 2013 and 2014 for Breech Block at RFI. August-October 2012 for 7.62mm MAG at SAF.

- **7.62mm MAG** - complete weapon along with component *viz.* Block Front at Small Arms Factory Kanpur.

Results of our examination are as under:

- Scrutiny of inspection notes (January to March 2013 and 2014) of the Factory for the component *viz.* Breech Block of Rifle 5.56mm revealed that while the control point inspection required for dimensional checking of component was conducted by the QC section of the Factory, dimensional checking at the surveillance point was not carried out. We found that due to dimensional variations, 1909, 1398 and 1177 Breech Blocks were declared rejected at the QA stage during 2011-12, 2012-13 and 2013-14 respectively, even though the QC section had carried out dimensional checking at control points.
- The Factory management intimated (September 2015) audit that 100 *per cent* inspection/check of complete weapon (including visual inspection) was carried out by the QC section of the Factory. However, the Factory management could not furnish the check sheets for 2012-13 and 2013-14 in support of their claim. It was reported to have been destroyed after one year. This was contrary to the provisions of the APEX Quality Manual at the factory (RFI) which stipulates that all record of monitoring and measurement of product must be maintained by the production sections and allied QCs for a period of two years. The Factory management submitted 323 check sheets (RAVR stage) only for the month of June and July 2014 which indicated the extent of checking under various parameters.

On scrutiny of those check sheets we found that the parameters of inspection (*viz.* protective finish, colour matching of components, safety-fire, gauging inspection of barrel bore *etc.*) as indicated in the inspection schedule of Quality Audit Plan were not included in the check sheets. This indicates that the requirement of QC plan was not properly addressed in the check sheets to ensure 100 per cent checking of all the prescribed parameters.

- Small Arms Factory Kanpur did not prepare the QC plan for Block Front (component) and complete weapon (7.62mm MAG). No check sheet for inspection of different parameters in respect of the component and complete weapon was formulated to ensure 100 *per cent* inspection of all the parameters. The Factory only maintained daily work register and inspection notes to record the extent of acceptance, RFR and rejections of components and complete weapons without recording the details of checks carried out against the prescribed norms. Therefore, the QC in the Small Arms Factory Kanpur was inadequate despite high incidence of RFR (52 *per cent*) and rejection (53 *per cent*) as declared by SQAE wing after QC inspection by the Factory during 2011-12 to 2013-14 as discussed in **Paragraph 7.2.4.3**.

7.2.4.3 Awards in quality assurance: RFR and final rejections

Although awarding of Returned for Rectification (RFR) is the responsibility of the Factory's QC section, the same was continued to be awarded for weapon items by the Senior Quality Assurance Establishment (SQAE) who is no longer authorised to do it as mentioned in **Paragraph 7.2.4.1**.

We examined the instances of RFR by SQAE, rejections by SQAE and by the indentors and implementation on quality improvement notes in all the six Factories. The Board did not prescribe the acceptable level of RFR against different classes of items. As RFR leads to delays in issue of finished items to the indentors and increase in cost for rectification, introduction of modern machinery, standardisation of specifications for components and finished products, quality checks at the time of receipt of components, are all steps to reduce the incidence of RFR, particularly of established items. A case study of 5.56mm Rifle, an established product of Rifle Factory Ishapore, Small Arms Factory Kanpur and Ordnance Factory Trichy at **Annexure- XXI** provides insights into the problems on quality faced by the Board.

In addition to the 5.56mm Rifle, defects were noted against major items of manufacture in all Factories, with Small Arms Factory Kanpur reporting the highest incidence of RFR and rejection mainly of 7.62mm Machine Gun, 5.56mm LMG. Details of Factory/item-wise incidence of RFR and rejections along with reasons are indicated in **Annexure-XXII**. Total value of RFR and rejections during 2011-12 to 2013-14 worked out to ₹390 crore and ₹145 crore respectively for 13 items.

Particularly noteworthy were RFR (52%) and rejections (53%) in 7.62mm Machine Gun (MAG), RFR in 30mm cannon (34%) and 12.7mm Air Defence Gun (100%) in Ordnance Factory Trichy and RFR in 84mm Rocket Launcher-Mark III series (19% to 66%) during 2011-12 to 2013-14.

During the Exit Conference, Small Arms Factory Kanpur informed Audit that although the documents of SQAE cited them as rejections, the 7.62mm MAG were actually returned to the Factory which rectified the defects and thereafter, the weapons were issued to the Army. However, we did not receive documentary evidence in this regard, though called for (June 2015).

Besides the delays leading to slippages in target, repeated testing led to excess consumption of ammunition⁹⁸ worth ₹7 crore in proof testing of 5.56mm Rifle, 5.56mm LMG, 7.62mm MAG and 9mm Pistol in 2011-12 to 2013-14. Further, the quality inspection notes of SQAE pointed out dimensional deviations in T-72 barrel with overhaul, T-90 Ordnance and 105mm Light Field Gun Ordnance manufactured by Field Gun Factory Kanpur, which should have been detected by the Quality Control section of the Factories; an indication of inadequate quality control.

While accepting the audit observation, the Board stated (May 2015) that:

⁹⁸ The SQAE conducts proof firing of weapons with the ammunition as per scale laid down on the basis of which it is accepted.

- Defects of RFR items were trivial in nature and subjective, and had not affected function of the weapons. The sentencing of RFR by SQAE involved minor adjustment of weapon which was necessitated after dynamic firing.
- As regards rejection at SAF, most of the weapons got repaired and re-submitted and few finally rejected weapons were converted for drill purpose.
- Defects/problems reported by the users were due to prolonged use of vintage weapon and sometime occurred due to mishandling/improper maintenance of the weapons by the users.

The reply of the Board did not justify high incidence of RFR and rejections in respect of 7.62mm MAG, 30mm Canon, 12.7mm AD Gun and 84mm Rocket Launcher which led to delay in issue of these weapons after carrying out rectification work. The Board, however, assured that detailed analysis of RFR and rejection would be carried out by Quality Audit Group (QAG) of the Board. Reply did not indicate the specific time-frame by which QAG would complete its assignment and recommend corrective measures for implementation.

7.2.4.4 Acceptance of weapons with deviations

We found that SQAE accepted weapons with minor deviations in manufacturing not affecting design, material, serviceability/functions, safety etc. The SQAE attached to Field Gun Factory Kanpur accepted 84 weapons (34 per cent)⁹⁹ worth ₹38 crore with 'Production Deviation' for issue to Gun Carriage Factory Jabalpur during 2011-12 to 2013-14. In response to Audit observation, Field Gun Factory Kanpur stated (October 2014) that the deviations were of minor nature which "would not affect function interchangeability and safety of gun."

Similarly, despite non-achievement of specified firing rate of 900 to 1000 rounds per minute, the SQAE (Small Arms) Kanpur accepted 592 Machine Gun 7.62mm (71 per cent) worth ₹27 crore produced by Small Arms Factory Kanpur for issue during 2011-12 to 2013-14. SQAE (Small Arms) informed (September 2014) Audit that such types of deviations had been granted since November 2009 after intervention of the Chairman of the Board and the Ministry.

Gun Carriage Factory Jabalpur also accepted various components of 105mm LFG (cradle, saddle, valve, rod, bracket, etc.) and of T-90 Gun (cradle assembly, sleeve) with deviations during 2011-12.

We noted that the Army had also raised (May 2012) concerns on quality with the Board and the Ministry. It was felt that given the "high dependence on supplies from the Board", these issues must be addressed on priority. The Army noted (May 2012) that "the number, frequency and types of defects

⁹⁹Out of 250 weapons (105mm LFG, T-72 Overhaul and T-90 Ordnance) issued during 2011-14.

occurring in equipment is a matter of serious concern and is eroding the confidence of the users in the field. With no accountability in place and no punishments being meted out to the defaulting officials, urgent measures are required to check this malaise.”

The Board did not communicate its response to the observations of the Army.

7.2.4.5 Internal controls and monitoring on quality

In order to effectively monitor the quality control and quality assurance, monthly interaction meeting is required¹⁰⁰ to be held between General Manager of Factories and head of the Quality Assurance Establishment to resolve technical and administrative issues. As per Para 30 to 32 of DGQA Standing Orders (Technical), QA Establishments are required to submit report on quality assurance bottlenecks and heavy rejections for providing additional controls as under:

- Cases of heavy rejections by the SQAE and causes for such rejections need to be reported to the AHSP¹⁰¹ and the DGQA; and
- Cases of rejections/hold-ups should be immediately subjected to investigation by the Factories or jointly by the Factories and quality assurance establishment of DGQA and remedial measures taken urgently to avoid recurrence. However, no timeframe has been laid down for such investigations.

We found that the Factories held meetings regularly with their respective SQAE which also generated monthly reports with details of RFR, rejection, consumption of ammunition in proof etc. Audit analysis also showed high rejections on items like 5.56mm rifles, 5.56 mm LMG, 7.62 MAG. But investigation reports on the rejections were not available; nor were there documents to show intimation of such rejections to the AHSP and DGQA.

Formation of Committee/Teams

In 2008, the Ministry issued directions on the composition of the *alteration committee* with General Manager of the Factory and representatives from DGQA and users who would be responsible for identifying potential improvements in design, which may, *inter alia*, be necessitated by investigation of quality defects. Despite the instructions, Small Arms Factory Kanpur did not form the alteration committee till March 2014. No alteration committee meeting was held at Ordnance Factory Trichy and Gun & Shell Factory Cossipore during 2011-12 to 2013-14. Only two such meetings were held in March 2012 and March 2014 in respect of Gun Carriage Factory

¹⁰⁰ Paragraph 26 of Standing Orders(Technical) for Defence Quality Assurance Organisation (2010)

¹⁰¹ Authority Holding Sealed Particular *i.e.* Controllerate of Quality Assurance for Small Arms and Weapons

Jabalpur. Some important issues¹⁰² were not taken up by the Field Gun Factory Kanpur in the alteration committee meetings.

In order to address quality concern on a systemic basis, the Ministry ordered (October 2013) the Board and DGQA to constitute a team of officers comprising users, Quality Assurance agencies, DRDO and production agency to review effectiveness of quality assurance and quality control practices. The team was required to generate annual report for each Factory for consideration of the Board for improvement in quality assurance and quality control practices. The Factories were yet to institute this mechanism as of September 2014. These deficiencies indicate inadequate monitoring of the quality control and quality assurance activities by the top level managements.

The Board stated that quality related observations raised at various levels were discussed in monthly liaison meeting with the inspectors and corrective actions in the process were implemented and any modifications/changes required in the drawings and methods of inspection were also incorporated. The Board added that alteration committee was already in place at Factories and meetings conducted as expected. But Audit observed that the alteration committee was not formed at Small Arms Factory Kanpur; the Committee though formed did not meet during 2011-12 to 2013-14 at Ordnance Factory Trichy and Gun and Shell Factory Cossipore. Besides, the reply is silent about constituting a team of all stakeholders to review effectiveness of quality assurance/quality control practices as per Ministry's order (October 2013).

Conclusion

The Factories have a system of multi-tiered quality checks involving the Factory's own Quality Control (QC) sections and the Senior Quality Assurance Establishments (SQAE) attached to each Factory. But quality problems besiege the Factories with impact on cost, achievement of targets and above all, the reputation of the Board and its products. The incidence of "Return for Rectification" by the SQAE (although not mandated in the laid-down process, the SQAE returns a defective weapon for rectification by the Factory) and rejection were high on certain products like 5.56mm rifle, 7.62mm MAG, 30mm cannon and spare barrel T-90. The recurrence of defects previously pointed out by the SQAE in its Quality Inspection Notes indicates inadequate attention to these Notes. Defects such as variations in gauge dimensions fall in the realm of inspections by the Factory QC, which remained undetected and were raised at subsequent stages by SQAE. The users, the Army noted the erosion of trust in field units because of weapon defects. The Factories consider the defects pointed out by SQAE as "minor" and as "subjective judgments". Some defects are seen as a consequence of poor handling by the users, Army/MHA. On the other hand, the common perception is that the Ordnance Factories produce weapons of poor quality. It is not in public interest that the citizens perceive that its Armed Forces are being provided with weapons with quality problems.

¹⁰² Issues like premature expiry of 669 Guns 105mm LFG without completing prescribed 4500 rounds of firing

Recommendation 5: *The Board may segregate the critical, major and minor defects¹⁰³ raised by SQAE and the users, on major items of weaponry and identify short and medium term strategy to address the quality issues, including modernisation of plant & machinery so as to strengthen quality control as well as to increase the accountability of the Factories.*

Recommendation 6: *The DGQA may re-look its policy with regard to prohibiting “Return for Rectification”, which is not being followed in its units. In such a case that “Return for Rectification” is considered acceptable by DGQA, the Board may fix the acceptable limits for “Return for Rectification”, with different levels for established and new items.*

Response of audited entity on recommendations

The Board accepted the recommendations.

7.2.5 Financial management

Audit Objective 4: *The Factories instituted controls for a close watch on utilisation of funds as well as on cost of production and recovery of costs.*

7.2.5.1 Utilisation of budgeted funds

The Accounts are prepared by the Principal Controller of Accounts (Factories), Kolkata. Local Accounts Office (LAO) of each Factory compiles the monthly accounts which are sent directly to the Principal Controller of Accounts (Factories) for consolidation. These accounts are integrated into the Appropriation accounts on the utilisation of the budget allocations from the Consolidated Fund of India.

The Board receives budgetary grant to meet its running expenses *i.e.* the revenue expenditure. Receipts, including those from sales of products to Defence Establishment¹⁰⁴ are booked as credit. The Board is allowed to recover its cost from the sale of products to the indentors. There was net surplus in the Account from the operations of the six Weapon manufacturing Factories (**Table-38**) in all the three years.

¹⁰³ CRITICAL DEFECT: A defect that on analysis, judgement and experience indicates that it is likely to result in hazardous or unsafe conditions for individuals using maintaining or depending upon the product or is likely to affect the performance of the function of a major end item.

MAJOR DEFECT: A defect, other than a critical defect, that is likely to result in a failure or to reduce materialistically the ability to use the item for its intended purpose.

MINOR DEFECT: Departure from established specification having a little bearing on the effective use/operation of the product.

¹⁰⁴ Another Account records receipts against sales to non-defence establishments (MHA, State, Pvt. and Export).

Table-38: Budget estimates and actual expenditure/income*(₹in crore)*

Year	Expenditure			Income			Net budget support (Actual)
	Budget Estimate	Actual	Variation (per cent)	Budget Estimate	Actual	Variation (per cent)	
1	2	3	4	5	6	7	8 (3-6)
2011-12	1632	1768	8	2079	1919	-8	-151
2012-13	1823	1758	-4	2258	1885	-17	-127
2013-14	2133	1957	-8	2543	2031	-20	-74
Total	5588	5483	-2	6880	5835	-15	-352

(Source: Statement of Budget Utilisation as furnished by Budget Section of Board)

As can be seen from the Table that the Board was fairly realistic in budget estimation of expenditure with the variation between actual and the estimates being within 10 per cent. However, actual income fell short of the estimated income by 8-20 per cent in 2011-12 to 2013-14 because of the inability of the Factories to meet the production targets. The actual production fell short of the target in 49 per cent cases by 21-100 per cent as discussed in **Paragraph 7.2.2.6**. Further, if advance issue vouchers¹⁰⁵ as discussed in **Paragraph 7.2.2.7** were to be taken into account, the actual income would be reduced by ₹222 crore during 2011-12 to 2013-14. Consequently, the variation between actual and estimated income would be higher by 12 to 22 per cent during the same period.

7.2.5.2 Analysis of profit and loss

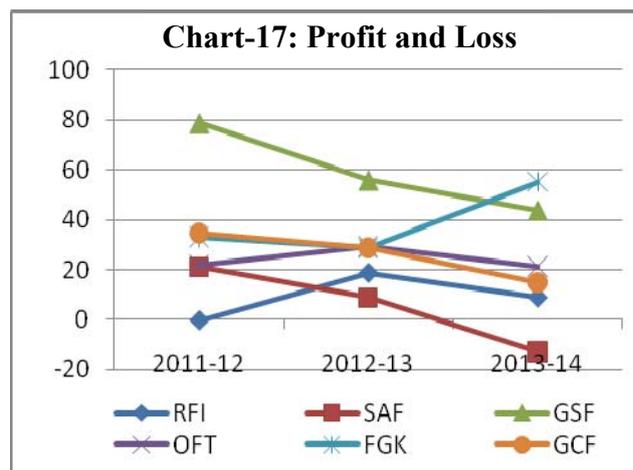
In addition to the Appropriation Accounts, the Board also prepares the Consolidated Annual Accounts which are cost accounts that guide the costing and pricing of products across the Factories. The Factories are expected to recover the cost from its sales to the Armed Forces.

As per pricing policy of the Board, the prices are fixed on the basis of actual cost of production for the past three years and the trend in material, labour and overhead for the current year. The Ministry allowed (March 1994) OFB to limit the annual price increase up to eight per cent on overall basis with emphasis to keep this to a minimum. The issue price for the products is fixed in the beginning of the year by the Price Fixation Committee¹⁰⁶. The price list is issued after the approval of the Board which includes a representative from the Army who is an invitee to the Board's meetings. Since the issue price is fixed before the commencement of production, it may be higher or lower than the actual cost, resulting in profit or loss respectively, as discussed in the succeeding paragraphs.

¹⁰⁵ The factories accounted for the issue of items although these items did not leave the factory gates

¹⁰⁶ The Committee consists of the Controller of Finance, Director of the Operating Division, Nominee of the General Manger of the Factory, Local Accounts Office of the Factory and the Joint Controller of Finance.

We analysed the trends in production, cost of production, as well as issue prices of the selected products in the six Factories. On the whole, the six Factories earned profit each year except loss sustained by Rifle Factory Ishapore in 2011-12 (₹40 lakh) and Small Arms Factory Kanpur in 2013-14 (₹13 crore). However, the six



Factories earned cumulative profit of ₹491 crore over 2011-12 to 2013-14. **Chart-17** illustrates the trends of profits/losses in the six Factories. As seen from the Chart, profit was continuously declining during 2011-12 to 2013-14 in Small Arms Factory, Gun and Shell Factory and Gun Carriage Factory over. A detailed analysis of Factory-wise trends in profit/loss is given in **Annexure-XXIII**. The synopsis of the Factory-wise reasons for profit and loss is indicated below:

- Profit of Small Arms Factory was reduced from ₹21 crore (2011-12) to ₹9 crore in 2012-13 and loss of ₹13 crore incurred in 2013-14 due to high incidence of labour cost (21 to 25 *per cent*) and overhead (55 to 63 *per cent*) of principal weapon items (7.62mm MAG and 9mm Carbine), whereas the issue price¹⁰⁷ fixed by the Board was on the lower side as compared to estimated/actual cost mainly due to non-increase of price by eight *per cent* in 2013-14 over 2012-13. In fact, labour cost of 7.62mm MAG was 399 to 466 *per cent* of the material cost during 2011-12 to 2013-14 owing to higher in-house labour cost for manufacturing components in the Factory as compared to component cost sourced from trade firms.
- At Rifle Factory Ishapore, profit declined from ₹19 crore (2012-13) to ₹9 crore (2013-14) due to reduction in issue of 5.56mm Rifles (Foldable and Fixed butt) and 9mm Pistol to MHA by 35 to 81 *per cent* in 2013-14.
- Gun and Shell Factory Cossipore earned profit aggregating ₹179 crore in all three years mainly because of reduction of cost by eight *per cent* and fixing of issue price at higher margin for 0.32" pistol issued to civil indentors over 2011-12 to 2013-14. However, profit was decreased by 10 *per cent* in 2013-14 due to loss in issue of AK-630 Gun to Navy. This arose because issue price was not revised in 2013-14 despite increase in estimated and actual cost by 11 and 21 *per cent*.
- At Gun Carriage Factory Jabalpur, profit decreased from ₹35 crore to ₹15 crore over 2011-12 to 2013-14 due to substantial loss sustained in issue of 105mm LFG, spare barrel T-72/ T-90, Kavach Modified to Army. This

¹⁰⁷ For 7.62mm MAG, issue price - ₹337154; estimated cost - ₹490654; actual cost - ₹527082

was attributable to significant increase in cost of production by 15 to 22 *per cent* as well as losses incurred in other items issued to sister Factories. Main contributing factors for cost increase in 2013-14 were 21 *per cent* and 33 *per cent* hike in labour cost for Spare Barrel T-90 and 105mm LFG, and 24 *per cent* increase in material cost for Spare Barrel T-72 over 2012-13.

- At Ordnance Factory Trichy, shrink in profit by 27 *per cent* in 2013-14 was mainly due to heavy loss (₹4 crore) on issue of 30mm cannon owing 49 *per cent* increase in cost of production. This occurred because increase in issue price by eight *per cent* in 2013-14 over 2012-13 could not match with 75 *per cent* and 49 *per cent* hike in overheads and labour respectively.
- At Field Gun Factory Kanpur, the profit increased to ₹55 crore (2013-14) from ₹33 crore (2011-12) because of increased volume of sale of revolver 0.32” in civil trade (accounting for 40 *per cent* of the profits in 2013-14) as well as increase in production of barrels for indigenised version of the Russian Anti-Submarine Rocket Guided Bomb 60 (RGB 60) for issue to the Indian Navy.

While noting the audit observation the Board stated that the pricing policy adopted by the Board ensured realisation of value of production from the Services on an overall basis with efforts being made to restrict the issue price of final product within eight *per cent*. The reply was however silent on action taken to reduce the wide gap between cost and issue price to make the products competitive. The Board assured that all vicarious pricing cases were examined and prices would be rectified in a realistic manner within next two to three years.

7.2.5.3 *Overheads in cost of production*

As discussed in **Paragraph 7.2.5.2**, high overheads contributed to rising cost of production and decline in profits. We further analysed the reasons for the high overheads.

Overheads charged in the cost of production include indirect labour cost, indirect stores, supervision, transportation, electricity, depreciation, *etc.* According to Paragraphs 541 to 549 of DADOM Part-VI, Section Budget Committee¹⁰⁸ of each production shop of a Factory estimates the rate of apportionment of overheads, based on the actual in the previous year and on the estimates of direct labour in the current year after considering the anticipated changes in the production programme for the ensuing year. The estimates from all the Shops are compiled to arrive at the rate of overheads for the entire Factory. The ‘Central Budget Committee’¹⁰⁹ assess all factors involved in the fixation of variable overhead rate *e.g.* anticipated direct labour hours, anticipated direct material, variable charges, *etc.*

¹⁰⁸ The Committee comprises the Divisional officer and head of particular shop and the Local Accounts Officer (LAO).

¹⁰⁹ The committee comprises General Manager and selected Works Manager of Factory and LAO.

We examined the trends of cost of production of selected factories and found that four Factories (FGK, SAF, OFT and RFI) operated on high overheads, particularly the fixed overheads. **Table-39** provides the data for 2013-14 across the Factories, the trends in 2011-12 and 2012-13 were not remarkably different from 2013-14. Analysis of major elements of overhead revealed that high supervision charges and indirect labour charges (48 to 73 per cent) were main contributors to high overhead.

Table-39: Overheads in cost of production (2013-14)

Particulars	FGK	SAF	OFT	RFI
Overheads as percentage of cost of production	47	55	50	59
Fixed overheads as percentage of total overheads	63	25	78	69
Supervision charges as percentage of total overheads	34	45	48	33
Indirect labour charges as percentage of total overheads	20	21	25	14

(Source: Annual Accounts of Ordnance Factory Organisation)

We observed that the trends of fixed overheads and their absorption were uneven across the range of products. Analysis of the cost-data of three selected items indicates the irrational trends in apportionment of fixed overheads to those items as detailed in **Table-40**.

Table-40: Apportionment of fixed overhead

Items	40mm UBGL	30mm Canon	12.7mm AD
Unit cost of production (₹)			
2011-12	29473	2932107	1186996
2012-13	51745	2529893	830962
2013-14	55557	3765225	893376
Unit Fixed overheads (₹)			
2011-12	7504	1096199	554576
2012-13	18667	938545	399062
2013-14	16210	1523754	463332
Quantity issued (Number)			
2011-12	2538	82	76
2012-13	4001	84	40
2013-14	7000	72	60
Change in total cost of production/Fixed overheads at OF Trichy (₹ in crore)			
	2012-13	2013-14	Percentage of decrease
Total cost of production	167.80	166.60	-
Total fixed overheads	70.80	64.30	9

Analysis of the Table showed that:

- The production of 40mm UBGL increased by almost three times during 2011-12 to 2013-14. The unit fixed overheads increased by 149 per cent in 2012-13 over 2011-12 even though (a) the total fixed overheads of the

Factory increased marginally by eight *per cent* and; (b) the production of UBGL had increased by 58 *per cent* during the same period. The trend of fixed overheads on UBGL did not correlate with the trends of fixed overheads in the Factory. With increase in production, the unit cost, particularly fixed overheads, would be distributed over a larger quantity and therefore, should come down. Despite 176 *per cent* increase in production of 40mm UBGL in 2013-14 over 2011-12, the unit cost of production of the item increased by 89 *per cent* during the same period.

- The total fixed overheads of the Factory was reduced by nine *per cent* in 2013-14 over the figures in 2012-13 but unit fixed overheads on 30mm cannon was disproportionately raised by 62 *per cent* during the same period.
- The unit fixed costs on 12.7mm Air Defence (AD) Gun was increased by 16 *per cent* in 2013-14 over 2012-13 figures although the production increased from 40 to 60 *per cent* during the period and more importantly, the total fixed costs of the Factory reduced by nine *per cent* over the same period.

While noting the audit observations, the Board further clarified that overheads are high in Ordnance Factories because of War Wastage Reserve capacities (which remain largely idle), social costs such as on estate/hospitals/schools, higher labour wages and supervisory cost *etc.* and assured that instructions were being issued to the Factories to control their overheads as these were affecting the overall issue prices of weapons.

The reply was, however, silent on irrational apportionment of overheads across the range of products.

7.2.5.4 Internal controls

The Local Accounts Office (LAO) under the overall supervision of the Principal Controller of Accounts (Factories) is responsible for review of production cost to help the Factory Management to take corrective steps for cost reduction. As per Paragraphs 635 and 637 of DAODM Part-VI, LAO is required to conduct quarterly concurrent review of production cost to identify cases of substantial variation between estimate cost and actual expenditure booked in a running manufacture warrant¹¹⁰ and to bring it to the notice of Factory management for remedial measures.

Apart from concurrent review of production cost, Paragraph 1026 of DADOM Part-VI stipulates LAO to prepare Quarterly Financial Review (QFR) report on value of issues, progressive expenditure, element-wise cost of production, analysis of overheads, *etc.* amongst other inputs with comparative figures for the last quarter and corresponding period of the previous year. Principal Controller of Accounts (Factories) is required to scrutinise, analyse and

¹¹⁰ Warrant is the authority of the General Manager of the Factory to the production shop for manufacture of a product.

consolidate the report of all the Factories for submission to the Board and Controller General of Defence Accounts (CGDA) for appraisal.

The procedures suffer from many constraints in actual practice, as discussed below:

- The stipulated activities of Section/Shop Budget Committee and Central Budget Committee and its review were either not practiced or were ineffective in ascertainment and allocation of overheads to individual weapon item as discussed in **Paragraph 7.2.5.2**. For instance, shop budget and central budget committee meetings were not convened at Ordnance Factory Trichy in 2012-13 and 2013-14. When conducted, it failed to meet the purpose since the review of variations from the estimated cost which exceeded 10 *per cent*, had not been carried out since September 2009.
- Concurrent review of production cost and production activity was not done by the selected Factories in a systematic manner as cost cards were not closed in time. Although two Factories (FGK & SAF) claimed that the LAOs conducted the concurrent review, they could not provide any documentary evidence. Despite this, the Board had not taken any action against the Factories for conducting concurrent review of cost nor did it review the trend of product-wise cost periodically in its meetings to take corrective measures against the rising cost.
- The QFR reports were neither analysed nor submitted to the Board and CGDA by the Principal Controller of Accounts (Factories). Even the Board did not insist to place the QFR report before them. Consequently, the QFR did not get the attention it deserved to control the costs.

The fluctuations and the erratic apportionment of overheads did not ensure the integrity of recording costs and reliability of cost data for arriving at the reliable cost of production or for pricing control. Ordnance Factories being the sole production unit for the Armed Forces are generally focused on meeting the demand placed on them, but no effective exercise has been carried out for cost control and reduction. On the other hand, the availability of assured funds with the Armed Forces led them to accept the products from the Board regardless of the high issue prices for certain items. Thus, the Board had no pressure to cut costs in the absence of any benchmark for comparable products.

The Board stated that the Section Budget Committees were formed for review of fixation of overheads and the Factories remained in close contact with LAO for overall control of the cost. It added that products of Factories were cost effective compared to the import cost.

The reply of the Board is not acceptable because the absence of effectiveness of Section Budget Committees as well as failure to hold the concurrent review of cost led to ineffective cost control resulting in increase in costs and decline in profits in the six Factories from ₹189 crore to ₹131 crore over 2011-12 to 2013-14.

Conclusion

The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective and fluctuations, especially in overheads were controlled. This was not, however, the case in the Factories.

The weapons group of Factories operated on high overheads, particularly, the fixed overheads. The apportionment of the overheads over products was irrational, overloading it on some products, making them uneconomical. Ordnance Factories are generally focused on meeting the demand placed on them without due regard to cost control and reduction. The availability of assured funds with the Armed Forces helped them to accept the products from the Board regardless of the high issue prices. The presence of the representative from the Armed Forces in the pricing committee meetings is a good practice, but this client interface is compromised due to lack of benchmarks with comparable products.

Recommendation 7: *The Board may strengthen the costing mechanism to ensure collection and consolidation of reliable cost data and efficient apportionment of cost across the product ranges. The mechanism of periodical review of estimated and actual cost should be operationalised for cost control.*

Response of audited entity on recommendations

The Board accepted the recommendation.

7.2.6 Planning for future

Audit objective 5: *The Factories were geared to meet the perspective needs of the Armed Forces in order to reduce the dependence on imports.*

7.2.6.1 Perspective plan of the Board

The Board prepared the First Perspective Plan in 2000 followed by the Second Plan 2007-08 to 2011-12 which was co-terminus with the XIth Five-Year Plan. The Perspective Plan 2007-08 to 2011-12 recognised the expectations from the Board to meet the dynamically changing Indian defence system with timely supply of state-of-the art weapons with greater value for money. The perspective production master plan indicating the present production level and the production level expected to be achieved at the end of 2011-12 was drawn up after interaction with Armed Forces and MHA.

The Board did not prepare a plan for the subsequent period starting from 2013. Meanwhile, though the Army prepared (2013) the Long Term Integrated Perspective Plan (LTIPP) covering 15 years, the same was not communicated to the Board despite repeated requests. In absence of the LTIPP and a perspective plan beyond 2012, the Board was yet to chalk out a production master plan to position itself strongly on strategic items of weaponry listed in

the LTIPP. The Defence Procurement Procedure 2013 has also been approved to steer the goals of indigenisation but one in which the Board has to compete with other manufacturers. New challenges that have arisen in the last one year after the period covered in audit (2011-12 to 2013-14) are opening of the defence sector with 49 *per cent* FDI and the 'Make in India' policy of the new Government which would impact the Board.

Our analysis in the subsequent paragraphs in this Chapter is with reference to the Perspective Plan of the Board 2007-08 to 2011-12 and the recent changes in the defence sector.

7.2.6.2 Implementation of the Perspective Plan

In the perspective plan, the Board made projections against three classes of weapons: Small Arms, Medium calibre and High calibre weapons. The status on development of 12 items against the milestones indicated in the perspective plan was analysed and discussed in **Annexure XXIV**.

As can be seen from the Annexure, major bottlenecks in development and regular production of new major items are as follows:

- Against the expectation of producing 5.56mm Carbine (Protective) in 2008-09, the production was yet to come up due to delays in development of the product by the Board and DRDO as well as shortcomings noticed in trials.
- Production of 5.56mm Carbine (Close Quarter Battle) under Transfer of Technology (ToT) was yet to materialise against the scheduled year (2009-10) due to delay in selection of the Carbine for import by the Army along with ToT.
- Production of 30mm Automatic Grenade Launching System (AGS) was yet to be established against the milestone (2010-11) due to quality problems noticed in several trials, changes in design as well as delay in endurance test owing to non-availability of ammunition for proof trials.
- Against the milestone (2010-11) for production of 155mm (45 calibre) gun 'Dhanush', the same developed in 2012 was still under confirmatory trials and the bulk production clearance was awaited (May 2015).
- Production of 130mm Up-gunning to 155mm in collaboration with an Israel firm, M/s Soltam could not commence within the scheduled year (2010-11) owing to delayed development and trials as well as ban imposed on M/s Soltam.
- Delayed development (2012) of 5.56mm Rifle (Folding Butt) against milestone of production (2008-09) led to short-closure of Army's indent (2006) for 20000 Rifles after delivery of 8454 Rifles. No further demand was received from the Army.

The analysis reveals that the milestones projected in the Board's perspective plan for development and production of new items could not be translated into reality mainly because of delays in development; lack of promising response from the users leading to delays in finalising the requirements and in conducting trials; incomplete/non-availability of ToT resulting in non-receipt of designs of critical components, which led to perennial reliance on imports.

7.2.6.3 Challenges and opportunities

The challenges and opportunities in each of the weapon manufacturing Factories are discussed in **Annexure-XXVI**. The analysis is to aid a prognosis for the Factories to remain relevant to their principal role of equipping the Armed Forces with state-of-the-art weaponry.

As can be seen from the Annexure, Small Arms Factories were facing multiple challenges. The Board has not been successful in getting sufficient orders for modern version of INSAS rifles (Foldable butt) as discussed in **Paragraph 7.2.6.2**. Rifle Factory Ishapore and Small Arms Factory Kanpur faced a downturn in the production of principal items (5.56mm Rifles, 9mm Pistol) due to fall in demand from the Army as discussed in **Paragraph 7.2.2.2**.

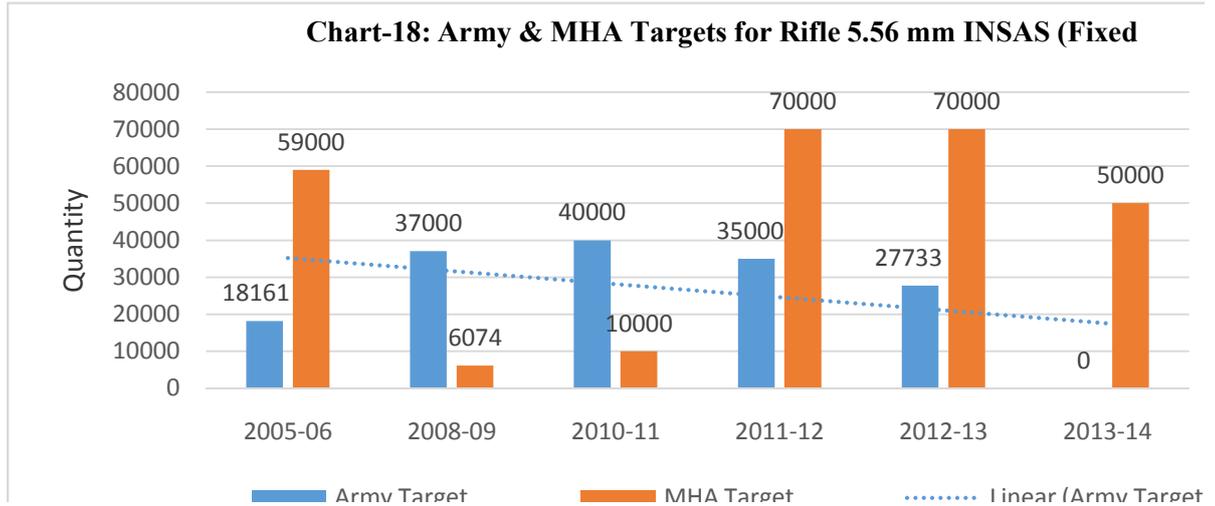
As discussed in the meeting (January 2013) held between the Board and the General Managers of the Small Arms group of Factories, MHA had been impressed upon to increase their demand for small arms in commensurate with the roll-on-plan so as to increase the workload of the Factories keeping in view declining demand for the small arms from the Army. Besides, in view of regular import of Glock Pistol and AK-47 rifles by MHA, the Board had also requested MHA to import these weapons with a provision for Transfer of Technology (ToT) which could help the Board in indigenous manufacture. However, the development of Glock Pistol and AK-47 rifles with ToT from foreign firm was not envisaged in the Board's Perspective Plan.

The Board directed (January 2013) the Small Arms group of Factories (RFI, OFT and SAF) to take up R&D projects for product improvement and also for development of new weapons so as to meet the user requirement. A case study of Rifle Factory Ishapore serves as an exemplar of a Factory trying to revive itself to meet the depleting business scenario with the development of new products.

Case Study of Rifle Factory Ishapore: Adapting to changing times

Rifle Factory Ishapore has its core products: Rifle 5.56mm (Fixed & Foldable Butt), Pistol 9mm (Army/MHA items) and 0.315" Sporting Rifle (Civil Item). Over the years the Factory has witnessed a steady decline in demand from the Armed Forces because of non-receipt of further orders. **Chart-18** shows the trend analysis in production of 5.56mm Rifle Fixed Butt, indicating no demand from the Army¹¹¹ in 2013-14; the current production was exclusively for the MHA.

¹¹¹The Army has surplus stock of rifles with them and Army Headquarters is looking for replacement of INSAS with Multi Role Assault Rifle (MRAR).



The Rifle Factory Ishapore attempted to develop the following products (Table-41) mainly to cater to the needs of the MHA even though firm order from MHA was yet to be received.

Table-41: Products developed by RFI (Production/Issue vis-a-vis Targets)

Sl. No.	Product	Year	Target	Production	Issue	Remarks
1.	12 Bore Pump Action Shot Gun	2012-13	4000	4025	4007	
		2013-14	13000	10807	10807	
		2014-15	6058	5826	3630	
2.	Tear Gas Gun	2013-14	3500	299	173	Bulk production clearance received in January 2014
		2014-15	10919	7546	6316	
3.	Anti-Riot Gun	2013-14	4000	1998	1998	Payment not received from State Police
		2014-15	10000	1242	1129	Constraints in receipt of payment
4.	0.32" Pistol	2013-14	2000	650	0	Production tapered down due to less payment from private indentors.
		2014-15	12000	3653	1853	
5.	7.62mm Sniper	2014-15	15	0	0	Material under procurement
6.	7.62mm Assault Rifle (Ghaatak)	2015-16	30000			Under trial by Central Armed Police Forces.

(Source : Rifle Factory Ishapore letter dated 10-01-2015)

Further, Rifle 5.56mm Ex-Calibre was newly developed as a substitute of Rifle 5.56mm and it was demonstrated successfully to the MHA and State Police. However, substantial orders were yet to be received from MHA.

Thus, with the development of the new product line Rifle Factory Ishapore should pursue with the users to get substantial orders in order to meet the challenging scenario.

In the high calibre range of weapons manufactured in the Gun & Shell Factory Cossipore and Gun Carriage Factory Jabalpur, it was observed that the demand for established products like 81 mm mortar and 105 mm Field Gun fell down as indicated in **Annexure XVII-A**. However, the demand for the high calibre weapons like 84 mm Rocket Launcher Mark III, AK-630 guns, T-90 ordnance and spare barrels T-72/T-90 indicated an increasing trend during 2011-12 to 2013-14 as indicated in **Annexure XVII-A** and **Annexure XVII-B**. Incomplete ToT agreements had disrupted the levels of indigenization, forcing the Factories to rely on perennial imports for critical assemblies of AK-630 guns and 84 mm Rocket Launcher Mark III as discussed in **Annexure-XXIV** and **Annexure-XXV**.

Field Gun Factory Kanpur and Ordnance Factory Kanpur also faced capacity constraint in production of barrels for high calibre weapons with inadequate capacity for forgings in Metal and Steel Factory Ishapore as discussed in **Paragraph 7.2.3.3**. In respect of another important high calibre weapon *viz.* 155mm Gun, the Board received an indent for 114 indigenous 155mm (45 calibre) Dhanush guns, but the bulk production clearance from the Army was awaited (May 2015).

The ability of the Board to develop indigenous alternatives reducing reliance on imports (AK-630 Gun, 84mm Rocket Launcher), receive bulk production clearance for its 155mm (45 calibre) 'Dhanush' guns; address quality and capacity constraints, together would determine the future of the Board in high calibre guns. This largely holds good for all the class of weaponry in the ordnance factories. However, the future of the Board would largely depend upon the proper coordination amongst all stakeholders *viz.* Armed forces, DRDO, DGQA and the Board for technological upgradation and indigenous development of weaponry.

While accepting the audit observation, the Board stated:

- They were striving hard to cater for additional load for Small Arms Factory by development/production of new products through in-house R&D and DRDO or through ToT. Next generation weapons like MRAR (5.56mm & 7.62mm), LMG 7.62mm and CQB Carbine were under selection by the Army for ToT;
- The Board would be the ToT recipient for production of 155 x 52 Towed Gun and would compete in the Army's Request for Proposal for 155x52 Calibre Mounted Gun.

The Board's endeavour to meet the milestone and expectations as projected in their Perspective Plan 2007-12 was not encouraging both in terms of quality and timeliness as discussed in Paragraph 7.2.6.2. The Board had also attempted to develop small arms without the firm orders from the users. In order to achieve the desired results of development of new products, users should be pursued to get the firm orders for the survival of the Factories.

Conclusion

The Board prepared a Perspective Plan 2007-12 to provide the Armed Forces with “timely supply of state-of-the-art technology with greater value for money”. The dreams of the Perspective Plan could not be translated into reality, with implementation marred by delays in development of the new items.

Even as the Board did not prepare a plan for the subsequent period, the environment has changed substantially. The Army prepared the Long Term Integrated Perspective Plan (LTIPP) covering a period of 15 years, to which the Board was yet to formulate a plan to position itself as an important player. The Defence Procurement Procedure 2013 has also been approved to steer the goals of indigenisation but one in which the Board has to compete with other manufacturers.

Small Arms Factories were facing multiple challenges like declining demand from indentors and quality problems; lacklustre response from clients for its new products; and delays in project for new generation carbines. The traditional weaponry in the high calibre range 81mm Mortar, 105mm LFG is facing a downturn. Besides, delayed indigenisation and continued reliance on imports of certain assemblies posed a challenge to the Factories in meeting the demand. On the other hand, new projects like “Dhanush” and the variants of 155 mm gun, hold promise.

Recommendation 8: *The Board may prepare its Perspective Plan in consultation with all stakeholders, including the Armed Forces, DRDO, DGQA, MHA and private sector partners.*

Recommendation 9: *The Ministry may set up a multi-ministerial body comprising various stakeholders to steer the procurement of weaponry in Armed Forces, the Central Paramilitary Forces and State Police Organisations, in order to maximise indigenisation; to reduce duplication of efforts; and to develop technologies that allow inter-operability and provide economies of scale in manufacture.*

Response of audited entity on recommendations

The Board stated that they were proactively interacting with the MHA and the State Police Organisations to ascertain their long-term requirement. The fair and balanced observations made by Audit were well taken and many points noted for implementation and corrective action.

7.3 Performance of Chemical Manufacturing Factories

Executive Summary

Ordnance Factories are classified into five product-based Operating Groups. The Chemical Group of Factories is a sub-group under the operating group: Ammunition & Explosives (A &E). This group accounted for 35 *per cent* of the total value of production during 2011-12 to 2013-14. The four chemical producing factories *viz.* Ordnance Factory Bhandara (OFBa), Cordite Factory Aruvankadu (CFA), Ordnance Factory Itarsi (OFI) and High Explosives Factory Kirkee (HEF) with an average annual cost of production of ₹755 crore during 2011-12 to 2013-14 contributed to around five *per cent* of the cost of the production of the Board.

The propellant and explosives manufactured by these factories primarily cater to the needs of the sister factories (hence called Inter Factory Demand factories) for supply of fully formed ammunition to the indentors as also for direct issue to the Armed Forces and Ministry of Home Affairs (MHA) *etc.*

Key findings

Army's roll on indent indicating five year requirement helped the Board in planning. Changes in requirements, mainly downward revisions, did not affect the production targets already given by the Board to the Chemical Factories.

Revisions by the Board in the annual targets to Factories, mid-year covering majority of products with greater bias to increasing the target did not in most cases result in target achievement as the factories were unable to meet even the original targets.

The Chemical Group of Factories are required to meet the production targets by January each year, a commitment the Factories were unable to meet which impacted the production schedules of the ammunition filling factories. The practice of advance vouchers without actual physical issue continued in three Factories. The internal controls in the Board to monitor production against targets have become routine and hence their effectiveness diminished.

The Factories could not achieve compliance with the timeframe prescribed by the Board on placing supply orders in one-third of the procurements. Further, if the lead time for delivery of stores were to be factored, procurement would consume most of the production year. Due to the delays in procurement, the factories could not maintain even flow of production, with production peaking in the fag end of the year. The labour productivity reported by the Factories was high and did not correlate with the performance against targets.

There were rejections in quality control and inordinate time taken in proof establishment, causing cascading effect on achievement against targets. The Factories faced shortage of technical staff and inadequate co-ordination between the Factory and SQAE were noticed. Absence of dedicated proof range at Factories caused delay in conduct of dynamic proof; a project

sanctioned in December 2008 was abandoned and alternatives have not come to fruition.

Delays in procurement of plant and machinery led to non-utilisation of capital budget in the Chemical group of factories. The Factories run on high overheads that inflated the cost of production. The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective to closely monitor abnormal fluctuations in cost. This was not, however, the case in the Factories with the two controls: the Shop Budget Committee and the Quarterly Financial Review, being inadequate interventions suffering from structural deficiencies. As a result, the issue price of a product in a year did not bear close correlation to its cost of production, leading to wide fluctuations in profit/loss.

Ordnance Factories being sole production unit for the armed forces are generally focused on meeting the demand placed on them without due regard for the considerations of cost control and reduction.

The Factories have prepared an Environment Management Manual in compliance to Environment Management System certification ISO: 14001:2004 which all the sampled factories have received. But the Factories did not identify the specific environmental risks or prepare a perspective plan for progressive risk mitigation measures. The investment of funds on environmental measures is low in all the Factories. Recycling, safe disposal and reusing of waste are areas which require attention from the factories especially with respect to disposal of explosive wastes.

The general trend of the accidents, especially in Ordnance Factory, Itarsi indicates a gap in safety training of the staff. The Factories have taken initiative for energy conservation and reported energy savings. However, the large number of pending recommendations in energy audit also indicates the future potential savings that will require investment of funds.

7.3.1 Introduction

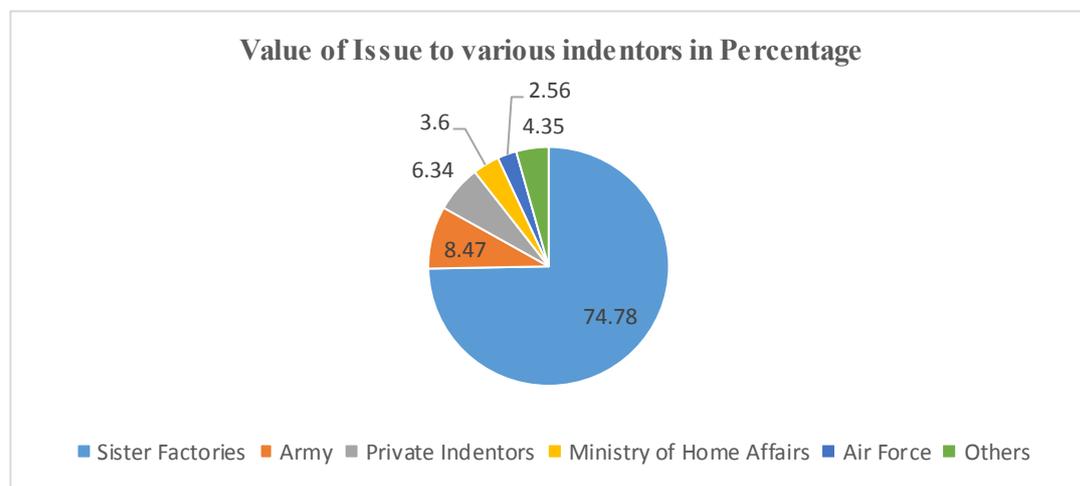
7.3.1.1 The operating group

Ordnance Factories are classified into five product-based Operating Groups. The Chemical Group of Factories is a sub-group under the operating group: Ammunition & Explosives (A &E). This group accounted for 35 *per cent* of the total cost of production during 2011-12 to 2013-14. The four chemical producing factories *viz.* Ordnance Factory Bhandara (OFBa), Cordite Factory Aruvankadu (CFA), Ordnance Factory Itarsi (OFI) and High Explosives Factory Kirkee (HEF) with an average annual cost of production of ₹755 crore during 2011-12 to 2013-14 contributed to around five *per cent* of the cost of the production of the Board.

The propellant and explosives manufactured by these factories primarily cater to the needs of the sister factories (hence called Inter Factory Demand factories) for supply of fully formed ammunition to the indentors as also for

direct issue to the Armed Forces and Ministry of Home Affairs (MHA) etc. The value of issues of four chemical producing factories aggregated to ₹2174 crore during 2011-14; the annual issue averaging to ₹725 crore. Indentor-wise distribution of issues by the chemical factories is depicted in **Chart-19**.

Chart-19



7.3.1.2 Organisational structure

The Member (Ammunition and Explosive) in the Board is responsible for policy formulation, planning and supervision of this operating group. The Factories are headed by General Managers. Internal quality control in the Factories is looked after by the Quality Control Section headed by Additional/Joint General Managers of the Factories.

Directorate General of Quality Assurance (DGQA), independent of the Board, provides quality assurance of the products. It discharges this function through its representatives at the factories. The Principal Controller of Accounts (Factories) Kolkata is responsible for compilation of consolidated accounts, cost control along with an advisory role on finance. The Principal Controller of Accounts (Factories) performs its functions through the Local Accounts Offices attached with every factory.

7.3.1.3 Why did we take up this audit?

The IFD stores account for 76 per cent of the stores used in filling factories. The performances of the IFD factories have a cascading effect on the performance of the filling factories. Hence in view of the importance of a review of the IFD factories we felt that a comprehensive coverage with focus on the areas of production planning, performance, quality and cost control and environment, would add value to the Management and provide inputs for policy formulation in the Government and in the Parliament.

The audit findings on the Chemical Group of Factories were reported in Chapter III of the Comptroller and Auditor General of India's Performance

Audit Report No 4 of 2008 against which the Ministry of Defence (Ministry) gave the following assurances:

Fixation of Annual Production target

- “A well-structured mechanism for target fixation commensurate with optimum utilisation of production capacity of ammunition and explosives manufacturing factories is in place. Capacity in the Chemical Group of factories is product specific. In general, alternate use is limited.”

Utilisation of machinery to meet the targets

- “Roll on indent for ammunition stores have been placed, which indicates the long-term requirement of items. It will aid planning towards optimum utilisation of plant and machinery.”

Cost control and pricing

- “Factories have been advised to adhere to the overall overheads, decided during price finalisation and further, lower them. Efforts will be made to keep the price of chemical group of factories at a level to ensure recovery of the cost during the year.”

Compliance with environment and safety norms

- “All the factories have been advised to ensure providing facility for periodical safety inspection by Centre for Fire, Explosive and Environment Safety (CFEES), New Delhi and Regional Controller of Safety (RCS), Pune to ensure factories’ compliance. However, in exceptional cases, where deviations take place, the Board takes immediate action as and when required and avoid recurrence of incidents. There is separate office with experts working under Controller of Safety looking after all such issues at factory level”.

We decided to carry out a review of the impact of the measures assured by the Ministry to the Parliament.

7.3.1.4 Scope of audit and sample audited

Our audit covered the performance of four factories for three years: 2011-12 to 2013-14. The audit findings were arrived at after test check of the records at the Board and four¹¹² factories, Controllerate of Quality Assurance (Military Explosive) Pune, Senior Quality Assurance Establishments stationed at Kirkee, Bhandara, Itarsi and Aruvankadu.

We selected 52 chemical/propellant items with the cost of production of ₹1729 crore that together accounted for 76 *per cent* of the total cost of production (₹2266 crore) of 2011-12 to 2013-14 at the four factories. The selection was

¹¹² Cordite Factory Aruvankadu, High Explosive Factory Kirkee, Ordnance Factory Bhandara and Ordnance Factory Itarsi

based on strategic use of the items required by the indentors mainly the sister factories and the cost of production. The details of the sample selected for examination are at **Annexure-XXVII**.

7.3.1.5 Audit objectives

The aim of the audit was to provide an opinion on the Board's ability to meet the quality products on time to its clients. The broad objectives of the audit, framed to address this audit aim, were to seek an assurance that:

- *The Board fixed annual production targets for the factories based on indentors' needs, the capacity of the Factories and the targets were met by the Factories on time ;*
- *The Factories were able to marshal their resources to implement the production plan;*
- *Strong quality control measures ensured timely issue of quality explosives/propellants to indentors;*
- *The Factories exercised due diligence on utilisation of funds as well as cost controls on production; and*
- *The Factories implemented sound practices and procedures of the Board's sound environmental policy, based on a risk assessment.*

7.3.1.6 Audit Criteria

The following sources to adopt the audit criteria for assurance on the audit objectives were identified:

- ❖ Procurement Manual 2010, Material Management and Procurement Manual 2005, Ordnance Factory Board's Standard Operating Procedure;
- ❖ Air (Prevention and Control of Pollution) Act 1981 and Water (Prevention and Control of Pollution) Act 1974;
- ❖ ISO 14001:2004 'Environment Management Systems – Requirements with guidance for use' adopted by the Bureau of Indian Standards; and
- ❖ Assurances given to the Parliament in Action Taken Note on the Comptroller and Auditor General of India's Performance Audit Report No 4 of 2008.

7.3.1.7 Audit Methodology

The audit objectives and methodology were discussed with the Board during an 'Entry Conference' held in August 2014 and audit criteria agreed upon. Detailed audit was carried out in the units selected for coverage as indicated in **Paragraph 7.3.1.4** above during the period from August - October 2014 to evaluate the performance against the audit criteria. Field audit included examination of records, collection of information through issue of audit memos and questionnaires. Audit also analysed the data extracted from the computerised packages used in the factories.

The draft report was issued to the Ministry and the Board in December 2014 and discussed in the Exit Conference held with the Board in June 2015. While the Board had furnished their response in June 2015, the same from the Ministry was awaited (September 2015) even after the lapse of the stipulated time frame of six weeks for the reply. Response of the Board and deliberations during Exit Conference have been considered while finalising this report. Wherever possible the best practices in the Board and the Factories have been highlighted.

7.3.1.8 Acknowledgement

We acknowledge the co-operation received from the Chairman of the Board, Member of the Ammunition and Explosive Division of the Board, Senior General Managers/General Managers and the Accounts officers of the factories and Senior Quality Assurance Establishments stationed at the four chemical manufacturing factories. Their inputs helped us plan and implement our audit leading to recommendation which we hope will be an aid to the Management at the Board and the Ministry of Defence.

A list of abbreviations and glossary of terms used in this Report are given in **Appendix-III** and **Appendix-IV** respectively.

7.3.2 Towards meeting the requirements of Indentors

Audit objective 1: *The Board fixed annual production targets for the Factories based on indentors' needs, the capacity of the Factories and the targets were met by the Factories on time;*

7.3.2.1 Target Fixation with reference to the client needs

The Board requires firm indents prior to the commencement of the year, based on which targets are assigned to the chemical factories with a view to providing adequate lead time for production at the factories. In the Action Taken Note (ATN) on Paragraph 3.7.1 of the Chapter III of Audit Report No PA 4 of 2008, the Ministry had assured the Parliament that "a well-structured mechanism for target fixation commensurate with optimum utilisation of production capacity of explosives manufacturing factories was in place." This assurance formed the criterion for our audit against Audit Objective.

The Army is the main indentor for the ammunition for which the chemical groups of factories are the feeders. The concept of a 'five year roll-on-procurement indent' (2009-2010 to 2013-2014) was introduced in January 2010 which projected the multi-year requirement¹¹³ of the Army. The Army provided such a firm multi-year commitment to the Board only in respect of ammunition.

The targets for MHA which procures ammunition and explosives for the paramilitary forces are fixed through an annual target fixation meeting held in November/December of the previous year. A roll on plan was received for the

¹¹³ The plan indicates the minimum essential requirement based on trends in wastage

first time by the Board in April 2010 which is, however, only an indicative wish list. Air Force, whose requirement forms a meagre part of production line¹¹⁴, communicates its requirements through an annual indent only.

7.3.2.2 Revisions in client requirements: Annual vis-à-vis Multi-year projections/demand

It was observed that the Army largely adhered to its requirements as reflected in the Roll on Indent placed in January 2010 except during 2013-14. As a result, the Board had an assured demand from the Army for the years 2011-2012 to 2012-2013. In 2013-14 the Army revised its requirements, mostly to reduce the demand. But the target already given to the Factories by the Board were not revised due to the revisions by the Army in 2013-14.

This was not the case with MHA which significantly changed its annual requirements with reference to its Roll on Plan of April 2010. But the revised annual requirements were communicated to the Board on schedule and as a result, were not disruptive to the production schedules.

7.3.2.3 Target fixation with reference to capacity

In addition to the indentors' demands, the Board is required¹¹⁵ to factor the available capacity in the factories and constraints related to production, while fixing targets. Audit found that the Factories did assess¹¹⁶ the product-wise capacity for production, although these were not being communicated to the Board on a periodical basis. **Table-42** correlates the targets with the reported capacity at three Factories in respect of the sampled products (except Cordite Factory, Aruvankadu which had not disaggregated capacity between products).

Table-42: Targets in correlation with capacity

Year	Target as percentage of capacity					Total
	< 20	21-50	51- 80	81-100	>100	
2011-12	4	5	3	2	5	19
2012-13	4	4	3	2	6	19
2013-14	2	10	3	0	4	19
Total	10	19	9	4	15	57
Instances of 100 per cent achievement of targets by March	4	7	2	1	3	

Source: (i) Available plant capacity extracted from records of OFI, OFBa and HEF and (ii) Monthly Achievement Report of March

¹¹⁴ Three per cent of the total value of issues by chemical factories during 2011-14

¹¹⁵ Paragraph 3.7.3 of Board's Material Management and Procurement Manual, 2005 (MMPM)

¹¹⁶ A seven person committee was formed (April 2010) under the chairmanship Shri B.N.Singh, Senior General Manager, Ammunition Factory Kirkee to analyse the requirement (future) vis-à-vis the existing capacities for both ammunition and explosive factories. The report which was submitted to the Board in December 2010, recommended augmentation in certain products. The report is yet to be acted upon.

¹¹⁷ A machine could be used for more than one products. Hence the table measures number of instances and not number of items

For 51 *per cent* of the items, the targets were fixed below 50 *per cent* of the capacity. However, achievement of targets did not bear a close correlation with whether the targets were commensurate with capacity. Even in instances where targets were fixed in excess of capacity, the achievement against these targets followed a similar pattern as in other categories where targets were fixed lower in comparison to capacity (**Table -42**).

In reply the Board stated that a 1:1 correlation between capacity of a plant and capacity for production of items cannot be established since many propellants had similar processes resulting in same set of infrastructure being used for manufacture of multiple products. Hence the capacity for production of one item is affected by volume of production of other similar products.

The Board's reply confirms the audit observation of absence of correlation between targets and available capacity. In the Exit Conference (June 2015), the Board agreed that the chemical factories were not limited by capacity of plant & machinery; achievements of targets depended more critically on pre-positioning material for manufacture.

7.3.2.4 Communication of targets to Factories: annual targets and revisions

According to Paragraph 5.5.2 read with Annexure-I of Board's Procurement Manual 2010, the targets are required to be communicated to the Factories six months in advance of the production schedule¹¹⁸. Unlike other operating groups which meet the targets by March end, the chemical groups of factories are required to meet their targets by January of each year. This is done to ensure that the filling factories (where the ammunition is assembled) get two months to meet the requirements of the Army/other indentors by March.

The Board communicated the annual yearly targets to the Factories in January of the preceding financial year; these targets were, however, revised during the currency of the production year. For instance, the original target for April 2011-March 2012 was communicated in January 2011 (*i.e.*, before the beginning of the year) to be revised in May 2011. In 2012-13, the revision took place in May 2012. The Board's target communication in 2013-14 was three months earlier as compared to the earlier years *i.e.*, in October 2012, though the targets were later revised in May 2013. As stability in demand is a key factor in the Board's consistency in meeting targets, mid-year revisions disrupt the process of provisioning of stores and consequently the production.

¹¹⁸ In addition to the targets fixed by the Board, the chemical group of factories also receive IFD requirements from the ammunition filling factories. High Explosives Factory, Kirkee informed audit that they received a two-year requirement from the filling factories. It was found that the targets given by the Board did not match with the requirements communicated by the ammunition filling factories. Production of TNT in High Explosives Factory, Kirkee was an example. In 2012-13, the Factory reported to the Board that the filling factories had sufficient stocks of TNT and were not lifting the material as a result of which the holding of TNT in HEF exceeded the explosive limit of storage magazines *i.e.*, the limit of holding prescribed by the Board. The Board replied that in general the target of TNT to HEF was calculated based on the ammunition targets projected by the indentors, which was reviewed after the filling factories intimate the carry forward stock of TNT in April of next financial year. Hence there is a need to factor the projected closing stock in filling factories during target fixation for the chemical group of factories. For this, the targets must be fixed in consultation with the ammunition factories.

The revisions covered on an average, 66 per cent of the sampled product range each year (**Table-43**). During 2011-12 to 2013-14, the targets were revised upwards in 62 instances (43 per cent), downward in 33 instances (23 per cent), while status quo was maintained in respect of remaining 50 instances (34 per cent). Out of 62 instances of upward revision, the Factories could not meet the targeted quantity in respect of 44 instances; in 17 instances, factories could not even meet the original targets (**Annexure-XXVIII**). The factories met the downwards revised targets in 23 instances but there were 12 other instances where the factories could not achieve the targets despite the reduction.

Table 43: Comparison of original with revised targets in a year

<i>Year</i>	<i>Nature of revision</i>	<i>OFBa</i>	<i>OFI</i>	<i>HEF¹¹⁹</i>	<i>CFA</i>	<i>Total</i>
2011-12	Increase in target (nos)	14	7	3	8	32
	Decrease in target (nos)	1	1	1	0	3
	Status quo (nos)	4	4	4	1	13
	Total	19	12	8	9	48
2012-13	Increase in target (nos)	0	4	3	5	12
	Decrease in target (nos)	5	2	0	2	9
	Status quo (nos)	14	7	5	2	28
	Total	19	13	8	9	49¹²⁰
2013-14	Increase in target (nos)	9	4	3	2	18
	Decrease in target (nos)	7	5	3	6	21
	Status quo (nos)	3	3	2	1	9
	Total	19	12	8	9	48

Source: Extracted from the Ordnance Factory Board's intimation of targets to Ordnance Factories during 2011-12 to 2013-14.

The revisions in the original targets during 2011-12 to 2013-14 were attributed to (i) review of actual stock position of explosive and propellants from all the concerned factories in April 2011 and revised ammunition programme during 2011-12 and (ii) restricted availability of components at filling factories during 2013-14. No reasons were recorded for revision of original targets during 2012-13.

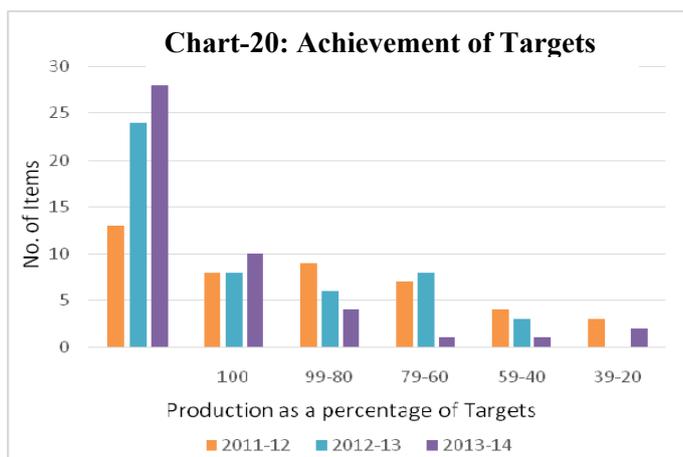
The Board stated that such revisions were necessary due to revisions made by the indentors. However, this assertion was not supported by the reasons earlier stated by the Board. The incidence of revisions in the Board was high. These revisions did not bear a correlation with the revisions in requirements by the Army. There was a greater bias towards increasing the target during the yearly revision in the Board and in many cases the Factories could not meet even the original targets given for the year. However, during the Exit Conference the Board accepted the Audit observation that the upward/downward revision in the target midway adversely impacts the provisioning of stores.

¹¹⁹ In addition, there were 6 items, initiators, for which the HEF did not receive targets from the Board but from the Ammunition Factory, Kirkee. These items are excluded from the Table

¹²⁰ In 2012-13, an additional item was added to OF, Itarsi

7.3.2.5 Achievement of targets

In 2013-14, 83 per cent of the products met 80 per cent and above of the targets by March-end, as compared to 48 per cent in 2011-12. In all, 10 items moved from the bottom range into the range of 60 per cent and above achievement rate of targets over 2011-12 to 2013-14 (**Chart-20**).



But the chemical group of factories is required to meet their production targets by January in order to enable the ammunition filling factories to meet their targets by March. While communicating the targets each year, the Board reaffirmed the January deadline.

The performance of factories in target achievement was compared on some key products taking January & March as the deadlines, to assess the impact, results of which are in **Table 44** (further details are in **Annexure XXVIII**.)

Table 44: Achievements of targets in percentage by January and March

Item	Percentage Achievement of targets in					
	2011-2012		2012-2013		2013-2014	
	Jan 2012	Mar 2012	Jan 2013	Mar 2013	Jan 2014	Mar 2014
Ordnance Factory, Bhandara						
NGB 204	100	100	36	85	77	100
NGB 221	53	60	51	59	95	100
NGB 241	42	60	61	100	91	100
RDX/TNT 60:40 A	17	24	33	47	57	100
RDX/TNT 60:40 B	22	31	37	50	46	89
RDX/WAX 88:12	41	54	40	51	71	91
RDX/WAX 95:5	0	0	34	39	58	86
Ordnance Factory Itarsi						
Pinaka	74	94	47	71	46	78
Ball Powder 5.56mm	72	94	63	86	83	100
Ball Powder 7.62mm	58	80	51	74	69	100
High Explosive Factory Kirkee						
TNT	69	92	45	66	96	100
Cordite Factory Aruvankadu						
130mm RVC	61	100	69	100	74	83
105mm IFG NC	80	100	61	78	68	99

(Source: Achievement Report of factories for the month of January and March)

Table-44 shows that the factories fell far short of targets by January each year. The following were also cited as bottlenecks for shortfalls in target achievement by the Factories:

- When new products are introduced, they take time for development for *e.g.*; Akash propellant: Ordnance Factory, Itarsi and augmented charges for 81mm and 120mm ammunition High Explosive Factory, Kirkee
- Time taken for inspection in quality clearance from the Quality Assurance Establishments attached to each factory, representing the Directorate General of Quality Assurance Establishment (DGQAE)
- Delays in proof testing of propellants

The long lead times taken in procurement and in proof-testing are discussed in the succeeding **Paragraphs 7.3.3, 7.3.4 and 7.3.5**. With regard to bottlenecks on new products the factories are given targets only after the pilot lots of products are cleared in proof before according bulk production clearance. Hence development time cannot be a factor in shortfalls.

7.3.2.6 *Impact of shortfalls*

The impact of shortfalls on the ability of the filling factories in meeting the Army's indent was assessed. A direct correlation of the impact of shortfall in issue of the chemicals to the filling factories is difficult to establish since ammunition has many components, of which propellant is a part, even if an important one. However, on certain items such a direct link was established by the filling factories. For instance, references were found from Ordnance Factory Chanda and Ordnance Factory Badmal informing Cordite Factory, Aruvankadu that production had been stopped for want of timely supply of propellants. The inability of the chemical group of factories to complete the delivery by January each year did have a cascading impact on the Board's ability to meet the ammunition indents¹²¹ (**Table-45**).

Table-45: Slippages in production impacting filling factories

Chemical Item	Year	Factory	Shortfall in production of chemical factory	Link to ammunition	Filling Factory	Shortfall in ammunition issue
Prop40mm PFFC	2012-13	OFBa	73 per cent	Cartg 40mm PFFC	OFK	51 per cent
RDX/TNT 60:40 A & B	2012-13	OFBa	64 per cent	125mm HE	OFBL	81 per cent
Pinaka Propellant	2012-13	OFI	53 per cent	Pinaka (PF)	OFCH	57 per cent

(*Source: - Achievement report of OFBa, OFI, OFK, OFBL and OFCh for 2012-13*)

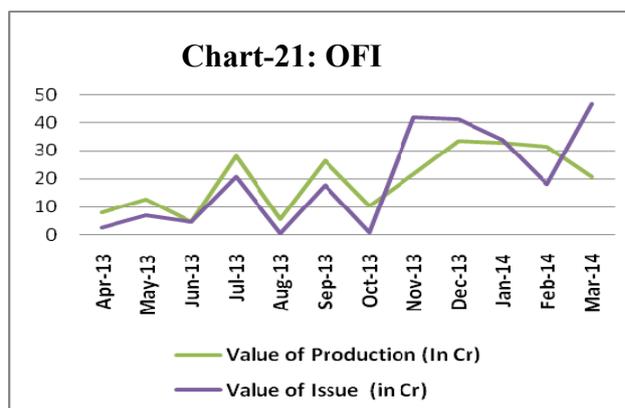
In reply, the Board stated (June 2015) that the targets are given to factories for completion over a period of 12 months of the ensuing year and it was not possible to compress the supply of propellants in 10 months in order to deliver by January each year. During the Exit Conference, the Factories accepted the view that if the production year were to be reckoned from January-December for the chemical factories, this problem could be avoided.

¹²¹ A 1:1 correlation is difficult to establish since ammunition has many components, of which propellant is a part, even if an important one

The present schedule has an adverse impact on the performance of the Filling factories and hence must be advanced for the Chemical Group of Factories so as to enable them to follow a twelve monthly schedule ending in January. During the Exit Conference audit suggested that these factories may be given a two-year target. A long-term requirement from the Army (2014-15 to 2018-19) aids this re-scheduling. The Board accepted these proposals.

7.3.2.7 *Production peaks in last quarter*

The trends in production show that production peaks in the factories only in the last quarter: January-March each year. Hence, the factories are not able to meet the targets by January as required. **Chart-21** illustrates the trends in Ordnance Factory Itarsi in 2013-14¹²². The Ministry of Defence had observed



(July 2012) that the tendency to push production to the last quarter, was not desirable. Further, the Ministry directed that “the value of production should be, as far as possible, be evenly spread over the four quarters.”

The Board accepted that the issue of finished products peaks in the last quarter and stated that conscious efforts have been made to improve performance in this area.

7.3.2.8 *Reliability of Production data*

According to Paragraph 668 and 670 of the Defence Accounts Department Office Manual Part-VI (DADOM), the manufactured items accepted in inspection, are issued to the indentors through production issue vouchers and the total value of issue is debited to the relevant Services’ head.¹²³

However it was observed that the Factories prepared “advance issue vouchers” whereby they raised demands for payment from the Army without physical issue of the stores. Taking cognizance of the risks of accounting irregularities¹²⁴ and distortion of production figures, the Controller General of Defence Accounts (CGDA), New Delhi instructed all Controllers of Finance and Accounts (Factories)¹²⁵ in October 2007, not to accept advance issue vouchers without despatch particulars.

¹²² The choice of 2013-14 for illustrating production trends is conservative. This was the best year of production in Ordnance Factory, Itarsi during the audited period: 2011-12 to 2013-14.

¹²³ The Board debits all its revenue expenditure to the Account 2079. At the time of issue to the Defence establishment, there is (-) Debit to the Account and simultaneously, the Services’ Head, 2076.

¹²⁴ Depiction of unrealistic profit in the accounts, distortion of cost of production and works-in-progress, disparity between value of issue and actual expenditure booked under manufacturing head etc

¹²⁵ Controller of Finance and Accounts (Factories) functions under the PCA (Factories) Kolkata for a group of factories on regional basis

We had commented on this issue in Paragraph 6.1.4.1 of Compliance Audit Report No 30 of 2013. Ministry, in their Action Taken Note, stated (March 2015) that close monitoring of production and issue *vis-a-vis* the plans was ensured to avoid recurrence of such incidence. Despite this, it was found that such practice continued in three out four factories checked for the selected items. During 2011-14, advance vouchers of ₹141 crore were prepared representing on an average eight *per cent* of the total issues (**Table -46**)

Table 46: Factory-wise value of advance vouchers

Factory	Value of advance vouchers (₹ in crore)			
	2011-12	2012-13	2013-14	Total
OFI	3.3	12.6	59.9	75.8
OFBa	17.7	19.4	15.4	52.5
HEF	4.1	2.6	5.8	12.5
Total	25.1	34.6	81.1	140.8
Total value of issues	573.7	531.0	621.3	1726.1
Percentage of value of advance vouchers to total issues	4.4	6.5	13.1	8.2

(Source: Issue vouchers of OFI, OFBa and HEF)

The incidence of advance vouchers was highest in Ordnance Factory, Itarsi in 2013-14 when the figures were almost 4.8 times the level in 2012-13. **Table-47** shows the trend in this Factory over 2011-14. The Factory reported a significant improvement in production in 2013-14, but more than 25 *per cent* of the achievements represented an inflation of figures as seen in the **Table 47**.

Table-47 : Details of spill over items as a percentage of total issues

Year	Value of advance vouchers	Total issue	Advance vouchers as percentage of total issue
2011-12	3.3	234.1	1.4
2012-13	12.6	226.4	5.6
2013-14	60	235.0	25.5

The Board stated that this was done keeping in mind the delays in transportation and the need for documentation at various levels. The Issue voucher document is therefore processed taking into account the likely delay. However in cognizance of the risks involved in the practice of issue of advance vouchers it is stressed that the applicable CGDA instructions may be complied with.

7.3.2.9 Internal control on achievement of targets

The Planning Section in the Factory prepares the production plan and is required to monitor the pace of production. The Section collects the data on issues of products on daily basis and the factory sends monthly production performance report to the Board. Monthly Production Review Meeting in the Factory is another tier of control. This meeting is attended by the General Manager and the heads of production shops as well as the planning section.

Paragraph 4032 of the Board's procedure Manual stipulates that the Factories should report to the Board the reasons for delayed production and issue of the products to indentors and the action taken by the factory to obviate causes of delay. We found that the meetings are conducted; the monthly reports are also being prepared and sent to the Board. But Factories did not report specific bottlenecks in production to the Board and instead, merely communicated the data for status on production and issue of items.

As per Ministry's order of February 1979, the Board is responsible for overall planning, monitoring and implementation of the production programme through the respective operating groups and at the Board level, through monthly Board Meeting. Paragraph 4039 of the Board's Procedure Manual also stipulates that the Board is required to examine monthly progress reports of the Factories for suitable action taken in all cases where delivery schedule has not been maintained or is not likely to be maintained. Audit however found that the Board in a routine manner wrote monthly letters to the General Managers of Factories, on the basis of monthly production reports, by following a set pattern which did not contain any specific directives to the Factories to step-up production. The periodicity of the letter (monthly) would dilute its impact unless if it were to contain Factory-specific interventions. In its present form, it runs the risk of being routine in nature, by virtue of which, a weak internal control. Even, the minutes of the quarterly Board meetings, did not indicate a threadbare discussion on the hold-outs in production. The continuance of advance issue vouchers was also an indication on the inadequacies in the Board's monitoring of the production performance of factories

Conclusion

Army's roll on indent indicating five year requirement helped the Board in planning. Changes in requirements, mainly downward revisions, did not affect the production targets already given by the Board to the Chemical Factories. Revisions by the Board in the annual targets to Factories, mid- year covering majority of products with greater bias to increasing the target did not in most cases result in target achievement as the factories were unable to meet even the original targets.

The Chemical Group of Factories are required to meet the production targets by January each year, a commitment the Factories were unable to meet which impacted the production schedules of the ammunition filling factories. The practice of advance vouchers without actual physical issue continued in three Factories. The internal controls in the Board to monitor production against targets have become routine and hence their effectiveness diminished.

Recommendation 1: *The Board may re-visit the practice of revising the targets across the Board in May/June each year and replace it with a strategy in fixing targets that is reasonable and hence will have a greater chance of being achieved by the Factories.*

Recommendation 2: *The monthly report from the Factory may be in the form of exception reporting highlighting the bottlenecks. The periodicity of the letter to the General Managers from the Director General, Ordnance Factories may be reviewed and may be made more effective by addressing only the specific bottlenecks reported by the Factories.*

7.3.3 Marshalling resources for production

Audit Objective 2: *The Factories were able to marshal their resources to implement the production plan*

7.3.3.1 General

On receipt of targets from the Board, each Factory formulates the production plan. It is important that the stores of the specified quality are procured on time and the labour and machines are utilised optimally.

7.3.3.2 Timeliness in procurement of stores

The guidelines containing the time limit for procurement of stores and flow chart of process of procurement are similar to that applicable for Weapon group of Factories as discussed in **Paragraphs 7.2.3.1 and 7.2.3.2.**

We examined the timeliness in procurement during 2011-12 to 2013-14 in the sampled Factories, against the above benchmarks. The results are as follows:

Issue of Tender Enquiry

- The tender enquiries were issued within one month only in respect of 14 *per cent* of the instances. It took 1-2 months in 42 *per cent* of the instances; 3-5 months in respect of 21 *per cent* and more than six months in respect of 566 instances which formed 13 *per cent* of the instances. **Annexure- XXIX** gives the details.

Placement of the Supply Order

- The Factories exceeded 26 weeks (182 days) in respect of 35 *per cent* of the instances. It took less than 180 days in respect of 65 *per cent* of the instances; 181- 240 days in respect of 20 *per cent* of the cases; beyond 241 days in respect of 15 *per cent* of the instances 2011-14. **Annexure- XXX** gives the details. In Ordnance Factory, Bhandara, the placement of supply orders took more than six months in 55 *per cent* of the cases in 2013-14.

The Factories stated that delays were because of the procedural requirements, which were time-consuming and occurred particularly in instances where the participation of vendors in the tender was poor, or where there were delays in negotiation with firms and in getting approvals *etc.*

The delays disrupted the production schedule and the Board must insist on timely completion of the prescribed procedures, supported by a review of the procedures to identify the choking points.

Inspection of input materials

- The Factories reported compliance with the limit of 15 days in 87 per cent of the instances (**Annexure XXXI**). In another 10 per cent of the instances, the time taken was in the range of 16-30 days *i.e.*, within one month, but one per cent of the instances the time taken for clearance of stores took more than two months.

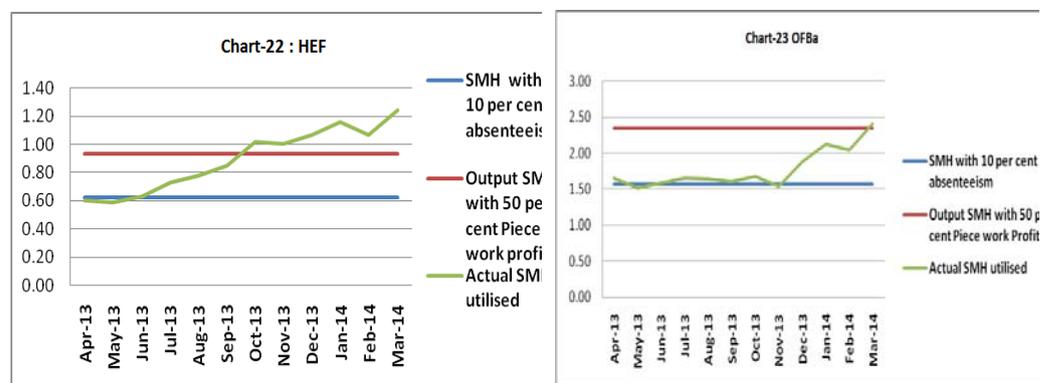
Audit analysis showed that on an average; processes in placement of supply order took around 6.5 months in two-thirds of the procurements. The actual receipt of items would depend on the delivery schedule which would vary depending on the nature of the item and the quantum of the supply order.

7.3.3.3 Manpower utilisation

Optimum and effective utilisation of manpower and machinery is essential to ensure the productivity in Factories so as to meet the production targets and minimise the cost for timely delivery of quality products to indentors. Direct Industrial Employees ¹²⁶ (IEs) are engaged in production based on the workload in each production shop. The available Standard Man-hours (SMH) for each month are worked out based on number of direct IEs engaged in production for eight hours a day for 25 days in a month. The output SMH is determined based on the total quantity of each item manufactured during the month and SMH required for all the items as per labour estimates. The Piece Workers are given piece work profit as an incentive, based on their actual output SMH compared to the input SMH. Piece work profit is calculated¹²⁷ as a percentage of excess output SMH over the input SMH.

We examined as to how effectively the Factories marshalled their direct IEs for production activities for a sample period of 2013-14 at the selected Factories based on available SMH and output SMH data furnished by the Board. Accordingly, we plotted Factory-wise and month-wise actual output SMH (**Chart-22 to 23 and Annexure-XXXII**) against the following two standards adopted by the Board for assessment of requirement of direct IEs:

- man-hours available with 10 per cent absenteeism
- man-hours available with 10 per cent absenteeism and 50 per cent piece work profit



¹²⁶ Labourers directly engaged in production process involving machines and materials

¹²⁷ Piece work profit percentage = $\left\{ \frac{\text{output SMH} - \text{input SMH}}{\text{Input SMH}} \right\} * 100$

We found that all the four factories except OFBa to some extent, reported high productivity of IEs. It exceeded 100 *per cent* in all months (except two months in OFI) while HEF reported 200 *per cent* efficiency in March 2014. The trends were shown in **Table-48** below:

Table-48: Productivity of Direct Labour in 2013-14

Performance in 2013-14	HEF	CFA	OFI	OFBa
No of months where productivity was 150 <i>per cent</i> or more	6	7	3	1
Percentage of products where production by March was				
100 <i>per cent</i> of the target	88	78	70	42
99-60 <i>per cent</i> of the target	12	22	20	42
below 60 <i>per cent</i> of the target	-	-	10	16
Cost of production (₹ in crores)	161	158	253	257
Number of direct labour	345	980	648	871

(Source - Piece work Profit statement, Annual Production Account and Direct Labour details of the factories for the year 2013-14)

The two factories with the lowest volume of production, HEF and CFA reported 150 *per cent* and more productivity during half the year and between 100-150 *per cent* productivity in the remaining half of the year, to meet 100 *per cent* in seven-eighth and three-fourth of the targets respectively. This means that with each labour producing 1.5 times his capacity, the Factory is not able to meet 100 *per cent* targets. These are the two Factories with the lowest production among the four Factories.

There was little correlation between the cost of production, the number of direct labour and the efficiencies reported. CFA reported around 150 *per cent* productivity for seven months of the year with the highest labour force (2.8 times that of HEF with nearly the same value of production) among the four factories to achieve 78 *per cent* of production targets. Subsequent analysis (**Paragraph 7.3.3.4**) shows that this achievement was with 60 *per cent* utilisation of machines in 2013-14, a 40 *per cent* fall from 100 *per cent* utilisation of machines reported by CFA in 2011-13. This goes to show that the labour estimates in production are not realistic¹²⁸ which allows space for high piece work profit payments.

The Board replied that SMH varied depending on the overtime pattern prevalent in the factory which in turn was decided based on the target for the factory for the particular year and did not agree with the figures stated above. However the Board did not provide data specific to the above instances in order to support its contention.

¹²⁸ For e.g; if 100 hours are actually required for 150 units and the estimates are inflated to 200 hours for 150 units. When the actual production of 150 units is completed in 100 hours, the balance 100 hours (200-100) are calculated as piece work profit.

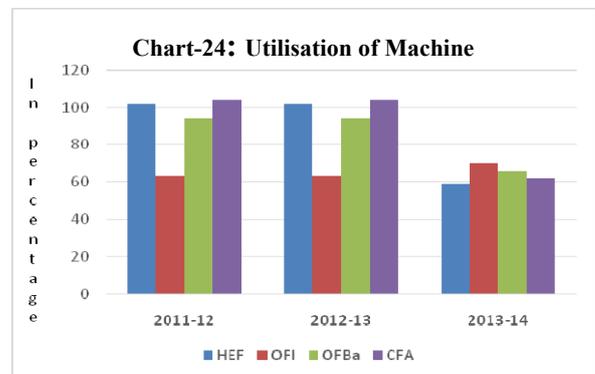
7.3.3.4 Utilisation of machines

In response to Audit Paragraph 3.7.8.1 of the Chapter III of Report No PA 4 of 2008 regarding under-utilisation of plant and machinery, the Ministry of Defence in its Action Taken Note had assured the Parliament that the long-term planning facilitated by roll-on indent for ammunition would help in proper and optimum utilisation of Plant and Machinery.

As per Ministry's order of February 1979, Ordnance Factories are required to utilise at least 80 *per cent* of their installed capacity. However, the Board revised (August 2013) the Manual for procurement of Plant and Machinery without the approval of the Ministry. Paragraph 3.2 of the Manual stipulates calculation of capacity based on 80 *per cent* efficiency each of machine and manpower *i.e.* overall 64 *per cent* efficiency¹²⁹.

The machine hour utilisation against availability of total machine hours at four chemical manufacturing factories during 2011-12 to 2013-14 is given in the **Chart-24**. The machine hour

utilisation for the two years 2011-12 to 2012-13 remained static in all the four factories to come down in 2013-14. HEF and CFA reported 102 and 104 *per cent* utilisation respectively in 2011-12 to 2012-13 to 59 to 62 *per cent* in 2013-14, whereas at OFBa it reduced from 94 *per cent* in 2011-13 to 66 *per cent* in 2013-14. The machine hour utilisation at OFI more or less remained static in the range of 63-70 *per cent*.



Conclusion

The Factories could not achieve compliance with the timeframe prescribed by the Board on placing supply orders in one-third of the procurements. Further, if the lead time for delivery of stores were to be factored, procurement would consume most of the production year. Due to the delays in procurement, the factories could not maintain even flow of production, with production peaking in the fag end of the year. The labour productivity reported by the Factories was high and did not correlate with the performance against targets.

7.3.4 Quality Control and Quality Assurance

Audit Objective 3: *Strong Quality control measures ensured timely issue of quality explosives/propellants to indentors.*

¹²⁹ 64 *per cent* is arrived at 80 per cent efficiency each of manpower and machines = 80%*80%=64 *per cent*

7.3.4.1 Quality Control and Quality Assurance

Quality of explosives/propellants is paramount as it ensures effectiveness of ammunition while hitting the intended target. The system of multi-layer quality control of the factory and the quality assurance by the Directorate General of Quality Assurance (DGQA) is similar to that applicable for Weapon group of Factories as discussed in **Paragraph 7.2.4.1**.

Audit examined the quality control mechanism in respect of two sampled items (TNT and NC-1066) at two Factories (HEF and OFBa) for the selected three months and found no deviation from the procedures prescribed in Standard Operating Procedures (SOP).

7.3.4.2 Coordination between QC and QA

Coordination between the factory and the SQA establishments is essential to ensure manufacture and issue of defect-free products to the Indentors. We found that Ordnance Factory Bhandara did not hold monthly meetings as mandated with SQA for 14 months during 2011-12 to 2013-14. Further, we observed that propellants worth ₹ 12.70 crore manufactured by Ordnance Factory Bhandara during 2011-12 to 2013-14 were rejected by the DGQA in Climatic Hut Test (**Annexure-XXXIII**). The Factory management intimated Audit that Climatic Hut Test was unilaterally decided by DGQA without consulting them and added that necessary actions were being taken for disposal of rejected lots. This indicated lack of synchronization and sharing of information between the DGQA and Factory about the modalities for proof test.

Board stated (June 2015) that as per the records available with the Factory, meetings had been held regularly during 2011-12 to 2013-14. They added that Climatic Hut Test was insisted on by CQA and not by local SQA.

The reply is not acceptable because as per the records furnished to Audit, no meeting was held for 14 months during 2011-12 to 2013-14. Further, the decision of CQA- being the Authority Holding Sealed Particulars- is final in so far as framing of tests to be carried out during proof.

7.3.4.4 Lead time in quality inspections

The Board did not prescribe time limits for quality inspection by the Factory. Data provided by the Factory on quality control showed that on an average, time taken for quality inspections at the Factory was around 15-30 days.

The SQA takes an additional 15-30 days for clearance. We found odd instances of delays at SQA which exceeded 45 days: for *e.g.*: clearance of four lots of Hexolite-B manufactured in OFBa in 2013-14 by SQA took 61-90 days.

The Board stated that integration of functions of Quality under single agency will help in reducing delays. There was diffused responsibility in the current structure where different agencies are not under the administrative control of

single authority. It stated that SQAEs at various units are also working with shortages of manpower which at times leads to delay.

We also found that delays at proof establishments were considerable. **Annexure XXXIV** illustrates the delays faced by OFBa in 2011-14 on select propellants. 54 *per cent* of the lots for NGB 204 produced by the Factory took more than 60 days in proof.

In order to ensure timely completion of quality inspection, a project for establishment of a dedicated Proof Range for the Ordnance Factories at Betul was approved in December 2008 at a cost of ₹ 85 crore. Once established, the delays in proof establishment can be curtailed to acceptable limits. However, the dedicated Proof Range had not been set up so far due to non-availability of land at Betul.

In the Exit Conference, the Board stated that Factories require a dedicated proof establishment for dynamic testing for which the requirement of land was considerable. It added that in order to ensure timely completion of quality inspections at the existing proof ranges (PXE Balasore and CPE Itarsi), the Board may have administrative control of one of the proof ranges or at least participate as an important stakeholder.

7.3.4.5 Rejection

We observed that HEF did not face any rejections during 2011-12 to 2013-14 while the incidence of rejections at CFA was within the deviation limits. OFI (**Annexure XXXV**) faced six instances of rejections, of which one involving 105 mm IFG NC (a single-based propellant based on nitro-cellulose used in field gun) in 2012-13, was substantial accounting for more than 40 *per cent* of the propellant produced during the year. These instances are illustrated in the **Annexure-XXXV**. These items, except Pinaka propellant, have been a part of the product profile of the Factory for a long time (hence, are not new products) and they are used in ammunition much in demand in the Army. OFI's poor performance on rejections as well as in accidents (**Paragraph 7.6.3**) indicates possible gaps in skills in labour which must be addressed by the Board.

The Board in the Exit Conference (June 2015) stated that those products which were rejected at OFI were ultimately reprocessed, cleared in inspection and duly issued to the indentors after its clearance in QA inspection by SQAe. However, the rejections disrupt schedule for issue of products and ties up the manpower which could have been gainfully used for current production.

Conclusion

There were rejections in quality control and inordinate time taken in proof establishment, causing cascading effect on achievement against targets.

Absence of dedicated proof range at Factories caused delay in conduct of dynamic proof; a project sanctioned in December 2008 was abandoned and alternatives have not come to fruition.

Recommendation 3: *The project for establishment of a dedicated Proof Range for the Ordnance Factories may be expedited with firm deadlines and greater stakeholder status may be accorded to the Board in other existing ranges.*

7.3.5 Financial management

Audit Objective 4: *The Factories exercised due diligence on utilisation of funds as well as cost controls on production.*

In the Action Taken Note (ATN) on Paragraph 3.7.1 of the Chapter III of Audit Report No PA 4 of 2008, the Ministry had assured the Parliament that “Factories have been advised to adhere to the overall overheads, decided during price finalisation and further, lower them. Efforts will be made to keep the price of chemical group of factories at a level to ensure recovery of the cost during the year.” Our analysis on this audit objective was with this assurance as the criterion.

7.3.5.1 Utilisation of budgeted funds

The Accounts are prepared by the Principal Controller of Accounts (Factories), Kolkata. Local Accounts Office (LAO) of each Factory compiles the monthly accounts which are sent directly to the Principal Controller of Accounts (Factories) for consolidation. These accounts are integrated into the Appropriation accounts on the utilisation of the budget allocations from the Consolidated Fund of India.

The Board receives budgetary grant to meet its running expenses *i.e.*, the revenue expenditure. Receipts, including those from sale of products to Defence Establishment¹³⁰ booked as credit. The Board is allowed to recover its cost from the sale of products to the Indentors. There was net surplus in the Account from the operations of the Chemical manufacturing Factories (Table-49) except in 2013-14.

Table -49: Budget estimates and actual expenditure/income

(₹ in crore)

Year	Expenditure			Income			Net budget support (Actual)
	Budget Estimate	Actual	Variation (per cent)	Budget Estimate	Actual	Variation (per cent)	
1	2	3	4	5	6	7	8 (3-6)
2011-12	629	698	(+) 11	777	733	(-) 06	(-) 35
2012-13	736	688	(-) 07	750	701	(-) 07	(-) 13
2013-14	781	784	(+).03	803	781	(-) 03	(+) 03
Total	2146	2169	(+)1	2331	2215	(-) 05	(-) 46

(Source: Statement of Budget Utilisation as furnished by Budget Section of Board)

¹³⁰ Another Account ⁽²⁾ head 0079 records the receipts against sale of products to non-defence establishments (state police), in the open market or exports.

As can be seen from the **Table-49** that the Board was fairly realistic in budget estimation of expenditure with the variation between actual and the estimates being within 10 *per cent*. At the factory level, we noticed variations indicating that timely re-appropriation between factories helped the Board to keep its expenditure close to the budgeted estimates. Further, if advance issue vouchers as discussed in **Para 7.3.2.8** were to be taken into account, the actual income would be reduced by ₹141 crore during 2011-12 to 2013-14. Consequently, the variation between actual and estimated income would be between nine *per cent* and 13 *per cent* during the same period.

The Board also receives budgetary support for capital expenditure, which meets the expenditure on new projects including procurement of plant and machinery. We observed that budgetary grants sought for and received against Capital projects were not utilised. An example was the case at HEF, where the production targets of TNT (Tri-Nitro Toluene) was not met during 2011-14. But the funds sought for the Tri Nitro Toluene/Denitration and Sulphuric Acid Concentration Plant, meant for the manufacture of TNT, was not drawn each year during 2011-12 to 2013-14. Cumulatively, the Factory received ₹9.5 crore against its requirement of ₹119 crore¹³¹. **Annexure-XXXVI** details the delays in procurement which led to non-utilisation of funds. Similarly, only a small part (₹15 crore) of ₹266 crore of funds received against projected requirements for new Plants for Nitro Cellulose, Nitro Glycerine and de-silting plants in CFA was allotted by the Board to the Factory during 2011-14.

The Board replied that non-utilisation of projected requirement of fund for procurement of plant and machinery was mainly due to limited number of global suppliers for plant and machinery required for explosive projects which was further compounded by the reluctance of vendors to share these technologies. The fact, however, remains that the Board should take measures to ensure effective utilisation of funds.

7.3.5.2 Analysis of profit and loss

In addition to the Appropriation Accounts, the Board also prepares the Consolidated Annual Accounts which are cost accounts that guide the costing and pricing of products across the factories. The Factories are expected to recover the cost of production from its sales to the Indentors.

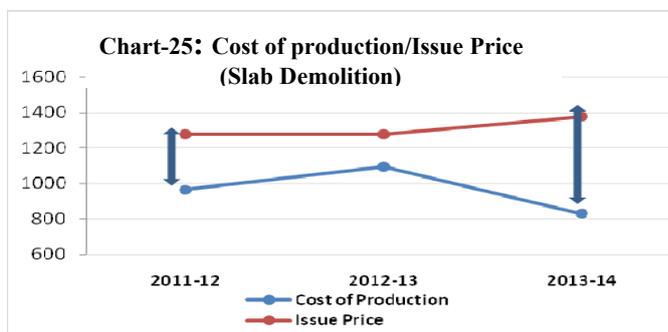
As per pricing policy of the Board, the prices are fixed on the basis of actual cost of production for the past three years and the trend in material, labour and overhead for the current year. The Ministry allowed (March 1994) the Board to limit the annual price increase up to eight *per cent* on overall basis with emphasis to keep this to a minimum. The issue price for the products is fixed in the beginning of the year by the Price Fixation Committee.¹³² The Price list is issued after the approval of the Board in its meeting in the presence of the representative from the Army who is an invitee of the Board's meeting. Since

¹³¹ Cumulative allotment figures under R&R, P&M and Capital Works heads

¹³² The committee consists of the Controller of Finance, Director of the Operating Division, Nominee of the General Manager of the Factory, Local Accounts Office of the Factory and the Joint Controller of Finance.

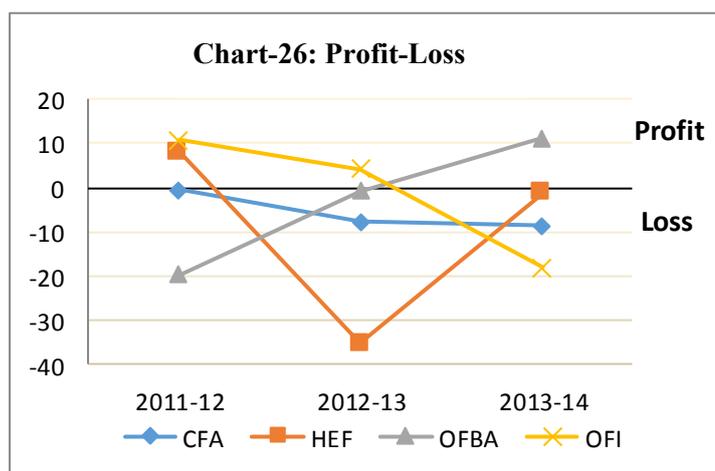
the issue price is fixed before commencement of production, it may be higher or lower than the actual cost, resulting in profit or loss respectively, as discussed in the succeeding paragraphs.

Audit observed that the Factories were incurring losses on IFD issues and items issued directly to indentors earned profits. From a profit of ₹7 crore during 2011-12 (sampled items), IFD issues have gone into losses: the losses being ₹34 crore and ₹23 crore during 2012-13 and 2013-14 respectively. On the other hand, issues to Direct Indentors earned a profit all the years 2011-12 to 2013-14. An example is Slab Demolition is a product issued directly to the MHA by HEF, Kirkee where issue price was increased steadily over 2011-12 to 2013-14 regardless of the decrease in production in 2013-14 (**Chart-25**).



7.3.5.3 Trends in cost of production

We analysed the trends in production, cost of production as well as issue prices of the selected products in four Factories. On the whole four Factories suffered (149) losses¹³³ each year, with the cumulative loss over 2011-14 being



₹58 crore. **Chart-26** illustrates the trends in losses/profits in the four factories, illustrating the wide fluctuations in profit/loss over the three years. **Annexure-XXXVII** gives the details.

The Factories faced stagnation over the three year period 2011-12 to 2013-14; the exceptions being OFBa (24 per cent increase in cost of production in 2013-14) and OFI (16 per cent increase in 2013-14). If indexed to inflation, the increase in production at OFBa and OFI would be 13 per cent and seven per cent respectively in 2013-14. HEF faced a downturn with a dip in production of their main product line, TNT. With decreased production, the Fixed Overheads as a percentage of Cost of production had increased. In all

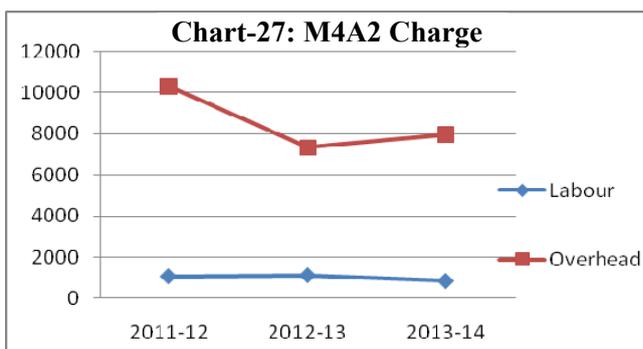
¹³³ There was loss in the Factories in the Cost Accounts, although they registered a surplus in the Appropriation Accounts, because the cost accounts are prepared on accrual basis and contain non-cash items like advance receipts against issues and advance paid for stores. The two accounts are reconciled by the Principal Controller of Accounts/Factories at the end of the year.

the factories, overheads accounted for around 50 per cent of cost of production, which was high. The only exception was OFBa which reduced the overheads from 73 per cent of cost of production in 2011-12 to 53 per cent in 2013-14.

7.3.5.4 Trends in overheads

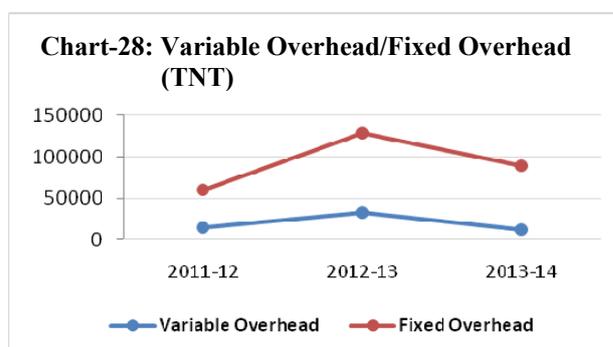
Our analysis of the major elements of overhead revealed the following:

- As per Paragraphs 541 to 549 of the DADOM Part-VI, total overheads in a factory are distributed across products as a percentage of the direct labour costs incurred on the product. But we found that there was no correlation between direct labour and



the overheads. **Chart-27** on labour and overhead costs in production of M4A2 charge in OFBa in 2013-14 illustrates this anomaly, raising doubts on the integrity of the process for recording costs.

- The abnormal trends in cost of production and overheads led to losses in issue of products. For instance, HEF incurred huge losses in production of TNT (Normal) each year: ₹8 crore in 2011-12, ₹27 crore in 2012-13 and ₹10 crore in 2013-14 (**Chart-28**). The increase in cost of



production due to inefficiencies in the system as well as less elbow room to increase issue price for a product that is the base for a wide range of explosives, led to the losses in production of TNT.

The Board stated during the Exit Conference that the abnormal and high overheads could be partly attributed to apportioning of expenditure on social costs such as on estate/hospitals/schools even though such expenditure is unrelated to production. However, the reply was silent on action taken to curve the high incidence of overheads.

7.3.5.5 Internal Controls

The Local Accounts Office (LAO) under the overall supervision of the Principal Controller of Accounts (Factories) is responsible for review of production cost to help the Factory Management to take corrective steps for cost reduction. As per Paragraphs 635 and 637 of DAODM Part-VI, LAO is

required to conduct quarterly concurrent review of production cost to identify cases of substantial variation between estimate cost and actual expenditure booked in a running manufacture warrant¹³⁴ and to bring it to the notice of Factory management for remedial measures. Apart from concurrent review of production cost and production activities, Paragraph 1026 of DADOM Part-VI stipulates LAO to prepare Quarterly Financial Review (QFR) report on value of issues, progressive expenditure, element-wise cost of production, analysis of expenditure *etc.* amongst other inputs with comparative figures for the last quarter and corresponding period of the previous year. Principal Controller of Accounts (Factories) is required to scrutinise, analyse and consolidate the report of all the Factories for submission to the Board and Controller General of Defence Accounts (CGDA) for appraisal.

The procedures suffer from many constraints in actual practice, as discussed below:

- The Shop Budget Committee and its review are procedures which are either not practiced or are ineffective in exercising close watch on cost of production.
- The quarterly Concurrent Review of Production Costs and Production Activities by the LAO was in the nature of an internal audit with seven objectives covering several aspects of production, of which identification of “cases of substantial variation between actual and estimates as revealed by the expenditure in a warrant that is running”, was only one of the seven objectives.
- The Quarterly Financial Reviews do not identify abnormal trends for variation of costs from estimates and the underlying reasons for fluctuations, if any. As a result, it does not constitute an effective control on costs. The Reviews were not submitted to the Board’s General Body Meeting; nor did the Board’s General Body direct their placement. Consequently, the Quarterly Financial Reviews did not get the attention it deserved to control the costs.
- The wide variations in overheads raises doubts on the integrity of recording costs and the assurance that can be drawn on the accounts to form the basis for reliability of cost or pricing controls.
- Ordnance Factories being sole production unit for the armed forces are generally focused on meeting the demand placed on them without due regard for the considerations of cost control and reduction.

The Board replied that it has a well laid out process for assessing the cost prior to the commencement of the production year based on the past three years actual cost of production and the estimated cost of the production of the year in which review are being undertaken. The variations take place due to various factors, such as source, market trends, quantities on order *etc.* Over a period,

¹³⁴ Warrant is the authority of the General Manager of the Factory to the production shop for manufacture of a product.

the variations are evened out and the issue price is fixed so as to only cover costs. Increase in issue prices is generally restricted to eight *per cent* to take inflation into account. The Board also pointed out that Issue prices were fixed in advance mainly to enable budget formulation for the services and planning of demands. The pre-determined cost cannot match the manufacturing cost. Concurrent review by LAO provides independent inputs on production and for midway correction.

The Board's reply does not address the core issue of cost control and reduction. Estimating cost of production based on previous years without adequate cost control measures would inevitably result in perpetually rising costs. It is stressed that the fluctuation between the issue price and cost of production must not be abnormal. The concurrent review by the Local Accounts Office was inadequate and the many constraints pointed out in Audit limit the potential of the Accounts Wing to meaningfully engage with the Factory management on issues of cost control.

Conclusion

The Factories run on high overheads that inflated the cost of production. The practice of fixing issue price for products in the beginning of the year based on the trends in the past three years could have worked in a set-up in which cost control was effective to closely monitor abnormal fluctuations in cost. This was not however the case in the Factories with the two controls: the Shop Budget Committee and the Quarterly Financial Review, being inadequate interventions suffering from structural deficiencies.

Ordnance Factories being sole production unit for the armed forces are generally focused on meeting the demand placed on them without due regard for the considerations of cost control and reduction.

Recommendation 4: *The Shop Budget Committee may be revitalised so that it may serve to exercise a close watch on the cost of production.*

7.3.6 Environmental Issues

Audit Objective 5: *The factories instituted sound practices and procedures of the Board's sound environmental policy, based on a risk assessment.*

7.3.6.1 General

The chemical factories handle various chemicals and explosive materials both as input and output of different manufacturing process. The factories also generate hazardous wastes, effluents and noxious gases which could have a detrimental impact on three main elements of environment: air, water and soil. To mitigate pollution and maintain safe handling and storage of chemicals and explosives, the factories are required to strictly follow the norms of the State/Central Pollution Control Boards and also comply with the statutory rules and regulations on safety.

In the Action Taken Note (ATN) on Paragraph 3.7.1 of the Chapter III of Audit Report No PA 4 of 2008, the Ministry had assured the Parliament that “all the factories have been advised to ensure providing facility for periodical safety inspection by Centre for Fire, Explosive and Environment Safety (CFEES), New Delhi and Regional Controller of Safety (RCS), Pune to ensure factories’ compliance. However, in exceptional cases, where deviations take place, the Board takes immediate action as and when required and avoids recurrence of incidents. There is separate office with experts working under Controller of Safety looking after all such issues at factory level”. This assurance formed the criterion for our examination against this audit objective.

7.3.6.2 Environmental measures: planning & implementation

Planning

The Controller of Safety in the Headquarters at Kolkata is the nodal office for environment issues in the Board. The Board did not prepare an environment policy which could guide an environment plan. However, the Factories had prepared an Environment Management Manual in compliance towards Environment Management System certification ISO: 14001:2004 which all of the sampled factories had received. But, they did not identify the specific risks or a perspective plan for progressive risk mitigation measures. We further observed the following shortcomings:

- Although the Factories complied with Pollution Control Board’s guidelines, the Manuals did not comprehensively map all the applicable legal requirements (**Annexure XXXVIII**)
- Factories did not lay down a multi-year or an annual plan ¹³⁵for achieving the environment objectives and targets. The environment related measures undertaken by the Factories were on a piecemeal basis not guided by identified targets or a perspective plan.

Implementation

The Factories had taken several measures for mitigation of environmental risks. However, there were shortcomings, which are summarised below:

- No Electrostatic Scrubbers Precipitators, Bag filter have been installed at High Explosives Factory, Kirkee
- The treated effluent from the plants is tested and then discharged into open nullahs/drains except in High Explosive Factory, Kirkee. The discharge of water effluent outside the factory premises is a violation of the State Pollution Control Board’s consent. The Factories have not found ways to recycle the treated water and instead, spent ₹3.20 crore for buying potable water for use in the gardening and fire brigade purpose during 2011-12 to 2013-14.

¹³⁵ Includes (i) designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization and (ii) means and time-frame by which they are to be achieved.

- The factories have entered into contracts with various vendors for disposal of solid wastes and hazardous wastes. However the actual method of disposal by the contractors to ensure that there is no risk to environment is not known.

During the exit conference the Board agreed to comply with the audit recommendation on identifying the specific environmental risks applicable to each chemical factory and to prepare a perspective plan for progressive risk mitigation measures. But no specific time frame for such compliance was communicated to Audit.

It was further observed that HEF, OFBa and CFA could not avail the rebate (₹19.74 lakh) provided by the SPBs to those units installing plant for the treatment of sewage/trade effluent due to non-submission of analytical reports of Industrial and Domestic effluents to the SPCBs in terms of Section 7 of the Water (Prevention and Control of Pollution) Cess Act 1977 even though they had installed mitigation measures like installation of plant for treatment of sewage/trade effluent.

7.3.6.3 Implementation of Safety measures in operations by Factories

The Factories reported 71 accidents (all Major accidents except one at HEF) (**Table-50**) during the calendar years 2011 to 2013. Most of the major accidents¹³⁶ were attributable to defective plant and machinery and unsafe condition (28 accidents accounting for 39 *per cent* of the accidents). Board of Enquiries constituted by all the factories did not assess the impact of accidents on environment. The accidents were also not reported to the State Pollution Control Boards except by CFA.

Table-50: Number of accidents at Ordnance Factories

Factory	No of accidents
CFA	2
OFI	35
OFBa	32
HEF	2
Total	71

Source: Environmental Audit Statement rendered by Factories to OFB

7.3.6.4 Internal controls on environment issues

The internal controls on environment issues at Factories are carried out at six levels. They are (I) Monthly safety audit carried out by the Factory (II) Half-yearly safety audit carried out by the Sister Factory (III) Annual safety audit carried out by the Regional Controller of Safety (IV)) Half yearly electrical safety audit by the Regional Electrical Inspector (V) Monthly safety and surveillance audit by SQA and (VI) Annual fire, environment and explosive safety audit by CFFEES. The Factories also submitted a detailed Monthly Safety Report to the Controller of Safety at Kolkata. Copies are also sent to the RCS¹³⁷ and the SPCB. The Report focussed mainly on safety requirements with elements of environment also forming a part of the Report.

¹³⁶ 12 other accidents accounting for 17 *per cent* of the accidents, were road accidents

¹³⁷ Four Regional Controllers of Safety at Chennai, Kanpur, Pune and Ambajhari.

We found that Level I to III and VI audits were carried out at the Factories during 2011-14, Level IV was carried out only in 2012 and 2013 at all Factories except HEF. Level V audit was not carried out at all factories in 2011 but was carried out in 2012 and 2013 except at OFBa.

7.3.6.5 Energy conservation

In tune with the Ministry's instruction (February 2006), Board issued guidelines to chemical factories in May 2007 to undertake two-tier energy audit for exercising economy in use of electrical energy. The two-tier energy audit involved audit through Internal Resources annually and external accredited energy audit by an accredited energy auditor once in five years. Ordnance Factory Bhandara and Ordnance Factory Itarsi carried out external accredited energy audit against supply order of March 2010 and May 2010/May 2013 respectively, they did not carry out the Tier-I audit through internal sources in 2011-14.

The Factories have shown initiative in implementing measures towards energy savings, guided by the recommendations flowing from the Energy Audits. The Factories reported substantial savings by taking small measures. OFBa had taken measures¹³⁸ to make saving in water and energy consumption.

Similarly, HEF reported a savings of

₹715 lakh in fuel consumption in 2013-14. However, the Factories had high pendency of implementation of the recommendations of audit as shown in **Table-51** the pending recommendations indicating the future potential savings that will require investment.

Table- 51 : No of recommendation of energy audit

Factory	Number of Recommendations			Total cost (in lakh)
	Total	implemented	pending	
OFBa	11	4	7	83
HEF	4	2	2	52
OFI	37	9	28	Not available

(Source: Energy Audit Report submitted by Energy Auditor)

7.3.6.6 Investment by Factories in environment measures

The factories spent ₹11 crore in 2011-12 to 2013-14 on environment which was only 0.6 per cent of the total expenditure. HEF spent ₹14 lakh in 2011-12 and thereafter there was no investment in 2012-14. The energy savings in

Table-52: Expenditure on Environment control to total expenditure

Factory	Expenditure in 2011-14 (in crore)		
	Total (i)	On environment (ii)	(ii) as a per centage of (i)
CFA	461	6.3	1.4
HEF	429	0.1	-
OFBa	609	4.4	0.7
OFI	670	0	0
Total	2169	11	0.5

(Source :- Summary of Overhead Expenditure during 2011-14)

¹³⁸ Shut down of underutilized 660 TR (Ton of Refrigeration) Chilling unit of old RX plant, Installation of Light Emitting Diode street lightening in the factory and reduction of leakages etc.

the recent past have come from tapping the low-hanging fruits and significant investments have not happened in the area of environment (**Table-52**). The Effluent Treatment Plants in the Factories are over a decade old, though functional. Some of the environmental measures, for instance, those related to air pollution are integral parts of the plant and machinery. The low investment in environment measures should be viewed with the fact that the product profile has undergone a change, there are several pending recommendations emerging from energy audit and attention to environmental aspects could yield potential areas of improvement that would necessitate a more sustained investment.

Board stated that the Chemical group of factories is making continuous efforts in the field of energy conservation. The conventional filament-based bulbs have been largely replaced by CFLs to reduce the impact on the environment and savings have been made in the field of furnace oil, steam, power factor etc. Measures are already in place to optimise consumption of electricity. The efforts are underway to harness solar power. The Board stated during the exit conference that the investment in certain plant and machinery includes environment friendly technology. Despite these measures the need to invest more significantly in environment protection is stressed upon.

During the exit conference (June 2015), the Board stated investments on environmental measures are not visible since it was integrated with procurement of plant and machineries. However audit's contention was the need for a medium-term/long-term strategy supported by continuous investment of funds which needs to be addressed.

Conclusion

The Factories have prepared an Environment Management Manual in compliance to Environment Management System certification ISO: 14001:2004 which all the sampled factories have received. But the Factories did not identify the specific environmental risks or prepare a perspective plan for progressive risk mitigation measures. The investment of funds on environmental measures is low in all the Factories. Recycling, safe disposal and reusing of waste are areas which require attention from the factories especially with respect to disposal of explosive wastes.

The general trend of the accidents, especially in Ordnance Factory, Itarsi indicates a gap in safety training of the staff. The Factories have taken initiative for energy conservation and reported energy savings. However, the large number of pending recommendations in energy audit also indicates the future potential savings that will require investment of funds.

Recommendation 5: *An integrated and planned approach to environmental management may be prepared in the Factories identifying the funds required for its implementation, to enable the Board to step up its investment in the area of environment.*

Planning

7.4 Loss of ₹1.37 crore due to non-fulfillment of contractual obligation against export orders

Ordnance Factory Board delayed the delivery of the Kavach system against an export order due to slippages in development of the Kavach system and non-supply of Fire Control System (part of the Kavach) by an Indian firm. Consequently, the foreign Firm deducted penalty of ₹1.37 crore from the bills of the Board.

In order to acquire two Fleet Tankers for the Indian Navy, Ministry of Defence (MoD) concluded two contracts in April 2008 and March 2009 with M/s Fincantieri (Firm) Italy with an offset¹³⁹ clause. Under the offset clause, the Firm was to purchase AK-630M Guns (Gun) and Kavach Mod-II Systems¹⁴⁰ (Kavach) from the Ordnance Factory Board (Board), to be fitted on the Fleet Tankers by the Firm and supplied to the Indian Navy.

The Firm placed two orders for eight Guns and two sets of Kavach on the Board in October and November 2009 respectively. One Kavach system was required to be delivered by 21 June 2010, extended to 26 February 2011 and another by April 2011. The contract stipulated a penalty¹⁴¹ for delays in delivery of Kavach by the Board; there was no such condition in the contract for supply of Guns.

To execute the order received under offset clause, the Board assigned Gun and Shell Factory Cossipore (GSF) to manufacture and supply the Gun. While Machine Tool Prototype Factory Ambarnath (MPF) was tasked to manufacture and supply the Kavach to the Firm. Kavach has three sub-systems viz (i) Launcher to be manufactured by MPF (ii) Electrical sub-system to be sourced from M/s Kirloskar Electric, Bengaluru and (iii) Fire Control System (FCS) to be procured from M/s SAMEER,¹⁴² Chennai. These three sub-systems were required to be assembled at MPF for manufacture and supply of complete Kavach.

In this connection, Audit observed that:

- Kavach being a new item for MPF, it was yet to establish manufacturing process for assembly of three sub-systems when the Firm placed orders. However, the order was accepted by the Board to keep the export volume growing as indicated in their note of 25 February 2009 and approved by the Chairman, OFB.

¹³⁹ In case of outright foreign purchase of ₹300 crore and above, foreign suppliers are required to procure products of at least 30 per cent of contract value from the Indian firms.

¹⁴⁰ Kavach system is a part of armament on board of the Fleet Tanker, which helps in defending the Tanker against incoming shells and missiles thereby adding teeth to the defensive cover of the tanker.

¹⁴¹ The penalty was to be calculated @ 0.5 per cent per week subject to a maximum of five per cent of the whole amount of order.

¹⁴² Society of Applied Microwave Electronics & Engineering Research, a Research & Development Organisation under the Ministry of Communications and Information Technology.

- The Firm expressed (February 2009) its unwillingness to place order on the Board because the Board had not provided the technical specification detailing the scope of supply.
- MPF and Board together took about eight months, reckoned from the date of receipt of order (October 2009), to finalise and place Supply Order (June 2010) on SAMEER for procurement of FCS on Single Tender basis being a Proprietary Article Certificate item.
- As per order, SAMEER was to deliver FCS by 15 May 2011. However, SAMEER could not adhere to the delivery schedule and after a lapse of one year from the scheduled delivery date, it expressed (June 2012) its inability to meet the commitment due to production limitation.
- Consequently, the Board delivered (March 2013) only one Kavach system without FCS to the Indian Navy. It was after two years, the Board received (March 2015) FCS from SAMEER.

As a result of failure of Board to meet the delivery schedule for Kavach sets, the Firm deducted penalty of ₹ 1.37 crore from the payments due to the Board against supply of Guns.

While accepting the audit observation on delayed delivery and consequent deduction of penalty the Board stated (April 2015) that when the Firm placed orders, the manufacturing process for Kavach system was fully established at MPF and sources for supply of trade components/sub assemblies were also established. It attributed the delayed delivery of Kavach mainly to considerable time taken in inspection of raw materials to end product and the manpower constraints faced by SAMEER leading to delay in development of FCS.

Board's contention is not acceptable because (i) both the Board and MPF admitted (June and September 2012) that MPF had not developed the Kavach at the time of accepting the order from the Firm. However, the Board accepted the order from the Firm to keep their export volume growing even though the Firm expressed (February 2009) its unwillingness to place the order due to non-availability of technical specification from the Board; (ii) MPF and the Board together took about eight months to place the order on SAMEER on Single tender basis for supply of FCS.

Thus, the acceptance of the order for Kavach system without establishing the manufacturing process for Launcher and its assembly with other two sub-systems at MPF as well as delay in placement of order for FCS on SAMEER coupled with slippages in delivery of FCS to MPF led to delayed delivery of Kavach to the Firm that too without FCS and consequent loss of ₹1.37crore.

The matter was referred to the Ministry in March 2015; their reply was awaited (September 2015).

Procurement of Machinery/Stores

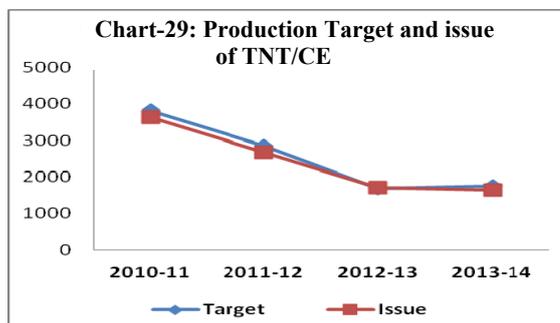
7.5 Unjustified procurement of storage tanks

Procurement of four storage tanks at a total cost of ₹1.08 crore by High Explosives Factory Kirkee was unjustified since the factory already had sufficient capacity.

High Explosive Factory Kirkee (Factory) manufactures Tri Nitro Toluene (TNT) and Composite Explosives (CE), for which Strong Nitric Acid is a raw material. The Acid is stored in aluminium tanks. In 2012, the Factory held eleven¹⁴³ tanks with a usable capacity of 70 tonne¹⁴⁴ each, of which four required replacement. In all, the Factory could store upto 490 tonnes¹⁴⁵ of acid on any given day.

In June 2012, Ordnance Factory Board (Board) approved the Factory's proposal to purchase four storage tanks to replace the four old storage plants. The supply of the pre-fabrication material for the tanks was received by September 2013 at a total cost of ₹1.08 crore; these were under fabrication/final commissioning as of March 2015.

We observed (September 2014) that the production and issue of Tri Nitro Toluene and Composite Explosive in the Factory showed a persistently low trend. The issue of Tri Nitro Toluene reduced by 55 per cent during five years: 2010-14 while that of Composite Explosive by 54 per cent during the same period. Even during the peak production targets of 2010-11, the requirement of storage capacity for Strong Nitric Acid did not exceed 345 tonnes. The seven existing tanks had a composite capacity for 490 tonnes which



was adequate to meet the production levels. In fact, the Factory's procurement with the vendor envisaged staggered supply of only 400 tonnes of Strong Nitric Acid each month. The actual supply of Strong Nitric acid was far less, with the monthly supply touching 350 tonnes only on five occasions out of the 24 months of 2012-14. On an average, the monthly aggregate holding in the Factory was 145 tonnes in 2013-14, substantially reduced from 250 tonne in 2011-12. Further, scrutiny of Bin Cards of Strong Nitric Acid revealed that the vendor supplied the acid on a day-to-day basis and the acid supplied was being immediately drawn for consumption in manufacture within a few days.

¹⁴³ In the first phase 3 tanks were replaced in 2008, second phase four tanks were replaced in 2012 and for remaining four tanks, the present Audit paragraph relates to.

¹⁴⁴ Each storage tank is capable of storing 50 cubic metres of Strong Nitric Acid with the filling height up to 400 cms. The tanks are filled up only up to the height of 375 cms to avoid overflowing of chemicals. Thus, each storage tank can store 70 tonne of Strong Nitric Acid.

¹⁴⁵ 7 tanks with 70 tonnes capacity, hence 7*70= 490 tonnes

We concluded that the purchase of four tanks for replacement of the remaining four tanks at a cost of ₹1.08 crore was unjustified.

In reply, the Board justified procurement of four storage tanks by stating (March 2015) the following:

- Under renewal and replacement plan, eleven tanks were created for storage capacity of 70.5 tonne each of 39 days continuous production from the safety and war capacity point of view.
- The factory had been producing Tri Nitro Toluene at 60 *per cent* plant capacity based on Board's target with the balance 40 *per cent* capacity meant to meet war situation. Hence, 11 serviceable tanks were to be maintained to achieve full capacity of TNT plant.
- Strong Nitric Acid was being procured from trade and the TNT plant was running continuously for 24 hours a day and uninterrupted supply of all input material were required to be maintained to avoid loss in production.
- Considering the target of production of TNT and CE for the year 2011-12, the replacement of four condemned tanks was essential.

The Ministry endorsed (July 2015) the views of the Board.

The justification of the Board/Ministry for replacement of four storage tanks was not acceptable since Paragraph 2.3.1 of Board's Manual for procurement of plant and machinery clearly stipulates that a factory should finalise its perspective plans on the basis of (a) projection of users requirement in case of end product factories and (b) inter factory demands in case of component manufacturing factories. Based on the perspective production load, the factory would prepare annual Renewal and Replacement plan. Considering an annual production target of TNT and CE assigned to the factory during 2010-16 ranging between 2586.40 tonne (2014-15) and 3813.95 tonne (2010-11), the requirement of strong nitric acid ranged between 223 tonne and 333 tonne per month respectively.

Therefore, seven tanks available at the factory at the time of initiating procurement action of four more tanks was more than sufficient to meet the monthly/annual production target for the financial years 2010-11 to 2015-16. Even after considering the peak levels of targets for production in 2010-11 at 333 tonne Strong Nitric Acid per month, the existing seven tanks were more than adequate to store the Strong Nitric Acid.

Thus, procurement of four storage tanks at a total cost of ₹1.08 crore by the Factory, despite adequate storage capacity and a declining demand for Strong Nitric Acid in production, was not justified even though it was for replacement.

7.6 Non- utilization of feeder system

A new substation installed by Rifle Factory Ishapore (RFI) at a cost of ₹4.09 crore in June 2006 remained unproductive owing to RFI's failure to procure and install switch gears (April 2015).

Rifle Factory Ishapore (Factory) meets its power needs primarily from the 6 KV through five feeders from Metal and Steel Factory Ishapore (MSF). In addition, it draws through a 33 KV Radial¹⁴⁶ Type Distribution System from substation of the power distribution company, Calcutta Electric Supply Corporation Limited Kolkata (CESC).

In view of the abnormal voltage fluctuations of power received from MSF, impacting adversely on the production, the Factory proposed (May 2002) a new distribution system with the following components:

- A new sub-station with a Ring Main feeding system¹⁴⁷,
- Equipped with Low Tension¹⁴⁸ and High Tension¹⁴⁹ Switch gear to develop a 33 KV Ring Main System in order to ensure uninterrupted, spike free electrical power for all the shops namely for high tech machining centres and Computerised Numerically Controlled cold swaging machine and;
- A digital SCADA¹⁵⁰ control system for the power received directly from CESC.

Ministry of Defence sanctioned (August 2003) the project for new 33 KV sub-station, scheduled to be completed by June 2004. The Factory procured the 33 KV sub-station from CESC at a total cost of ₹4.09 crore which was energized in April 2006.

We observed that the sub-station was energized but the Factory could not finalise the procurement of the switch gears required to make the new Ring System operational for nine years thereafter. The Factory was unable to decide if the SCADA system was required or not. The inability to finalise the tender offers within the validity period led to repeated tendering in September 2004, June 2005, December 2006 and November 2007.

¹⁴⁶ A power distribution system whereby different feeders come out radially from the substation and connected to the primary distribution transformer directly. This has one major drawback in that in case of any feeder failure, the associated consumers would not get any power as there is no alternative path to feed the transformer. In case of transformer failure also, the power supply is interrupted until the feeder or transformer is rectified.

¹⁴⁷ Alternative to overcome the defects of the radial power distribution system. Under this system, one ring network of distributors is fed by more than one feeder. If one feeder is under fault or maintenance, the ring distributor is still energized by other feeders connected to it. Thus, the supply to the consumers is not affected even when any feeder becomes out of service.

¹⁴⁸ Consisting of underground Low Tension cable for eight kms, capacitor bank and Power panels.

¹⁴⁹ Consisting of underground High Tension cable for two kms, circuit breaker, battery bank, transformers, substation earthing, lightning arrestor, etc., as per Indian Electricity rules

¹⁵⁰ Supervisory Control and Data Acquisition system is a system, operating with coded signals over communication channels so as to provide control of remote equipment (using typically one communication channel per remote station).

Ultimately, the Factory decided (January 2012) to opt for procurement of switch gears without SCADA on the ground that modern system will not match with the existing 33 KV system (feeder from the CESC sub-station). The Factory received (November 2012) sanction for this proposal from the Ordnance Factory Board (Board). Six months later, the Factory floated a tender enquiry (March 2013). However, the purchase order was not placed as of April 2015.

As a result, the new 33 KV Ring Main System procured in June 2006 to mitigate the problems in manufacturing of weapons due to supply fluctuations, remained unproductive at RFI for want of switch gear.

While accepting the facts, the Board stated (April 2015) the following:

- An independent 33 KV substation to receive power directly from CESC substation was proposed in addition to existing 33 KV feeder to develop a Ring Main System to ensure uninterrupted power supply for the factory in case of failure of the existing 33 KV supply source besides making RFI independent of MSF supplies.
- At the time of breakdown of existing 33 KV feeder on CESC HT side at RFI on 19 October 2013, CESC restored power supply to RFI from newly installed 33KV HT feeder using bus coupler¹⁵¹ for four days which prevented production loss.
- With the use of 33 KV Ring Main System, the Factory was able to obtain an annual rebate of ₹1.86 crore in the form of Load factor, Power factor and Max Demand etc from CESC.
- Tender enquiry to procure and install switch gear for 33 KV Ring Main System had been opened and RFI was going to complete the process of procurement and its installation on a fast track basis.

The reply was not acceptable for the following reasons:

- Factory justified (May 2002) installation of new 33 KV ring main system, in addition to existing 33 KV radial type system, to develop a Ring Main System in order to ensure uninterrupted, spike free power to vital installations with a view to avoiding receipt of current, having abnormal voltage fluctuations, from the primary feeder of MSF.
- It was not possible¹⁵² to restore power supply from the newly installed Ring type substation during the period of breakdown of existing radial type substation since Low and High tension switch gears are required¹⁵³

¹⁵¹ Bus coupler is a device which is used to couple one bus to the other without any interruption in power supply and without creating hazardous arc.

¹⁵² Since the High Tension and Low Tension switch gears are necessary to step down the electricity received from High Voltage 33 KV substation to Low Voltage of 6 KV.

¹⁵³ As stated by the Rifle Factory Ishapore while justifying (May 2002) the necessity for procurement of switch gears.

for receiving uninterrupted and spike free electrical power for all the shops from the newly installed substation.

- Since no billing for the new 33 KV substation existed as intimated to Audit by Factory (April 2015), there was no possibility of obtaining rebate on consumption of electricity as contended by OFB.

Thus, a new substation installed by Rifle Factory Ishapore at a cost of ₹4.09 crore in June 2006 remained unproductive owing to RFI's failure to procure and install switch gears (April 2015).

The matter was referred to the Ministry in February 2015; their reply was awaited (September 2015).

7.7 Idling of testing equipment

Test stand procured at a cost of ₹9.21 crore by Heavy Vehicle Factory Avadi was lying idle since its receipt in December 2010.

Ministry of Defence (Ministry) entered into a Transfer of Technology (ToT) agreement (February 2001) with M/s. Rosoboronexport, Russia (ROE) for indigenous manufacture of T-90 tanks at Heavy Vehicles Factory Avadi (HVF), T-90 engines at Engine Factory Avadi and Sighting Instruments for fitment in T-90 tanks at Opto Electronics Factory Dehra Dun (OLF).

Ministry instructed (May 2006) that the procurement of TI-ESSA¹⁵⁴ Sights was to be done directly from M/s Bel- Tech Export, Belarus and not through M/s Rosoboronexport, Russia who were not the Original Equipment Manufacturer. Ministry also stipulated (December 2006) that Ordnance Factory Board (OFB)/General Manager/Senior General Manager was authorized to conclude Supplementary Agreements in respect of procurement cases from ROE with full powers.

We observed that instead of approaching Belarus based firm for ToT of Sights, OFB took up the matter with ROE through a series of meetings, which assured to supply the ToT for the sights in May 2008, seven years after signing of the ToT. Accordingly, HVF signed a Draft Supplementary Agreement (February 2009) for supply of technical documentation in the Russian Language (USD 5.50 lakh) and equipment (comprising of 17 items including Test Stand¹⁵⁵ at USD 20.53 lakh, required for testing of Sights after integration with the T-90 tanks on the basis of Ministry's instructions stipulated in December 2006 order.

¹⁵⁴ A night vision device used in the T-90 Gunner and Command Version tanks working on the principle of thermal imaging to detect targets during day and night under normal and adverse conditions.

¹⁵⁵ Test Stand means the equipment required for defect investigation in case of any defect after integration of TIESSA sights.

We further observed that HVF received the ToT documents in July 2010 at a cost of ₹2.55 crore and incurred ₹5.10 lakh to get it translated to English in October 2010. HVF received equipment (comprising 17 items including Test Stand) in December 2010 along with ToT at a total cost of ₹9.29 crore.

While 16 types of equipment were taken on charge in December 2011, the Test Stand costing ₹9.21 crore was taken on charge in March 2012. The Test Stand, however, could not be commissioned so far as the drawings received from ROE were reported to be 'under- study'.

When raised in audit, HVF replied that drawing documents received from ROE were thoroughly studied and the clarifications required were taken up with Russian Specialists during meeting held at HVF between 11 December 2013 to 13 December 2013 and since Russian side had clarified their points, the case was 'under study'.

The fact remains that:

- Contrary to Ministry's specific directions of May 2006, HVF procured the Sights from ROE instead of M/s Bel-Tech Export, Belarus on the basis of Ministry's instructions stipulated in December 2006, which was not correct since December 2006 instructions were general instructions to delegate powers for procurement.
- Moreover, though Test Stand was received in March 2010, it was taken on charge in March 2012. Regarding the time taken, HVF replied that the delay was attributed to non-acceptance of the Draft Supplementary Agreement by the computer system resulting in creation of 'dummy supply order' and 'dummy receipt voucher' in February 2011. The reasons for delay from February 2011 to February 2012 were not, however, intimated to Audit by HVF.
- The Test Stand procured at a cost of ₹9.21 crore was still lying idle at HVF as it had not been commissioned.

The matter was referred to the Ministry and the Board in March 2015. In its reply, the Board stated (May 2015) that the complete drawings received from ROE were being studied by HVF to ascertain the tools, resources and technical guidance required for erection and commissioning of Test Stand and after completion of the study the commissioning work would be taken up. The Board did not, however, communicate any specific time schedule for completion of the study of the drawings to commission the Test Stand.

Thus, contrary to Ministry's direction, HVF procured a Test Stand at a cost ₹9.21 crore from a Russian Firm which was lying idle since its receipt in December 2010 as the factory did not take charge of Test Stand for more than one year coupled with the fact that the factory failed to complete the study of the drawings received from the foreign firm for more than four years to commission the Test Stand.

The matter was referred to the Ministry in March 2015; their reply was awaited (September 2015).

7.8 Extra Expenditure due to non-insertion of option clause in the tender enquiry/supply order

Failure of Opto Electronics Factory Dehra Dun to incorporate option clause in the Tender Enquiry/Supply order in violation of existing provision of procurement manual had resulted in subsequent procurement of image intensifier tubes at an extra expenditure of ₹1.33 crore.

Paragraph 9.15 of the Material Management and Procurement Manual (Manual) of Ordnance Factory Board (OFB), 2005 stipulates that ordnance factories should decide at the tendering stage itself as to whether any option clause for quantity enhancement will be included in the supply order to be finalized against the tender. Manual further provided that (i) even if mention about option clause was missing, the right to order an additional quantity up to 25 *per cent* was catered for in the special instructions to tender (ii) where it is decided to include such option clause, the matter should be indicated in the tender enquiry itself as well as give consent for up to 100 *per cent* enhanced quantities against option clause to be operated within the currency of the initial supply order and the Tender Purchase Committee would decide on the inclusion of the option clause and the option quantity on the basis of the quotations received.

In order to meet the production requirement for the 2007-08, Opto Electronics Factory Dehra Dun (OLF)¹⁵⁶ issued (May 2007) a global tender enquiry (GTE) for procurement of 4944 numbers of High Performance Supergen Image Intensifier Tubes¹⁵⁷ (tubes) against a projected deficient quantity of 9592 numbers. We observed that the GTE, in violation of Manual, did not incorporate any option clause for quantity enhancement.

OLF, based on offers received from potential vendors, evaluated technical bid (August 2007-March 2008) and commercial bid (April 2008) and approached OFB for procurement of tubes from M/s. Photonis-Dep, France at a unit cost of Euro 1975. OFB, however, directed (June 2008) OLF to procure 4248 tubes from M/s. BELOP¹⁵⁸, Pune at a unit cost of Euro 1935 and initiate source development for 20 *per cent* quantity of annual requirement to increase the vendor base.

¹⁵⁶ A factory functioning under the Administrative control of Armoured Vehicles Division of Ordnance Factory Board whose Headquarter viz. Armoured Vehicles Headquarters is based in Avadi, Chennai. The Armoured Vehicles Headquarter in turn functions under the administrative control of Ordnance Factory Board based in Kolkata.

¹⁵⁷ Required for manufacture of Driver Passive Night Vision Devices.

¹⁵⁸ Joint Venture between M/s Bharat Electronics Limited and M/s Photonis- Dep, France

OLF accordingly placed order (June 2008) and received 4248 tubes (October 2008 to January 2010) from M/s. BELOP at unit rate of Euro 1935. In the meantime, considering huge lead time involved in procurement process of tubes, OLF issued a Tender Enquiry (January 2009) for procurement of another 2400 tubes for meeting the production requirement for the year 2010-11 with quantity enhancement clause for 25 *per cent* of the indented quantity and received offer from M/s. BELOP- being L-1 offer- to supply at unit rate of Euro 2075.

We observed that both OLF (March 2009) and Armoured Vehicles Headquarter Avadi (AVHQ) (May 2009) desired to exercise option clause for 25 *per cent* of the ordered quantity *viz.* 1062 tubes against the supply order of June 2008 at the same unit rate of Euro 1935. M/s. BELOP, however, refused (May 2009) to entertain it as the option clause was neither incorporated in tender enquiry of May 2007 nor was it specified in the supply order of June 2008. M/s. BELOP, nevertheless, agreed (June 2009) to supply 1062 tubes at unit rate of Euro 1935 subject to release of 15 *per cent* of the order value in advance to meet their working capital requirement.

We further observed that even though AVHQ acceded to M/s. BELOP's request and recommended (June 2009) to accord their approval to procure 1062 tubes at unit rate of Euro 1935 and remaining tubes at unit rate of Euro 2075 with release of 15 *per cent* of the order value as advance payment. OFB, however, did not agree (August 2009) with the proposal because non-inclusion of option clause either in the GTE of May 2007 or order of June 2008 and release of 15 *per cent* as advance payment in deviation of the tendering terms (January 2009) would jeopardize the transparency of procurement and attract vigilance angle against post tender amendment.

OLF therefore procured 2400 tubes (February 2010 to February 2011) from M/s. BELOP against its order (September 2009) at unit rate of Euro 2025. As a result, OLF had to procure 2400 tubes against its order of September 2009 at higher unit rate of Euro 90 involving an additional expenditure of ₹1.33 crore, which could have been avoided had the clause relating to quote for quantities mentioned in the tender as well as give consent for up to 100 *per cent* enhanced quantities against option clause to be operated within the currency of the initial supply order was provided in the GTE of May 2007.

In reply, Ordnance Factory Board stated (April 2015) that (i) the total deficient quantity of tubes as noted on Material Planning Sheet was 7463 and not 9592 numbers as contended by Audit (ii) as per 4.1 (D), annexure of material management and procurement manual of Ordnance Factory Version 2005, the option clause to be incorporated in cases where 80 *per cent* of the annual requirement is covered through Limited Tender Enquiry on established sources. It further added that the supply order in the present case was placed through GTE covering the requirement and hence option clause was not incorporated in the supply order.

The contention of OFB is not acceptable since (i) even though the total deficient quantity of tubes noted on Material Planning Sheet of 19 April 2007

to meet the target of 2007-08 was indicated at 7463 and proposed procurement of 4944 tubes with dues in quantity of 2032 tubes, yet in the tender Purchase Committee meeting held on 20 April 2007, General Manager, Opto Electronics Factory Dehra Dun approved procurement of 4944 tubes against the deficient quantity of 9592¹⁵⁹ through global tender route; and (ii) there is no provision in the Manual which prevented the OLF from incorporating the option clause in case of procurement through GTE. Besides, Para 6.6 (j) of the OFB's Manual indicated check points for preparation of tender enquiry which inter alia called for an assurance from Ordnance Factories regarding incorporation of the option clause in tender enquiry relating to "coverage of additional quantity up to 100 per cent if demand for the store was of repetitive nature". Moreover, incorporation of option clause in the GTE is only an assurance to procure the additional quantity at the same terms and conditions within the pendency of proposed supply order, in case there was no downward trend in the price of the stores, and that too at the option of the factory. In the present case, further requirement of tubes existed because total deficient quantity as approved by General Manager, OLF was 9592 tubes as against the proposed quantity of 4944 tubes to be procured.

Thus, failure of OLF to incorporate the requisite option clause in the GTE/Supply order in violation of procurement manual had resulted in subsequent procurement of tubes at an extra expenditure of ₹1.33 crore.

We recommend that OFB should issue instruction to Ordnance Factories to ensure incorporation of option clause in the tender enquiries irrespective of whether the entire requirement for the year is fully covered or not.

The matter was referred to the Ministry of Defence in February 2015; their reply was awaited (September 2015).

Miscellaneous

7.9 Loss due to under-recovery of brass rods in conversion orders

Provision of lower product yield and higher process loss by Metal and Steel Factory Ishapore in their orders on trade firms for conversion of brass billets to brass rods, inspite of the fact that one of the trade firms offered higher product yield and less process loss, had resulted in low recovery of brass rods by ₹3.32 crore and extended undue benefit to the trade firms who had executed the conversion order to the same extent.

Metal and Steel Factory Ishapore (MSF) is engaged in production of finished brass rods of different sizes for supply to sister factories¹⁶⁰. In order to meet this requirement, MSF draws 175mm dia brass billets made by its Melting

¹⁵⁹ Total deficiency of 9592 worked out based on the total requirement of 13234 less Received quantity till date 1610 tubes + dues in quantity of 2032 tubes).

¹⁶⁰ Gun & Shell Factory Cossipore, Ordnance Factory Dum Dum, Ordnance Factory Ambajhari and Ordnance Factory Khamaria.

Platform section and sends the same to a State owned undertaking, M/s Neo Pipes and Tubes Corporation Limited (NPTCL) for extruding the brass billets into brass rods.

In view of M/s. NPTCL's failure to meet the delivery schedule, MSF felt (August 2010) the need to develop new sources. Accordingly, MSF placed (August 2010) a development order on M/s. Senor Metals, Jamnagar (SM) for conversion of 175mm dia brass billets into 13720 Kgs of brass rods of various sizes with a minimum yield of 80 *per cent* and maximum process loss of three *per cent*. However, SM delivered (September 2010) 13720 Kgs brass rods of various sizes against 15875 Kgs of 175mm dia brass billets from MSF at a product yield of 86.43 *per cent* and process rejection loss of three *per cent*.

Audit observed that MSF subsequently placed seven purchase orders between December 2010 and August 2012 for conversion of brass billets to 1609 tonne brass rods on NPTCL and SM. These purchase orders stipulated product yield of minimum 70 *per cent* and process loss at four *per cent* even though yield of 86 *per cent* and process loss at three per cent were achieved by SM against an earlier order of August 2010. Moreover, it was observed that against Tender enquiries of November 2010 and April 2011, SM had offered to convert brass billets into brass rod with product yield of minimum 80 *per cent* and process rejection of three *per cent*, but MSF did not take cognizance of this product yield rate and process rejection loss while placing purchase orders.

MSF issued (December 2010 and April 2013) 2081.116 tonne of 175mm dia brass billets and received 1584.66 tonne brass rods of various sizes (April 2011 to May 2013) from SM and NPTCL. Of these, MSF accepted 1556.557¹⁶¹ tonne brass rods and thus average product yield of 75 *per cent* was achieved by SM and NPTCL with four per cent process loss.

Thus, provision of lower product yield of 70 per cent and high process loss of four per cent in the seven purchase orders (December 2010 to August 2012) by MSF for conversion of brass billets to brass rods had resulted in low recovery of brass rods of ₹3.32 crore and it also resulted in undue benefit to NPTCL and SM.

On this being pointed in Audit, the Board (OFB) stated (April 2015) during Hot Extrusion, the brass billets are heated to a temperature close to melting point, which could result in oxidation of the outer layer of the brass billets when exposed to open air. The yield beyond 70 *per cent* was contingent on several parameters including the thickness of oxidation layer. The burning loss would also depend on the amount of impurities embedded upon the billet

¹⁶¹ The difference between received quantity of 1584.66 tonne and accepted quantity of 1556.56 tonne represents 28.10 tonne brass rods which were rejected as the same were not of requisite specification.

surface which were removed during the heating process and an additional two to three *per cent* normal rejection loss was provided in the estimate besides process loss of three *per cent*. The payments were made on the actual yield achieved during the conversion, hence there was no loss.

The reply is not acceptable since cost of finished brass rods was much more than the cost of process loss and process scrap. Hence, the contention regarding no loss because of payments were made on actual yield was not acceptable.

Thus, provision of lower product yield and higher process loss by MSF in their supply orders on trade firms for conversion of brass billets to brass rods in spite of the fact that one of the trade firms offered higher yield and less process loss in their offer, had resulted in loss of ₹3.32 crore and extension of undue benefit to the trade firms who had executed the conversion orders.

The matter was referred to the Ministry in March 2015; their reply was awaited (September 2015).

7.10 Recoveries at the instance of Audit

On pointing out the omission to recover interest on security deposit, liquidated damage and to avail of rebate on excess consumption over the maximum demand of electricity as well as releasing of payment under price variation clause even for delayed supplies, Ordnance Factory Muradnagar, Ordnance Factory Kanpur and High Explosive Factory Kirkee recovered ₹1.68 crore from the respective electric supply agencies and the firm.

Three Ordnance Factories recovered ₹1.68 crore at the instance of Audit on account of interest on security deposit, rebate on electricity consumption, liquidated damage and price variation clause.

Case – I: Ordnance Factory Muradnagar

Between 1994 and 2010, Ordnance Factory Muradnagar (OFM) deposited security deposit of ₹3.20 crore to Paschimanchal Vidyut Vitran Nigam Ltd (PVVNL) on which PVVNL was liable to pay interest at the rate of six *per cent* per annum. OFM did not avail interest on security deposit after 2011-12 *i.e.* for the year 2012-13 and 2013-14. On this being pointed out by us (March 2014), OFM adjusted the interest of ₹45.79 lakh from the electricity bill (May 2014) of PVVNL.

Case – II: Ordnance Factory Kanpur

Uttar Pradesh Electricity Regulatory Commission (UPERC) introduced a load factor rebate of 7.5 to 20 per cent in tariff schedule in October 2012. The rebate was admissible to the consumers whose consumption was in excess of (i) over 396 kVAh per kVA up to 432 kVAh per kVA per month with rebate of 7.5 per cent (ii) over 432 kVAh per kVA up to 504 kVAh per kVA per month with rebate of 10 per cent and (iii) in excess of 504 kVAh per kVA per month with rebate of 20 per cent.

We examined the electricity bills and observed that Ordnance Factory Kanpur (OFK) did not avail rebate aggregating ₹43.09 lakh from Kanpur Electricity Supply Company Ltd. (KESCO) for consuming electricity in excess of 396 kVAh per kVA during¹⁶² October 2009 to April 2012. OFK referred (February 2013) the matter to KESCO for refund of rebate after this being pointed out by us (January 2013). Rebate of ₹27.83 lakh was adjusted in the monthly bill of May 2013 and recovery of the remaining amount was in process.

Case – III: High Explosive Factory Kirkee

High Explosive Factory Kirkee placed (September 2011) a supply order on M/s. Deepak Nitrate Limited Mumbai (Firm) for supply of 4094 tonne Ortho Nitro Toluene (ONT) to be delivered in a staggered monthly schedule and completed by 31 December 2012 at a total cost of ₹23.62 crore under a price variation and option clause. The ordered quantity was enhanced by 1150 tonne in December 2012 under option clause with the stipulation to supply the ordered quantity by March 2015.

We observed that against the scheduled delivery of 1050 tonne ONT during October 2013 to December 2013, the firm actually supplied only 435.44 tonne and the remaining 614.56 tonne ONT was supplied during the subsequent months. However, HEF did not recover liquidated damages of ₹50.68 lakh for delayed supply of 614.56 tonne ONT. Further, HEF accorded undue benefit of ₹43.20 lakh to the firm by way of releasing payment to the firm at higher rates under Price Variation Clause for the delayed supplies during August 2013, November 2013 and May 2014 in gross violation of Paragraph 7.5.1 (g)¹⁶³ of the Ordnance Factory Board's (Board) Procurement Manual 2010.

On this being pointed out in Audit, Board stated in July 2015 that liquidated damages of ₹50.68 lakh and irregular payment of ₹43.20 lakh under price variation clause were being recovered from the pending bills of the firm.

¹⁶² October 2009, November 2009, March 2010, November 2010, December 2010, January 2011, April 2011, January 2012 and April 2012.

¹⁶³ If the supplier fails to supply the store within the delivery schedule, the purchaser has the option of extending delivery period with liquidated damages. However, no price variation clause would be admissible to the supplier if the delivery period is extended owing to suppliers default and in case of downward trend in the price during the extended period, the benefit thereof shall pass onto the purchaser.

Further examination revealed that HEF had recovered (June 2015) ₹93.88 lakh from the firm.

Thus, at the instance of Audit, HEF recovered liquidated damages of ₹50.68 lakh for the delayed supply of a chemical and irregular payment of ₹43.20 lakh under price variation clause from a firm.

In reply to Audit query, OFB confirmed (February/September 2015) that the recoveries of ₹1.68 crore been effected at the instance of Audit in respect of above three cases.

The matter was referred to the Ministry in March 2015; their reply was awaited (September 2015).

Chapter-VIII :Defence Public Sector Undertaking

BEML Limited, Bangalore

8.1 Procurement and Inventory Management

8.1.1 Introduction

8.1.1.1 Company Profile

BEML Limited (Company), established in 1964, is a listed 'MiniRatna' Central Public Sector Undertaking (CPSE) under the administrative control of the Ministry of Defence (MoD) and caters to the core sectors of the economy. The Company is engaged in design, manufacturing, marketing and after-sales-service of a wide range of Mining and Construction equipments, Defence products, Railway and Metro Rail products. The Company operates under three distinct business segments viz., Mining & Construction, Defence & Aerospace and Rail & Metro and has four manufacturing complexes with nine manufacturing units located at Bangalore¹⁶⁴, Kolar Gold Fields¹⁶⁵ (KGF), Mysore¹⁶⁶ and Palakkad.

The Corporate office and Central Marketing Division is located at Bangalore. The Company has a nation-wide network of sales & service offices and spare parts depots.

8.1.2 Audit approach

8.1.2.1 Why we selected the topic for audit

In order to obtain a reasonable assurance on whether the commercial interests of the Company were adequately met, Audit decided to review the system of Procurement and Inventory Management in the Company during the period from 2010-11 to 2012-13. Our analysis of the decrease in profit revealed that one of the many factors contributing to this was high inventory levels impacting on the working capital.

8.1.2.2 Audit Methodology

Audit studied the procurement policies, management guidelines and directives on procurement activity, inventory control mechanism, working capital facility and their implementation by all the manufacturing units/marketing divisions. Out of 86,794 purchase orders (POs) valuing ₹9,007.68 crore placed during the period from 2010-11 to 2012-13, Audit selected 1,577 POs¹⁶⁷ valued ₹5,498.51 crore for audit review based on Stratified Random Sampling to size without replacement sampling method (**Annexure - XXXIX**).

¹⁶⁴ Rail and Metro Division

¹⁶⁵ Earth Moving Division, Rail Coach, Heavy Fabrication and Hydraulic & Power Line

¹⁶⁶ Truck Division and Engine Division

¹⁶⁷ Out of 1577 POs, 1217 POs were external POs placed on vendors and balance 360 POs were inter-divisional POs of the company.

Audit commenced with an Entry conference (19 July 2013) with the Management wherein the scope, objectives, criteria and methodology of audit were discussed. This was followed by review of POs files at units, collection and analysis of data, issue of preliminary observations and discussions with the management. Audit was concluded with an Exit conference (30 December 2013) with the Top Management of the Company wherein the results of audit and the audit recommendations were discussed.

The draft Audit Report issued in October 2013 was replied to by Management in December 2013. The Company accepted eight out of ten recommendations made by audit and expressed reservations/constraints on two recommendations which have been discussed in **paras 8.1.3.1 and 8.1.3.4**.

We further reviewed the position for the year 2013-14 and corresponding financial figures for the year were updated.

The report was issued to Ministry in January 2015 and their reply was awaited (September 2015).

8.1.2.3 Audit Objectives

The objectives of the Performance audit were:

1. To examine whether policy and procedures of the Company for procurement are well defined, framed in compliance with statutory/Government guidelines and updated periodically;
2. To ensure that the purchase procedure is adhered to;
3. To examine and assess the effectiveness of the Inventory management system;
4. To examine and map the procedure followed in e-procurement to ensure that they are documented and are in consonance with Purchase Manual, Central Vigilance Commission (CVC) guidelines and STQC requirements.

8.1.2.4 Audit Criteria

The performance of the Company was assessed against following criteria:

- Purchase policy and procedures and instructions/guidelines issued from time to time;
- Minutes of the meetings of the Board of Directors, Audit Committee, Steering and Internal committees;
- Targets and achievements, Production plan and minutes of the production review meetings;
- Guidelines issued by CVC and other regulatory authorities;

- Review of Purchase orders and contracts placed on suppliers and progress of supplies, feedback from suppliers;
- Inventory norms and holding.

8.1.2.5 Audit acknowledgement

We acknowledge the co-operation extended by the Management at all levels in production of records and information, clarifications of issues and furnishing of replies.

8.1.2.6 Inventory position

The inventory position for the four years from 2010-11 to 2013-14 is as shown in **Table-53** below:

Table-53: Inventory Position

(₹ in crore)

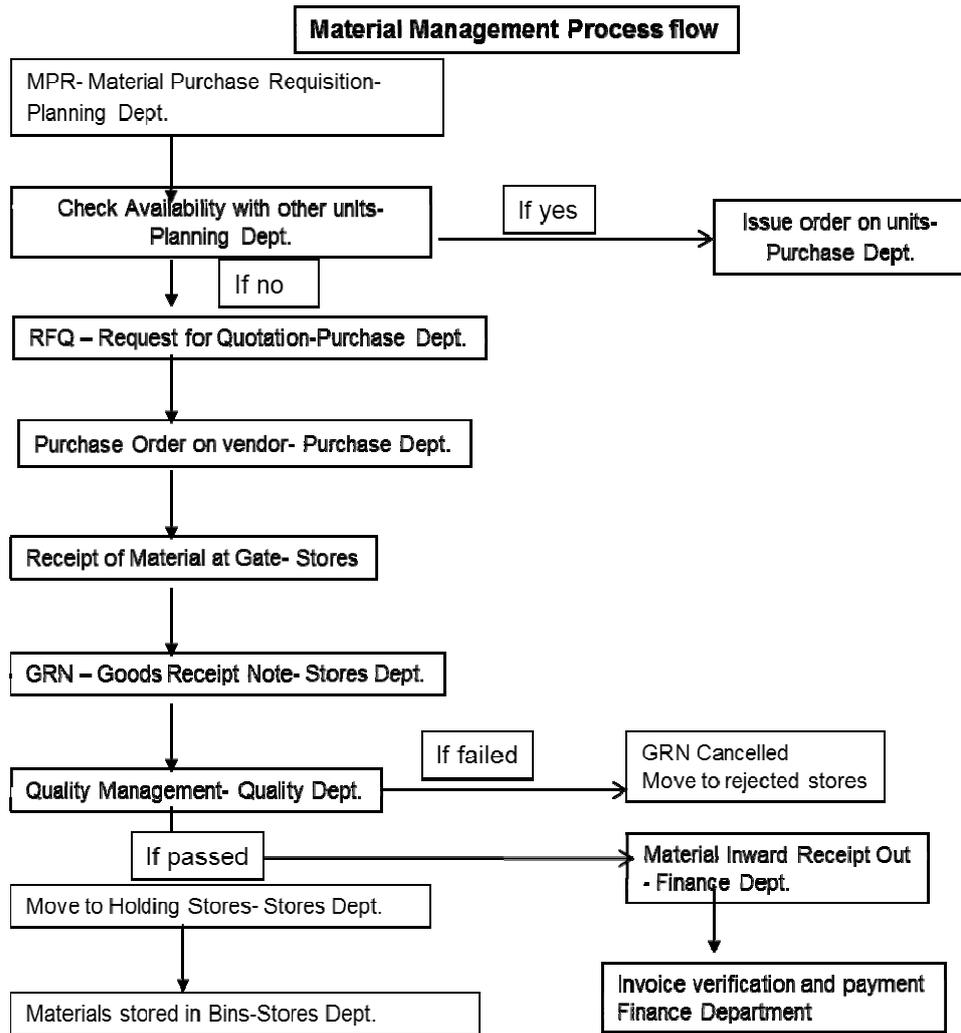
Year	2010-11	2011-12	2012-13	2013-14
Raw material & Components	553.94	656.74	624.40	439.10
Stores and Spares	27.16	26.67	23.31	22.59
Work in progress	472.10	604.97	730.29	579.29
Finished Goods	444.39	739.59	680.45	737.70
Others	391.32	394.44	397.75	373.42
Total	1888.91	2422.41	2456.20	2152.10
Inventory of raw material in terms of months' consumption	4.01	4.27	4.35	3.26
Inventory of Finished Goods in terms of months turnover	2.01	3.26	2.91	3.04

The Company had higher finished goods inventory of ₹737.70 crore at the end of 2013-14. However, the overall inventory position came down by ₹304.10 crore as at March 2014 compared to previous year mainly due to reduction in inventory of raw materials and work in progress.

8.1.2.7 Computerisation of Procurement and Inventory activities

The Company has adopted SAP for Sales and Distribution, Production & Planning, Materials Management, Finance and Controlling, Quality Management, Payroll and Human resources. The process flow of Material Management module for initiating procurement activity to accounting of received stores in SAP is furnished in **Chart-30**:

Chart-30



SAP captures the procurement and material transactions in Material management module and simultaneously captures financial entries, like advance payments to vendor, liability to vendor, final payments to vendor, etc. in Financial Accounting & Controlling(FICO) module. Audit observations relating to deficiencies in SAP is included in **paras 8.1.3.4, 8.1.3.6, 8.1.4.1, 8.1.4.4, 8.1.5.4 and 8.1.5.5.**

The Company has also adopted Supplier Relationship Management (SRM) add-on module of SAP covering e-procurement functions like tendering (all types of tenders viz., Single, Proprietary, Limited and Open tenders), receipt of bids, short listing of bids and reverse auctions. Audit observations relating to deficiencies in SRM module is included in **paras 8.1.6.1 to 8.1.6.3.**

8.1.3 Procurement System and Procedure

Audit Objective: To examine whether policy and procedures of the Company for procurement are well defined and updated periodically and framed in compliance with Statutory/Government guidelines;

8.1.3.1 Post-tender negotiations held in deviation to CVC guidelines and Purchase Manual

As per the CVC guidelines (March 2007), post-tender negotiations with L-1 should be held only in exceptional situations as it could often be a source of corruption. The Purchase Manual of the Company also stipulates that negotiations with L-1 should be an exception and held only in the case of proprietary items, items with limited source of supply and for item where there is a suspicion of a cartel formation. The Purchase Manual also specifies that the justification and details of such negotiations are duly recorded and documented without loss of time and convincing reasons are recorded while recommending for negotiations. Negotiations are to be minuted and signed by all the members of the negotiation committee along with bidders with schedule of delivery.

Audit observed that the Company resorted to negotiations in case of 717 POs (59 per cent) out of 1217¹⁶⁸ POs reviewed. Exceptional circumstances warranting such negotiations were not recorded.

Management in its reply stated (December 2013) that CVC guidelines did not bar price negotiations in totality. Negotiations were conducted to obtain best competitive price particularly with bidders where possibility of cartel formation among the vendors was suspected.

Audit observed that negotiations were held in more than 50 per cent of the POs placed indicating that negotiations were held as a practice and not as an exception. Further, the reply was silent regarding non-recording of exceptional circumstances warranting such negotiations.

8.1.3.2 Bank Guarantee amount not in accordance with CVC guidelines

CVC guidelines (February 2011) stipulate that Bank Guarantee (BGs) for an amount equivalent to at least 110 per cent of advance amount is to be obtained to ensure recovery of interest and principal in the event of default. Audit observed that the Purchase Manual stipulated acceptance of BGs equivalent to advance amount which was being followed by the Company.

Management stated (December 2013) in reply that due care was taken to protect Company's interest by stipulating payment of only interest bearing advance with acceptance of BGs for an equivalent amount (100 per cent).

Reply is not factual as the Company had made payment of interest free advances in three¹⁶⁹ cases against the BG for equivalent amount. The reply has to be viewed in the background of provision in the Purchase Manual which clearly stipulated that advance payment was to be interest bearing as per CVC guidelines. Moreover, CVC guidelines do not distinguish between interest bearing and interest free advance. Thus, accepting of BGs equivalent to

¹⁶⁸ excluding 360 STOs/internal POs out sample of 1577 POs

¹⁶⁹ ₹0.11 crore each in respect of POs 4580067427, 4580067428 and ₹0.16 crore in respect of POs 4580070003

amount of advance was not in accordance with CVC guidelines and did not protect the interests of the Company.

Audit further observed that there was no monitoring of bank guarantee as detailed below:

- a) CVC guidelines (December 2007) stipulate that in the organisation/unit, one officer should be specifically designated with responsibility for verification, timely renewal and timely encashment of BGs. However, receipt and acceptance of BGs in the Company was being handled by multiple departments and no officer was designated for verification, timely renewal and encashment of BGs as stipulated in the CVC guidelines.
- b) CVC guidelines also stipulate that it should be insisted upon the contractors, suppliers, *etc.*, that BGs to be submitted by them should be sent to the organisation directly by the issuing bank and in exceptional cases where the BGs are received through the contractors, suppliers, *etc.*, the issuing bank should be requested to immediately send an unstamped duplicate copy of the BG to compare with the original BG and confirm that it was in order. While the BG register maintained by the Company contains Name of the vendor, PO reference, BG reference, bank reference, amount, date of expiry, date of sending for confirmation and date of receipt of confirmation, details such as mode of receipt, dates on which BGs were received and purpose for which accepted were not being entered in the BG register. Mode of receipt was required to comply with CVC guidelines, the date of receipt was to ensure that the BG was received before the payment of advance to protect Company's interests and the purpose was to ensure that the relevant BG only was returned after completion of the contract in cases where multiple BGs were received from the same vendor. Audit further observed that though SAP had facility to capture and monitor the transactions relating to BGs, the Company had not utilized it.

Absence of above monitoring mechanism has the inherent risk of non-encashment of BG in event of non-performance by vendors, holding expired BGs due to non-renewal in time, *etc.*, thus exposing the Company to risk of loss.

Management stated (December 2013) in reply that instructions would be issued to streamline the system of monitoring of BGs.

8.1.3.3 Documentation of Purchase Records not in accordance with CVC guidelines

CVC guidelines (January 2002) stipulate that proper documentation should be maintained for all the activities relating to procurement. The Purchase Manual of the Company specifies that every PO file should be page numbered. A test check of 1217 POs revealed the deficiencies like non-availability of copy of Material Purchase Request (MPR), noting, correspondence with vendors, proprietary certificate *etc.*, in the PO files. It was also observed that date

indicated in the ERP system was different from actual date of approval and issue of POs.

Management stated (December 2013) in reply that necessary instructions for proper documentation would be issued.

Audit observed (August 2015) that the Management issued (July 2014) suitable instructions for complying with the CVC guidelines regarding BG and documentation of purchase records.

8.1.3.4 Vendor Management not in accordance with Purchase Manual

The Purchase Manual envisages development of two or more sources to reduce dependency on single source. The Company also formed (2007) a Vendor Development and Sourcing (VDS) Cell to explore development of alternate sources. As brought out in **para 8.1.2.7**, SRM module of SAP was installed by the Company in March 2009 for implementation of e-procurement in phased manner. Accordingly, threshold limit for procurement through e-procurement was fixed initially at ₹50 lakh (June 2007) and was gradually lowered to ₹10 lakh in August 2009, ₹5 lakh in November 2011 and ₹1 lakh in July 2012. Audit observed that tendering activities are carried out outside the SAP either manually or through SRM module. Due to absence of inter-face between SRM and SAP, SAP does not have data relating to tendering activities like date of hosting of Notice inviting Tender (NIT) *i.e.*, date of publishing, submission date of bid, date of opening of bid, comparative statement, short listing of vendor, *etc.* Thus, due to non-availability of data in the system relating to tendering activities, the Company could not adhere to the following provisions of the Purchase Manual:

- i. As per the Purchase Manual, Approved Vendor List (AVL) was classified 'category wise' for various categories, such as Fabrication, Machining, Assembly, Raw Materials, Castings and Forgings, Hardware, Electrical Hydraulic Cylinders, Rubber items, Hoses, *etc.*. The Purchase Manual prescribes the minimum number of vendors¹⁷⁰ to be contacted on the basis of value of Purchase proposals. Audit review revealed that due to non-maintenance of item or part number-wise vendor data, the Company could not identify the vendors dealing with the material required from the Company's Vendor database and hence, could not adhere to the minimum number of vendors to be contacted in respect 100 POs out of 376 POs test checked pertaining to Earth Moving division. Further, a detailed review of 32 POs by Audit revealed that all the vendors to whom NIT was sent did not respond and in 13 cases, only one offer was received which was due to the fact that the vendors were not dealing with the material specified in the NIT.
- ii. In absence of item or part number-wise vendor data, the vendors to whom the enquiries were to be sent were being identified manually in

¹⁷⁰Four vendors for Purchase proposals upto ₹5000, six vendors for Purchase proposals above ₹5000 but below ₹25000, eight vendors for Purchase proposals above ₹25000 but below ₹ one lakh, 10 vendors for Purchase proposals above ₹ one lakh but below ₹10 lakh and 12 vendors for Purchase proposals above ₹10 lakh.

respect of both conventional tendering and tendering through SRM system.

Management stated (December 2013) in reply that

- a) compilation of part number-wise vendor data was under consideration and
- b) procedures laid down in manual were always followed strictly and in exceptional cases, approval of the competent authority was obtained indicating the reasons.

However, part number wise AVL was yet to be finalized (August 2015) and no specific reasons for non-adherence to the minimum number were recorded in purchase proposals reviewed in Audit.

- iii. The Purchase Manual provides that the names of vendors not responding against the enquiries for more than five times or two years, whichever was earlier, should be removed from AVL. However, no such analysis was carried out defeating the purpose of the manual provisions which would have been a deterrent to the vendors who do not regularly participate in tenders.

Management stated (December 2013) that efforts would be made to develop a data base on vendors who have failed to respond to Company's tenders to enable removal of such vendors as stipulated in the Manual.

- iv. Audit observed that out of 1217 sampled POs analysed in audit, 223 POs (18 *per cent*) were single tenders. The Company developed 288 vendors during the review period but orders were placed only on 151 vendors. Audit could not verify whether the developed vendors were also included for sending the purchase enquiries to ensure better competition as well as reducing the dependency on single tenders as there was no inter-face between SRM and SAP. Due to inadequate development of vendors, Company continued to depend on single/limited sources.

Management stated (December 2013) in reply that in certain business segments like Rail and Metro, the vendor base was dependent on customer approved source and accordingly scope for expansion was limited and further added that efforts were being made to develop vendors.

The fact remains that maintenance of a proper database would have reduced the dependency of the Company on single tenders.

8.1.3.5 Rating of vendors

As per the Purchase Manual, vendor evaluation for rating of the vendors was to be done where more than one source of supply for the same item of material

was available. Seven¹⁷¹ parameters at pre-order stage and post order stage were prescribed in the Purchase Manual. Audit observed that specific methodology for such rating indicating the weightage points to be assigned for each such parameter was not prescribed for evaluation of vendor performance.

Management stated (December 2013) in reply that in compliance of ISO audit requirement, vendor evaluation was being carried out at division level assigning a weightage of 80 *per cent* and 20 *per cent* to quality and delivery respectively.

Fact remains that manual provisions were not being complied with and as against seven parameters, only two were considered by the Company. Audit further observed on a test check of evaluation of five¹⁷² vendors done during 2012-13 and 2013-14 by the Company that vendors were assessed for one parameter *viz.* quality only and not for parameter relating to delivery.

8.1.3.6 Duplication of vendors in approved list

The Company maintains Vendor Master containing address, Tax information, Bank details, Accounting Information, Order currency, Payment terms, Vendor pricing scheme, Partner details, *etc.*, in SAP. Addition and deletion of vendors to the master were made by the authorized officials. Vendor master consists of five categories of vendors, *viz.*

- Approved Vendors (70 series¹⁷³);
- Vendors recommended by Vendor development Cell for Project requirement (76 series);
- Vendors recommended by Divisional Purchase groups for Project requirement (77 series);
- Foreign Vendors (80 and 90 series); and
- Vendors for Non-Project requirement (60 series).

On an analysis of the data in Vendor Master, Audit observed that 22 vendors were repeated in same series (Nine in 70 series and 13 in 77 series) and seven vendors were repeated in two different series (three vendors in 70 series and 76 series and four vendors were repeated in 70 series and 77 series) resulting in duplication of vendors. Thus, SAP was not configured to prevent creation of duplication of vendors.

Management stated (December 2013) that multiple vendor codes were frozen across the Company and creation of Vendor master was centralized at Corporate Quality Department to avoid creating of multiple vendor codes.

¹⁷¹ Pre-order stage for participation in tender and post-order stage for Quality, order execution, price, delivery, after-sales service and general

¹⁷² M/s Engineering Steel (701288), Sri Ramanuja Industries (701978), Steel Cast Limited(702000), Trident Fabrications (702081) and ArniMech Product (702226).

¹⁷³ Vendor Code is a multi-digit number and the first two digits of the Vendor Code indicate the category to which the Vendor belongs.

Reply of the Company was not correct as a test check of additions to Vendor Master by audit revealed that users from other departments other than Corporate Quality Department continued to create the vendors in the system whereby the same vendor was assigned different vendor codes by different departments. Duplication of vendors could result in continuation of the vendor in the database despite being blacklisted and management of POs placed on the vendor would be difficult since different divisions would be using different vendor codes though the vendor would be the same. Further, duplication in vendor list indicated lack of internal controls which need to be addressed on 'Top Priority' by the Management.

8.1.4 Contract Management

Audit Objective: To ensure that the purchase procedure is adhered to

Purchase Manual stipulates ensuring timely delivery, inspection and acceptance of material and payment/levy of liquidated damages.

Audit observations relating to non-adherence of purchase procedure from placement of POs to receipt of material and payment to vendors are given below:

8.1.4.1 Non-adherence to prescribed time schedule in procurement process, non-supply and delayed supply of materials

Audit, in order to assess the efficiency of procurement process with reference to the prescribed time schedule indicated in the Purchase Manual, reviewed the time taken at various stages of procurement activity for selected 1217 external POs and observed that:

- (i) The time taken for floating of tenders from the date of raising of Material Purchase Requisitions (MPRs) was more than 30 days in respect of 339 sampled POs as against prescribed time limit of 10 days.
- (ii) Overall time taken for conversion of MPRs to Purchase Order was more than 6 months in respect of 289 sample POs as against prescribed time limit of 90 days for Open Tender and 60 days for Limited Tender from the date of approval of MPRs
- (iii) The MPRs created for initiating procurement activity inter alia included 'expected delivery date' by which materials were required to be made available to the intending department. On review of 3777 MPRs issued during 2010-11 to 2012-13, it was observed that in respect of 2352 MPRs, POs were issued after the "expected delivery date" specified in MPR indicating that procurement of material was delayed at the time of issue of PO itself.

Audit observed that there was no provision in the system to generate Management Information System (MIS) Reports required to monitor compliance to time schedules prescribed in Purchase Manual. Non-finalisation

of tenders within the time stipulated in the Purchase Manual result in delay in procurement of the material and consequently affects the production schedule besides delay in supply of the finished product to the customer.

Management stated (December 2013) in reply that:

- the delay in conversion of MPRs to POs was due to change in production plan, short closure, delay in release of POs pending receipt of confirmed customer orders;
- original date of MPR is retained irrespective of actual developments and audit observation was noted for necessary corrective action;
- delivery schedule indicated in MPR was only tentative and actual requirement was based on customer's delivery schedule, availability of stock and supply lead time.

Reply has to be viewed with reference to the fact that

- The delay in receipt of materials results in delayed supplies to customers and consequently levy of Liquidated Damages (LD) by customers. As SAP was unable to link PO to a customer order, impact due to delayed placement of POs on the execution of customer orders could not be ascertained. However, delayed procurement processes by the Company resulted in delayed supplies and is corroborated by the fact that the Company has already incurred LD of ₹18.29 crore in 2010-11, ₹27.18 crore in 2011-12, ₹7.20 crore in 2012-13 and ₹6.96 crore in 2013-14.
- MPR was the basic document required by purchase department for initiating procurement action and the Purchase Manual stipulates that the quantity and delivery schedule should be suitably linked to the production provisioning programme. However, the quantity and delivery schedule was not linked to the production provisioning programme. Audit observed that the Company converted 609 MPRs into POs but the quantity ordered as per the PO was less than the quantity indicated in the MPR. Though the MPRs were converted to POs partially, the intending divisions did not pursue for the procurement of the balance quantity and these MPRs remained open for the remaining quantity for which order was yet to be placed. Non-closure of MPRs after placing of POs could result in initiating procurement action without the requirement and consequent blocking of inventory as well as funds. Further, non-procurement of full quantity as per MPR indicated that the actual requirement of material was not considered while raising MPRs.

8.1.4.2 Non-clearing of advances to vendors contrary to provisions of Purchase Manual

As per the Purchase Manual, the advance payments needed to be generally discouraged except in specific cases. CVC guidelines (April 2007) also stipulate the same. Audit extracted details of pending advances as at the end of 31 March 2015 from SAP and age-wise analysis is shown in the **Table-54** below:

Table-54 Pending Vendor Advances*(₹ in crore)*

Year	Advance with PO	Advance for other activities	Total
2007-08	0.56	0.03	0.59
2008-09	0.28	1.30	1.58
2009-10	0.26	-0.13	0.13
2010-11	2.48	3.93	6.41
2011-12	36.81	0.97	37.78
2012-13	7.89	0.29	8.18
2013-14	14.91	0.75	15.66
2014-15	48.13	9.53	57.66
Total	111.32	16.67	127.99

Audit observed that unadjusted balances were remaining outstanding for more than five years. On further analysis it was revealed that payments made against proforma invoices, ad-hoc payments against pending POs, payments made through Letter of Credit *etc.* were included under advances. Adjustments against materials received against these advances were pending in the system for pairing with corresponding liability. This indicated system weakness leading to lack of monitoring mechanism.

Expeditious action needs to be taken for recovery of the advances before the same are rendered irrecoverable. Any delay in adjustment of advances results in blocking of borrowed funds and consequent increase in finance cost to the Company.

Management assured (December 2013) to review unadjusted advances for necessary corrective action.

Audit observed (August 2015) that unadjusted advances pertaining to period prior to 2012-13 reduced from ₹169.54 crore as on March 2013 to ₹54.67 crore as on March 2015 after issue of report.

8.1.4.3 Non-regularisation of advance paid to M/s Speck Systems

Audit observed on further review of the pending advances that an advance payment of ₹3.45 crore (February 2012) paid to M/s. Speck Systems, Hyderabad (SS) was pending adjustment (March 2015). The advance was paid based on Letter Of Intent (LOI) issued by the Company for supply of 43 nos. of Super Structures at total price of ₹38.70 crore by February/March 2012 in anticipation of orders from Ministry of Defence (MoD) for manufacture of Command Post Vehicles. Audit observed that 14 Super Structures were supplied (February 2012) by SS and the anticipated contract with MoD did not materialise (March 2015). The Company had neither regularized the supply nor adjusted the advance paid to the supplier.

Management stated(December 2013) in reply that part payment was made with the approval of competent authority and accounting of material would be made on regularization of POs. Management further stated (June 2014) that the expected order from MoD did not materialize and hence, no purchase order was placed since it creates legally enforceable contract between the buyer and seller.

The reply is not tenable since placement of PO and payment of advance in anticipation of order from MoD was not in order. Further, the material received was not accounted in the books of accounts of the Company even as on March 2015 though the same was lying with the Company since February 2012.

8.1.4.4 Lack of validation checks in SAP relating to Purchase activity

Input control procedure ensures that all data is recorded completely, accurately and without duplication in the system. Validation checks ensure that the data entered into the system was valid. However, Auditobserved that due to absence of proper input control and validation checks, the data was incomplete and unreliable.

As per Flow Chart given in **para 8.1.2.7**, after receipt of material by Company, the inspection of materials was to be carried out before acceptance and creation of liability for making payment to vendor. Before completion of inspection, the material should not be accepted and corresponding liability towards the vendor should not be created in the system. Due to lack of such validation controls, out of 74203 line items of sample POs reviewed, it was noticed that liability was created in 1611 line items before completion of inspection and acceptance of material. Though the Management accepted (October 2009) this deficiency and agreed to address the issue in future, validation checks were yet to be put in place (March 2015).

Management stated (December 2013) in reply that as per sequence activities in ERP, creation of liability was only after inspection, payment to vendors occurs only on creation of liability and there were no payments made prior to quality clearance.

The reply of the Company was with reference to payment after quality clearance and did not address the issue of creation of liability before quality clearance and necessary validation controls needs to be in place for capturing events as per approved sequence.

8.1.5 Inventory Management

Audit Objective:To examine and assess the effectiveness of the Inventory management system.

8.1.5.1 Introduction

During the period of review we observed that the inventory holding of the Company increased from ₹1888.90 crore in 2010-11 to ₹2456.20 crore in

2012-13 (30 per cent) while the turnover increased marginally from ₹2652.24 crore to ₹2808.81 crore (5.90 per cent). High level of inventory holding lead to blocking of working capital. The finance cost on working capital almost doubled from ₹48.01 crore in 2010-11 to ₹82.09 crore in 2012-13. This had an impact on profitability of the Company.

Management stated (December 2013) in reply that efforts were being made to reduce finance cost through improved collections as well as reduction in inventory by the end of financial year 2013-14. It also stated that orders have been issued to liquidate old finished goods inventory after judicious cost evaluation and to curtail procurement to limit the stock to two months' consumption in respect of indigenous material.

It was observed in audit that the inventory holding of the Company reduced by ₹304.10 crore to ₹2152.10 crore in 2013-14 and further to ₹1921.20 crore as on 31 March 2015. Similarly, the finance cost also declined by ₹19.64 crore to ₹62.45 crore in 2013-14 and further to ₹30.62 crore in 2014-15.

Audit Committee is a sub-committee of the Board of Directors. This committee has to approve all financial statements before the same are submitted to the Board of Directors for approval. Though the inventory position showed increasing trend affecting the working results of the Company during the review period 2010-13, Audit committee reviewed and discussed the inventory position once in May 2010. The terms of reference of the committee did not include specific directions for periodical review of inventory.

On the recommendations of audit, the Company also included (February 2014) review of inventory in the terms of reference of the Audit Committee.

Audit reviewed the inventory management system in place in the Company. Audit findings are discussed in the following paragraphs:

8.1.5.2 Non fixing of inventory norms as prescribed in the Purchase Manual

Purchase Manual envisaged fixing of inventory norms for each type of inventory from time to time which was to be treated as the upper limit. However, such inventory holding limits were not fixed by the Company.

Management did not attribute any specific reasons for the same in their reply (December 2013).

In the absence of inventory norms as envisaged in the Purchase Manual, Audit analysed the inventory levels of the Company with reference to parameters specified in Memorandum of Understanding (MoU) entered annually with MoD for evaluating the performance of the Company. The details of parameters specified in the MoU and actual achievements there against are furnished in the **Table-55** below:

Table-55: Target and achievement of Inventory holdings

(₹ in crore)

Year	MoU Criteria	Value of Production ¹⁷⁴ (VoP)	Inventory at the end of the year	Inventory in terms of days of VoP	Achievement vis-à-vis MoU Criteria
2010-11	114 days of VoP	3,795.07	1,888.91	179	Inventory was 179 days against 114 days specified in the MoU
2011-12	4 per cent reduction in Inventory over 2010-11	4,077.19	2,422.41	214	Inventory increased by 28 per cent instead of reduction
2012-13	4 per cent reduction in Inventory over 2011-12 (VoP days)	3,359.69	2,456.20	263	Inventory in terms of VoP days was 263 days as against 205 days
2013-14	6 Months of VoP	3,165.14	2,152.10	245	Inventory in terms of VoP months was 8 months' as against 6 months'

As could be seen from the above Table, the Company did not achieve the MoU parameters in all the four years (2010-11 to 2013-14) and the inventory level remained to be high.

Management in its reply (December 2013) stated that recession in market particularly in mining and construction business led to piling up of finished goods inventory and revision of production plans which in turn led to piling up of raw material inventory resulting in under performance.

The reply indicates that procurement was not revised with revision of production plans resulting in accumulation of inventory and non-achievement of targets set in MoU with MoD. Instances which led to accumulation of inventory are discussed in subsequent paras.

A. Trend in inventory of Raw material and Components

Inventory of Raw material and Components decreased from 4.01 months' consumption in 2010-11 to 3.65 months' consumption in 2014-15 as shown in **Table-56** below:

Table-56: Raw material holding

(₹ in crore)

Particulars	2010-11	2011-12	2012-13	2013-14	2014-15
Stock of Raw material and components	553.94	656.74	624.40	439.10	418.04
Material consumed	1,658.81	1,846.33	1,724.27	1,617.34	1373.68
Inventory of raw material in terms of months' consumption	4.01	4.27	4.35	3.26	3.65

¹⁷⁴ Gross value of production which measures the actual production output

Management in its reply stated (December 2013) that action was being taken to curtail the procurement so as to limit the stock equivalent to two months consumption in respect of indigenous material which would reduce inventory during the FY 2013-14.

Efforts of the Management did not yield desired results as inventory continued to be more than targeted level of two months of consumption. However, as could be seen from the above table, inventory of Raw material and components reduced to ₹439.10 crore in 2013-14 and further to ₹418.04 crore in 2014-15 indicating curtailment of procurement activity after review by audit.

Audit also observed that in case of procurement for Armoured Recovery Vehicles, the Company adopted good practice by putting on hold the supplies from indigenous vendor pending reassignment of contract with foreign vendor though formal POs were placed to avoid blocking of inventory.

B. Finished Goods inventory levels

The Finished Goods Inventory (FGI) of increased by 66 per cent from ₹444.39 crore in 2010-11 to ₹ 737.70 in 2013-14. FGI in terms of months' turnover was above two months' in all the years during the review period as shown in the **Table-57** below:

Table-57: Finished Goods holding

(₹ in crore)

Year	2010-11	2011-12	2012-13	2013-14
Finished Goods	444.39	739.59	680.45	737.70
Turnover	2652.24	2726.49	2808.91	2911.51
Inventory of FGI in terms of months turnover	2.01	3.26	2.91	3.04
Percentage of Finished goods to total inventory	23.53	30.53	27.70	34.28

Management attributed (December 2013) recession in market, severe competition and dumping of price by international players, obsolescence and non-moving of projects/models particularly in mining and construction business for accumulation of FGI.

The Company operates in diversified sectors with different market conditions. The production plan varies between 'made to order' and 'made to shelf' categories. Non-fixation of specific inventory norms as envisaged in the manual leads to absence of an effective mechanism for inventory control. The increase in percentage of finished goods to total inventory in 2013-14 was due to conversion of Raw material and work-in-progress into finished goods. Further, though the Company attributed obsolescence and non-moving of projects/models particularly in mining and construction business for accumulation of FGI, no specific identification of the obsolete products was

carried out by the Company and hence, the impact of obsolescence on the FGI could not be verified in Audit.

8.1.5.3 Non-revision of Stores Manual

Stores Manual deals with various functions of stores department and the procedures, documentation and accounting to be followed in receipt, stocking, maintenance and drawl of various items of inventory. The stores manual issued in May 1990 was not updated since then. SAP covering stores functions was implemented in 2007. After implementation of SAP, all stores related data and processes were captured and maintained online. As a result, the process of maintaining bin cards, raising of MPRS, receipt and issue vouchers manually was discontinued. These changes were not reflected in the Stores Manual resulting in the Stores Manual not being in sync with SAP.

Management in its reply stated (December 2013) that action was being initiated for revision of the Stores Manual synchronizing with SAP. Management further stated (August 2015) that the Stores Manual was under revision and proposed to implement from January 2016.

8.1.5.4 Accounting of material prior to receipt contrary to provisions of Purchase Manual

In on-line system transactions are captured as it happens. Material received by the Company at the gate is moved to Stores Department for raising of Good Receipt Note (GRN). After GRN, Inspection is conducted by Quality department and cleared materials are accounted as Receipt.

SAP allowed posting of the transactions relating to two months at any given point of time *i.e.* previous month and current month. Due to keeping open two months period, the system accepts transaction ante-dated up to two months. This defeated one of the objectives of 'on-line access to the information'.

Due to above system provisions, on a review of 74203 line items related to sample POs placed during 2010-11 to 2012-13, Audit observed that in respect of 9047 line items, GRN date captured was prior to date of receipt at gate.

Management stated (December 2013) in reply GRN entry date follows date of receipt at gate, sequence was system driven and controls exist in the system as per the posting date.

The reply of the Management has to be viewed in the following context:

- Gate entry date was the system date (*i.e.* date on which it was entered in the system) whereas GRN date was entered by the user of the system. Audit verification in the sample cases revealed exceptions to process flow due to keeping periods open for two months. Bringing the system on-line by managing periods with calendar months would avoid above discrepancies.

- In spite of pointing out delayed opening of periods in SAP and its impact in earlier audit report¹⁷⁵, the Company continued with same practice.
- Keeping two months open during closure of accounts would lead to recognizing sales of incomplete equipment where materials were received and accounted subsequent to closure of financial year undermining the internal controls as observed in earlier report¹⁷⁶. Hence, the controls need to be reviewed to avoid recurrence of the same.

8.1.5.5 *Non-confirmation of material issued to sub-contractors contrary to provisions of Purchase Manual*

Production divisions of the Company are allowed to outsource/sub-contract activities with due approval from Corporate Office considering the capacity constraints. As per the provisions of Purchase Manual, raw material issued against sub-contract orders are to be regulated in accordance with the delivery schedule and periodical confirmation/reconciliation are to be obtained by the sub-contract cell.

Material valued ₹10.53 crore were lying with sub-contractors (March 2014) as indicated in the **Table-58** below:

Table-58: Value of material lying with sub-contractors

(₹in crore)

Division	Material with sub-contractors as at end of March	
	2013	2014
Bangalore	9.21	3.12
Palakkad	0.15	0.05
KGF Complex	4.03	3.33
Mysore Complex	5.72	4.03
Total	19.11	10.53

SAP was not configured to generate year-wise breakup of the materials lying with the sub-contractors. In the absence of year-wise breakup of the materials, the details of period since when the materials were lying with the sub-contractors, value of materials lying and the impact of non-returning of the materials by the sub-contractors could not be ensured in Audit.

Management stated (December 2013) in reply that divisions were advised to collect confirmation of balance for material lying with third parties.

Though the material lying with sub-contractors reduced from ₹19.11 crore as at the end of March 2013 to ₹10.53 crore as at end of March 2014 after being

¹⁷⁵ Report No.10 of 2010 Chapter IV – Information Technology Audit of IT systems in selected Public Sector Undertakings .

¹⁷⁶ Report No. CA 24 of 2009-10 – Chapter VI - Deliberate violation of internal procedures for recognition of sales

pointed by audit, process of obtaining confirmation of balances needs to be streamlined and consistently followed.

8.1.6 E-procurement system

Audit Objective: To examine and map the procedure followed in e-procurement to ensure that they are documented and are in consonance with Purchase Manual, CVC guidelines and STQC requirements.

8.1.6.1 Failure to conduct third party audit as stipulated in CVC Guidelines

Audit reviewed the SRM module to ascertain its efficacy and to assess whether it was introduced for a competitive and transparent procurement system. CVC guidelines (April 2010) on e-tendering solutions stipulated that a comprehensive third party audit was to be conducted to ensure compliance to Information Technology Act and Government of India also stipulated to get e-procurement system mandatorily tested and audited by Standardisation Testing and Quality Certification (STQC) Directorate under Department of Electronics. However, no third party audit was conducted to ensure compliance to guidelines in this regard.

Management replied (December 2013) that third party audit was planned to be carried out after updation of SRM version. Accordingly third party audit was completed and report received (January 2015) was under examination (August 2015).

8.1.6.2 Lack of security features

E-bidding is the electronic equivalent of traditional manual tendering process. In e-Bidding, the bid invitations (tenders) are published by Company to bidders online and the bidders can submit their bids online till the submission deadline. The bids submitted by the bidders are required to be available for display to the authorized persons only after the opening date and time for further processing. The details of e-bidding carried out by the Company during the period 2010-11 to 2013-14 are indicated in **Table-59** below:

Table-59: Details of e-bidding carried out by the company

(in Numbers)

Sl. No.	Particulars	2010-11	2011-12	2012-13	2013-14
1	e-bidding tenders	8,577	13,790	12,426	12,113
2.	Local vendors	8,572	13,785	12,418	12,107
3	Foreign vendor	5	5	8	6

It could be seen from the above that only 24 foreign vendors participated in the e-bidding carried out by the Company during four years period 2010-14. The Company reported (December 2013) that due to lack of security features in SRM, foreign vendors were hesitant to share their technical documents in e-

mode leading to poor participation of foreign vendors under 'Import Tender' category.

Management stated (December 2013) in reply that apprehensions were not limited only to the Company alone as the security features were inadequate. Procedures for obtaining digital signature were cumbersome involving certification of the documents of the vendors by the Embassy. Hence, these procedures deter the foreign vendors from participating in E-tenders and efforts were being made to improve foreign vendor participation.

The Company should ensure security of the e-procurement systems for better participation by the foreign vendors in terms of CVC circular (January 2012).

Management further stated (August 2015) that upgradation and integration of present SAP and SRM was being taken up, which would address the security concerns of foreign vendor, resulting in increased participation.

8.1.6.3 Decline in reverse auction process

E-Auction, which is also called as Reverse auction, is an electronic auction where suppliers bid and compete against each other online in real time for purchase orders/contracts for products/services against a published specification and pre-established criteria. E-Auction enables online, real time dynamic price negotiation. The process of reverse auction is very much transparent as bidders get to know their status dynamically during the course of the reverse auction. Reverse Auctions are normally conducted for items where the specifications are well defined, where there are at least three vendors and where the current market trend indicates that there is scope for competitive bidding. Audit observed that the reverse auction in the Company declined from 120 to 24 during the period 2010-13 due to which the benefits of operational efficiency and cost effectiveness/reduction were forgone.

Management in its reply stated (December 2013) that reverse auctions work effectively when there is decreasing trend of prices for raw materials, power, fuel, *etc.* Due to the increasing trend of prices in the market over the last three years, reverse auction was not found as an effective tool for getting competitive prices.

The reply of the Company that reverse auctions work effectively when there was decreasing trend of prices for raw materials, power, fuel, *etc.*, could not be verified since the Company did not furnish any data to support the same. As the reverse auction minimizes human involvement, offers greater insight into the current market pricing, reduces time spent in arriving at final prices and gives equal opportunity to all short-listed suppliers to be more competitive, the Company should strive to increase the reverse auctions.

Conclusion

Post tender negotiations resorted to by the Company and amount of Bank Guarantees obtained for advances paid were in deviation to the Purchase Manual and CVC guidelines. Documentation of all the activities relating to

procurement was inadequate. Vendor management was not foolproof due to non-availability of data regarding all the tenders in the system and Vendor list contained duplicates indicating lack of sufficient controls in SAP. The procedure prescribed in the Purchase manual was not followed for evaluation of vendors. Stores manual was not updated for last 25 years, SRM system of the Company lacked confidence of foreign vendors due to inadequate security features. No integration of data between SAP and SRM was provided.

Recommendations

- 1) Post tender negotiations may be restricted to exceptional cases in line with Purchase Manual/CVC guidelines with proper documentation.
- 2) SRM system may be upgraded to include data of all the tenders so that all the reports necessary for Vendor management as stipulated in the Purchase Manual could be generated and provisions of Purchase Manual complied with.
- 3) Vendor evaluation procedure may be carried out as per Purchase Manual.
- 4) Internal controls in SAP may be enhanced so as to avoid duplication of vendors.
- 5) Outstanding advances may be reviewed and cleared without further loss of time before the advances are rendered irrecoverable to protect Company's interests.
- 6) Inventory holding norms needs to be fixed as envisaged in purchase manual in order to maintain optimum level of inventory.
- 7) Stores manual may be updated periodically.
- 8) Adequate internal control system may be put in place for material issued to sub-contractors in the interest of the Company.
- 9) Participation of e-tendering system may be improved for including foreign vendors by enhancing security features and facilitating digital signature.
- 10) Reverse auction process may be conducted for getting better competition.

BEML LIMITED

8.2 Loss of ₹4.90 crore due to non-synchronisation of delivery schedules in back to back contract.

Failure of the Company to take up revision of delivery schedule with the customer while revising the delivery schedule of the supplier resulted in loss of Liquidated Damages (LD) of ₹4.90 crore.

BEML Limited (Company) received a purchase order (PO) from Northern Coalfields Limited¹⁷⁷ (NCL) for supply of two Rope shovels¹⁷⁸ along with accessories and consumables on FOR destination basis to be delivered within 15 months and 15 days from the date of placement of order *i.e.*, by 15 September 2010 at a total value of ₹47.48 crore. Erection and commissioning was to be completed by BEML within 60 days of the receipt of complete equipment at site. As per the terms of the PO, delay in delivery of the equipment attracted liquidated damages (LD) of 0.5 *per cent* per week of the price of any stores not supplied subject to a maximum of 10 *per cent* of the contract value and delay in erection/commissioning of the equipment attracted LD of 0.5 *per cent* per week of the landed price of equipment subject to a maximum of 5 *per cent* of the contract value.

BEML placed a PO (August 2009) on M/s. Bucyrus International Inc., USA (BII) for supply of two sets of CKDs¹⁷⁹ of Rope Shovels on back to back basis to be delivered by the end of June 2010 on Free On Board (FOB), United Kingdom(UK)/United States America (USA) port. The Company amended (October 2009) the delivery schedule at the request of BII as 40 weeks and 44 weeks from the date of amended POs. As per the amended delivery schedule, BII was to deliver the CKDs by August 2010 and September 2010. Considering the fact that delivery term of BII was FOB UK/USA port and after taking into account the time required for transportation of CKDs from UK/USA port to NCL site, the revised schedule extended beyond the delivery period stipulated by NCL. The Company did not obtain extension of delivery schedule from NCL.

BII supplied the CKDs to M/s. Balmer&Lawrie (Freight forwarder of the Company) on 27 July 2010 and 17 August 2010 after a delay of ten days and four days respectively. However, the CKDs, were received in the Company only on 8 October 2010 and 10 December 2010 and delivered to NCL in December 2010. Erection and commissioning was completed during May 2011 to July 2011. Due to the delay in supply and erection of the rope shovels,

¹⁷⁷NCL , Singrauli, Madhya Pradesh - A subsidiary of Coal India Limited, a Government of India undertaking;

¹⁷⁸ 10 Cum AC Electrical Rope Shovels;

¹⁷⁹ Complete Knock Down of groups and components;

NCL levied LD of ₹3.03 crore towards the belated supply of equipment and ₹1.87 crore for the delay in erection and commissioning of the equipment.

Management in its reply (December 2013) stated that the amended delivery schedules were within the customer's delivery schedules. As the delay in shipment of the consignment was attributable to the forwarder, recovery of LD from M/s. Balmer&Lawrie was under consideration.

Reply is not acceptable since the Company while revising the delivery schedule with the supplier did not simultaneously take up the revision of delivery schedule with the customer which was imperative in back to back contracts. Further, though the Management stated in December 2013 that recovery of LD from M/s. Balmer&Lawrie was under consideration, the Company had not preferred any claim till date (September 2015).

Thus, failure to synchronise the delivery schedule of the supplier with the delivery schedule of the customer resulted in levy of LD of ₹4.90 crore.

8.3 Blocking of funds due to accumulation of Inventory - ₹16.14 crore

Continued procurement of raw materials when the new technology was yet to be proven and production of dumper without matching shovel resulted in blocking of inventory valued ₹16.14 crore.

M/s BEML Limited (the Company) was manufacturing BD-475 Dozers and BH 150E Dumpers. The dozer was used for clearing the bolders/debris in mines and the dumper was used for carrying overburden in mines.

Audit observed that due to continued procurement of raw materials when the new technology was yet to be proved and manufacture of dumper only without matching shovel, inventory valued ₹16.14 crore was blocked as discussed below:

a) BD-475 Dozers

The Company planned production of five numbers of BD 475 model dozer during 2008-09 even though one dozer valued ₹2.39 crore manufactured in 2003-04 was still lying in inventory. In accordance with the production plan, the Company procured raw materials valued ₹4.77 crore (July 2009 to June 2011) and manufactured one dumper during 2008-09 at a total cost of ₹3.39 crore. The Company stopped the production of dozers from 2009-10 but continued with the procurement of raw materials. Both the dozers remained

unsold and were lying in stock (March 2015). Considering obsolescence of the dozers, the Company made provision for ₹4.57 crore towards diminution in value of the dozers (thereby the value of two dozers reduced to ₹1.21 crore). As the Company stopped production of the dozers from 2009-10 due to lack of demand, utilisation of Raw Material¹⁸⁰ valuing ₹3.37 crore and work in progress valuing ₹1.71 crore was un-certain. Continued procurement of raw materials despite two dozers remaining unsold resulted in accumulation of inventory to the extent of ₹6.29¹⁸¹ crore as at March 2015.

Management stated (December 2013) in reply that Company was manufacturing dozers from 1992 under collaboration from M/s Komatsu. In view of withdrawal of collaboration support from M/s Komatsu, development of electronic engine was taken up with M/s Cummins and performance related issues were observed during in-house trials. Management further added that efforts would be made to use unutilised inventory in production of other models and sale as spares to liquidate the same.

Though the Company could not succeed in development of dozer model with electronic engine, continued procurement of raw materials when the new technology was yet to be proved resulted in accumulation of inventory.

b) BH 150E Dumpers

The Company, considering the market potential of BH 150 dump trucks, placed (July - October 2011) orders on M/s General Electric (GE) for design, development, supply and commissioning of one number of 150H Dump truck at a total landed cost of ₹10.20 crore. The production of the dumper was completed (December 2012) at a total cost of ₹9.85 crore. However, the Company did not manufacture the matching shovel required and hence, the dumper manufactured could neither be sold nor deployed for field trials. Due to non-availability of matching shovel, feasibility of sale of dumper is remote and Company continued to hold dumper valued ₹9.85 crore in the finished goods inventory (March 2015).

Management stated (December 2013) in reply that Company could not participate in tender for 150T dumpers in 2007 due to qualification criteria and decision was taken in December 2010 to design and develop a prototype as no technology partner was available.

¹⁸⁰339 items including Bearing, Track Shoe assembly, Seal Ring Assembly, Recoil Spring and bushing Assembly procured between May 2009 to March 2011

¹⁸¹Finished Goods valuing ₹1.21 crore + Raw Materials valuing ₹3.37 crore + Work in progress valuing ₹1.71 crore

Specific reasons for manufacture of only dumper without matching shovel were not stated. The sale of dumper was not certain since matching shovel was not developed and resulted in blocking of ₹9.85 crore in inventory for more than two years.

The matter was referred to Ministry in January 2015 and their reply is awaited (September 2015).



(PARAG PRAKASH)
Director General of Audit
Defence Services

New Delhi
Date: 26 November 2015

Countersigned



(SHASHI KANT SHARMA)
Comptroller and Auditor General of India

New Delhi
Date: 26 November 2015

ANNEXURE-I*(Referred to in Paragraph 1.9)***Position of outstanding ATNs****Ministry of Defence - excluding Ordnance Factory Board****(i) Pending for more than ten years**

Sl.No.	Report No. and Year	Para No.	Subject
1.	No. 2 of 1989	11**	Purchase and licence production of 155mm towed gun system and ammunition
2.	No.12 of 1990	9**	Contract with Bofors for (a) purchase and licence production of 155mm gun system and (b) Counter Trade
3.	No.8 of 1991	10*	Procurement of stores in excess of requirement.
4.		13*	Central Ordnance Depot, Agra.
5.	No.8 of 1993	29*	Import of mountaineering equipment and sports items
6.		31*	Avoidable payment of detention charges
7.	No. 7 of 1997	18**	Management of Defence Land
8.	No. 7 of 1998	32*	Infructuous expenditure on procurement of substandard cylinders
9.	No. 7 of 2001	15**	Procurement of an incomplete equipment
10.	No.7A of 2001	@Entire Report (ATN for 8 out of 42 paras yet to be received even for the 1 st time)	Review of Procurement for OP VIJAY(Army)
11.	No. 6 of 2003	2**	Exploitation of Defence lands
12.		14*	Irregular recruitment of personnel

Sl.No.	Report No. and Year	Para No.	Subject
13.	No. 6 of 2004	3.2*	Recoveries/Savings at the instance of Audit.
14.	No. 6 of 2005	3.2*	Recoveries/savings at the instance of Audit
(ii) Pending more than 5 years upto 10 years			
15.	Report No. 4 of 2007	3.3**	Unauthorised use of Defence assets and public fund for running educational institutes
16.		3.5*	Recoveries/savings at the instance of Audit
17.	Report No. PA 4 of 2008 (Performance Audit)	Chapter I**	Supply Chain Management of General Stores and Clothing in the Army
18.	Report No. CA 17 of 2008-09	2.7*	Non-renewal of lease of land occupied by Army Golf Club
19.		3.4*	Unauthorized use of A-1 Defence land by Army Welfare Education Society
20.		3.5*	Utilisation of Government assets for non-governmental purposes
(iii) Pending more than 3 years upto 5 years			
21.	Report No. 12 of 2010-11	2.1**	Defective import of SMERCH Multi Barrel Rocket Launcher System
22.		3.6*	Recoveries and savings at the instance of Audit
23.		4.1**	Irregular sanction and construction of accommodation for a Golf Club
24.	Report No. 6 of 2010-11 (Performance Audit)	Standalone Report***	Supply Chain Management of Rations in Indian Army
25.	Report No. 14 of 2010-11 (Performance Audit)	Standalone Report*	Canteen Stores Department
26.	Report No. 35 of 2010-11 (Performance Audit)	Standalone Report*	Defence Estates Management

Sl.No.	Report No. and Year	Para No.	Subject
27.	Report No. 11 of 2011-12 (Performance Audit)	Entire Report*	Special report on Adarsh Co-operative Housing Society, Mumbai
28.	Report No.24 of 2011-12	3.1**	Extra expenditure due to acceptance of higher rates
29.		3.11**	Irregular payment to Civil Hired Transport Contractors
30.		3.14*	Recoveries and savings at the instance of Audit
31.		5.2**	Non-completion of bridge after twelve years of sanction
(iv)	Pending upto 3 years		
32.	Report No.16 of 2012-13	2.1*	Loss of revenue on renewal of lease of Government land
33.		2.3*	Loss due to non-levy of licence fee on vehicles entering Cantonment Board Ahmednagar
34.		3.1**	Unauthorised use of defence assets and manpower for the benefit of Army Welfare Education Society
35.	Report No. 18 of 2012-13	Entire Report*	Performance Audit of the Medical Establishments in Defence Services
36.	Report No. 30 of 2013	2.1*	Improper management of Defence land
37.		2.3*	Non introduction of Air Conditioners in Tanks
38.		2.5*	Absence of effective controls resulting in non recovery of outstanding dues
39.		3.1***	Acceptance of sub-standard stores without prior technical inspection from an unregistered and inexperienced firm
40.		3.6***	Unauthorised use of Defence accommodation
41.		3.7*	Recoveries, savings and adjustment in accounts at the instance of Audit

Sl.No.	Report No. and Year	Para No.	Subject
42.		4.4*	Inadmissible payment of escalation charges to the contractors
43.	Report No. 35 of 2014	2.1***	Inordinate delay in indigenisation of TATRA vehicles
44.		2.2***	Procurement of unacceptable equipment valuing ₹27.32 crore
45.		2.3***	Loss of revenue due to unauthorised use of Defence land by United Services Club, Mumbai
46.		2.4***	Irregular construction on Defence leased land
47.		2.5***	Non recovery of overpaid rent for requisitioned land
48.		2.6***	Unfruitful expenditure on payment of bandwidth charges by Canteen Stores Department
49.		3.1***	Nugatory expenditure of ₹88.39 crore in the procurement of Chemical, Biological, Radiological and Nuclear (CBRN) Equipment
50.		3.2*	Extra expenditure of ₹2.33 crore due to failure to accept the tender for procurement of tea within the validity period
51.		3.3***	Loss of revenue due to non collection of metal scrap from Field Firing Range
52.		3.4***	Procurement of defective tyres
53.		3.5***	Over provisioning and uneconomical issue of Batteries by COD Agra
54.		3.6***	Recoveries, savings and adjustment in accounts at the instance of Audit
55.		4.1***	Avoidable expenditure on construction of excess dwelling units

Sl.No.	Report No. and Year	Para No.	Subject
56.		4.2***	Inordinate delay in handing over the clear site to the contractor resulted in avoidable payment of escalation charges
57.		4.3***	Selection of improper site resulted in foreclosure of work after an expenditure of ₹5.49 crore
58.		5.1***	Unauthorised utilization of funds for construction of a Multipurpose Hall
59.		5.2***	Construction of a bridge without sub-soil investigation resulted in loss of ₹0.75 crore
60.		7***	Defence Grants-in-Aid Scheme of Defence Research and Development Organization

* Action Taken Notes examined by Audit but yet to be revised by the Ministry in the light of Audit remarks – 26

** ATNs vetted by Audit but copy of the finalized ATNs awaited from Ministry – 13

*** Action Taken Notes not received even for the first time - 20

@ Part ATN received – 01

ANNEXURE-II

(Refer to Para 2.1.2)

Statement showing the mandated services to be provided by the CBs as per the Section 62 of Cantonments Act 2006

- i. lighting streets and other public places;
- ii. watering streets and other public places;
- iii. cleansing streets, public places and drains, abating nuisances and removing noxious vegetation;
- iv. regulating offensive, dangerous or obnoxious trades, callings and practices;
- v. removing, on the ground of public safety, health or convenience, undesirable obstructions and projections in streets and other public places;
- vi. securing or removing dangerous buildings and places;
- vii. acquiring, maintaining, changing and regulating places for the disposal of the dead;
- viii. constructing, altering and maintaining streets, culverts, bridges, causeways, markets, slaughter- houses, latrines, privies, urinals, drains, drainage works and sewerage works and regulating their use;
- ix. planting and maintaining trees on roadsides and other public places;
- x. providing or arranging for a sufficient supply of potable water, where such supply does not exist, guarding from pollution water used for human consumption, and preventing polluted water from being so used;
- xi. registering births and deaths;
- xii. preventing and checking spread of dangerous diseases; establishing and maintaining a system of public vaccination and inoculation for the said objective;
- xiii. establishing and maintaining or supporting public hospitals, maternity and child welfare centres and dispensaries, and providing public medical relief;
- xiv. establishing and maintaining or assisting primary schools etc..
- xv. rendering assistance in extinguishing fires, and protecting light and property when fire occurs;

- xvi. maintaining and developing the value of property vested in, or entrusted to, the management of the Board;
- xvii. establishing and maintaining civil defence services;
- xviii. preparing and implementing town planning schemes;
- xix. preparing and implementing plans for economic development and social justice;
- xx. naming and numbering of streets and premises;
- xxi. according or refusing permission to erect or re- erect building;
- xxii. organising, promoting or supporting cultural and sports activities;
- xxiii. celebrating Independence Day and Republic Day and incurring expenditure thereon;
- xxiv. fulfilling any other obligation imposed upon it by or under this Act or any other law for the time being in force.

ANNEXURE-III

(Referred to in Paragraph 2.1.2.2)

Authorized and posted strength of manpower of the test checked 17 CBs during the period 2009-10 to 2013-14

Sl. No	Cantonment Board	Position as of 31 March 2010		Position as of 31 March 2011		Position as of 31 March 2012		Position as of 31 March 2013		Position as of 31 March 2014		Percentage
		Authorised	Posted									
1	Lucknow/I	613	525	613	517	613	504	604	488	594	470	79
2	Dehradun/I	453	320	453	318	453	304	453	304	453	292	64
3	Meerut /I	844	730	844	710	843	690	843	668	843	638	76
4	Ramgarh/I	268	239	268	239	268	223	268	212	268	214	80
5	Ahmednagar/II	210	186	209	185	209	182	249	178	209	166	79
6	Barrackpore/II	214	151	214	140	213	137	213	132	213	125	59
7	Clement Town/II	156	136	156	141	156	129	156	115	156	115	67
8	Danapur/II	181	136	179	127	179	130	178	128	179	120	67
9	KhasYol/II.	78	65	77	66	77	64	77	61	75	62	83
10	Pachmarhi/II	112	78	100	80	110	82	114	86	114	105	92
11	Ranikhet/II	352	276	351	261	352	252	352	240	352	227	64
12	Shillong/II	73	62	73	62	73	62	73	62	73	60	82
13	Wellington/II	190	176	191	175	191	176	191	176	191	175	92
14	Chakrata/III	117	76	117	75	118	71	118	70	118	66	56
15	Lansdowne/III	102	87	103	84	103	79	103	75	103	71	68
16	Dalhousie/IV	78	58	79	59	79	56	79	55	79	54	68
17	Jalapahar/IV	56	54	56	54	56	54	56	55	57	51	89
	TOTAL	4097	3355	4083	3293	4093	3195	4127	3105	4077	3011	74

ANNEXURE-IV

(Referred to in Paragraph 2.1.2.5)

Statement showing the supply and network coverage of the water supplied by the test checked 17 CBs

Sl. No	Name of the CB	Category	Number of households	Network coverage (in %)	Per capita supply in litres lpcd
1	Dehradun	I	8475	100	150 to 187
2	Lucknow	I	2275	80	140
3	Meerut	I	6003	100	140
4	Ramgarh	I	8242	28	70
5	Ahmednagar	II	2947	100	57
6	Barrackpore	II	1162	100	135
7	Clement Town	II	NA	NA	
8	Danapur	II	2006	100	158
9	Khasyol	II	1466	100	50
10	Pachmarhi	II	899	100	56
11	Ranikhet	II	970	100	85
12	Shillong	II	156	100	48
13	Wellington	II	3609	35	95
14	Chakrata	III	765	100	66
15	Lansdowne	III	268	99	36
16	Dalhousie	IV	497	100	70
17	Jalapahar	IV	70	100	140

ANNEXURE-V*(Referred to in Paragraph 2.1.2.6)*

Statement showing availability of hospital facilities and population (as per 2011 census) of the test checked 17 CBs during the period 2009-10 to 2013-14.

Cantonment/ Category	Population	Medical facilities at the CBs		Bed Strength of Hospital
		Hospital	Dispensary/ Polyclinic	
Meerut/I	93312	1	0	70
Lucknow/I	63003	1	1	44
Ramgarh/I	88781	1	0	32
Dehradun/I	52716	1	1	18
Danapur/II	28723	0	1	0
Clement Town/II	22557	1	0	14
Ahmednagar/II	28986	1	1	36
Barrackpore/II	17380	1	0	25
Wellington/II	19462	1	0	30
Ranikhet/II	18886	0	1	0
Shillong/II	11919	0	1	0
Khasyol/II	12028	1	0	20
Pachmarhi/II	12062	0	1	0
Chakrata/III	5117	0	0	0
Lansdowne/III	5667	1	0	33
Dalhousie/IV	3549	1	0	2
Jalapahar/IV	1711	0	1	0

ANNEXURE-VI

(Referred to in Paragraph 2.1.2.6)

Statement showing the availability of educational facilities in test checked 17 CBs during the period 2009-10 to 2013-14.

Cantonment/ Category	Education facilities at the CBs						
	KG	PS	EMS	JHS	HS	GIC	IC
Meerut/I	--	4	--	--	--	--	1
Lucknow/I	--	4	1	1	1	--	--
Ramgarh/I	--	6 MS	--	--	1	--	--
Dehradun/I	--	2	1	2	--	1	--
Danapur/II	-	-	-	-	-	-	--
Clement Town/II	-	-	--	1	--	--	--
Ahmednagar/II	1	5	--	--	1	--	--
Barrackpore/II		2	--	--	--	--	--
Wellington/II	--	1	--	--	1	--	--
Ranikhet/II	--	4	--	1	1	--	--
Shillong/II	--	1	--	--	--	--	--
Khasyol/II	--	4	--	--	1	--	--
Pachmarhi/II	--	1	--	--	--	--	--
Chakrata/III	-	2	--	--	1	--	--
Lansdowne/III	--	1	--	--	1	--	--
Dalhousie/IV	-	1	--	--	--	--	--
Jalapahar/IV	--	1	--	--	--	--	--

KG-Kinder Garten School, PS-Primary School, EMS-English medium school, JHS-Junior High School, HS-High School, GIC-Girls Intermediate College, IC-Intermediate College, MS-Middle School

ANNEXURE-VII*(Referred to in Paragraph 2.1.3.1)*

Statement indicating expenditure incurred on establishment, original works and maintenance works by the test checked 17 CBs during the period 2009-10 to 2013-14.

(₹ in crore)

SL No	Name of CB/ Category	Expenditure on establishment	Expenditure on original works	Expenditure on maintenance works	Total expenditure
1	Dehradun/I	22.63	1.00	27.23	50.86
2	Lucknow/I	73.48	0.23	48.86	122.57
3	Meerut/I	85.32	0	24.71	110.03
4	Ramgarh/I	17.95	2.10	19.17	39.22
5	Ahmednagar/II	30.44	0.66	7.31	38.41
6	Barrackpore/II	18.1	0	8.73	26.83
7	Clement town/ II	10.32	0	14.51	24.83
8	Danapur/II	13.76	0	4.29	18.05
9	Khasyol/II	14.13	0	2.86	16.99
10	Panchmarhi/II	7.08	0	7.88	14.96
11	Ranikhet/II	30.07	0	7.28	37.35
12	Shillong/II	12.48	0.75	6.53	19.76
13	Wellington/II	21.5	0	29.61	51.11
14	Chakrata/III	16.71	0	15.54	32.25
15	Lansdowne/III	14.94	1.57	12.75	29.26
16	Dalhousie/IV	4.16	0	1.19	5.35
17	Jalapahar/IV	5.75	0	7.93	13.68
	Total	398.82	6.31	246.38	651.51

ANNEXURE-VIII

(Referred to in Paragraph 2.1.3.2)

Statement indicating actual expenditure as a percentage of anticipated expenditure and actual allotment of funds in r/o test checked 17CBs during the period 2009-10 to 2013-14.

Sl No.	Financial Year	Anticipated Expenditure as per Revised Estimates (₹ in crore)	Allotment of funds by PDDE (₹ in crore)	Actual Expenditure (₹ in crore)	per cent of expenditure vis-a-vis REs	per cent of expenditure vis-a-vis Allotment
1	CB Dehradun					
	2009-10	39.78	29.43	18.10	45.50	61.50
	2010-11	43.92	30.50	21.72	49.45	71.21
	2011-12	48.67	28.97	17.81	36.59	61.48
	2012-13	38.36	31.56	21.06	54.90	66.73
	2013-14	40.92	36.03	20.94	51.17	58.12
2	CB Lucknow					
	2009-10	33.71	33.71	24.92	73.92	73.92
	2010-11	45.37	45.37	27.50	60.61	60.61
	2011-12	40.50	40.50	30.88	76.25	76.25
	2012-13	49.91	49.91	36.77	73.67	73.67
	2013-14	56.36	56.36	41.00	72.74	72.74
3	CB Meerut					
	2009-10	39.05	39.05	28.62	73.29	73.29
	2010-11	41.03	42.60	33.74	82.23	79.20
	2011-12	39.84	39.84	31.96	80.22	80.22
	2012-13	44.64	44.64	37.01	82.91	82.91
	2013-14	59.56	59.50	41.52	69.71	69.78

SI No.	Financial Year	Anticipated Expenditure as per Revised Estimates (₹ in crore)	Allotment of funds by PDDE (₹ in crore)	Actual Expenditure (₹ in crore)	per cent of expenditure vis-a-vis REs	per cent of expenditure vis-a-vis Allotment
4	CB Ramgarh					
	2009-10	20.20	20.20	12.20	60.40	60.40
	2010-11	22.51	22.51	13.68	60.77	60.77
	2011-12	21.24	21.24	14.49	68.22	68.22
	2012-13	40.72	41.87	10.94	26.87	26.13
	2013-14	56.86	52.63	22.51	39.59	42.77
5	CB Ahmednagar					
	2009-10	13.74	12.33	9.59	69.80	77.78
	2010-11	16.47	14.20	11.50	69.82	80.99
	2011-12	19.62	16.06	12.83	65.39	79.89
	2012-13	21.50	17.22	12.37	57.53	71.84
	2013-14	21.08	19.69	14.70	69.73	74.66
6	CB Barrackpore					
	2009-10	17.70	17.70	7.08	40.00	40.00
	2010-11	20.19	16.79	10.83	53.64	64.50
	2011-12	18.23	18.23	10.69	58.64	58.64
	2012-13	20.55	20.55	9.10	44.28	44.28
	2013-14	18.08	18.08	10.35	57.25	57.25
7	CB Clement Town					
	2009-10	7.75	7.75	4.82	62.20	62.20
	2010-11	10.53	10.53	8.88	84.33	84.33
	2011-12	16.23	16.23	8.30	51.14	51.14
	2012-13	15.96	15.96	10.16	63.66	63.66
	2013-14	20.25	20.25	10.81	53.38	53.38
8	CB Danapur					
	2009-10	13.22	10.12	3.86	29.20	38.14

SI No.	Financial Year	Anticipated Expenditure as per Revised Estimates (₹ in crore)	Allotment of funds by PDDE (₹ in crore)	Actual Expenditure (₹ in crore)	per cent of expenditure vis-a-vis REs	per cent of expenditure vis-a-vis Allotment
	2010-11	18.64	16.25	6.12	32.83	37.66
	2011-12	18.31	18.96	5.41	29.55	28.53
	2012-13	16.80	16.90	7.42	44.16	43.90
	2013-14	19.99	18.10	8.95	44.77	49.45
9	CB Khasyol					
	2009-10	3.47	4.89	3.40	97.98	69.53
	2010-11	4.17	5.45	4.24	101.67	77.80
	2011-12	4.71	5.89	4.64	98.51	78.78
	2012-13	5.24	6.39	5.59	106.67	87.48
	2013-14	6.61	7.88	6.66	100.76	84.52
10	CB Pachmarhi					
	2009-10	8.42	6.06	2.70	32.07	44.55
	2010-11	6.27	6.27	5.89	93.94	93.94
	2011-12	13.57	7.60	6.20	45.69	81.58
	2012-13	15.33	14.23	8.40	54.79	59.03
	2013-14	11.11	16.75	8.18	73.63	48.84
11	CB Ranikhet					
	2009-10	15.08	15.08	8.49	56.29	56.29
	2010-11	15.20	15.20	13.07	85.99	85.99
	2011-12	16.76	16.76	11.74	70.05	70.05
	2012-13	19.84	19.84	12.89	64.97	64.97
	2013-14	22.23	22.23	13.21	59.42	59.42
12	CB Shillong					
	2009-10	4.29	5.17	3.33	77.62	64.41
	2010-11	7.96	7.96	4.33	54.40	54.40

SI No.	Financial Year	Anticipated Expenditure as per Revised Estimates (₹ in crore)	Allotment of funds by PDDE (₹ in crore)	Actual Expenditure (₹ in crore)	per cent of expenditure vis-a-vis REs	per cent of expenditure vis-a-vis Allotment
	2011-12	6.33	6.50	3.93	62.09	60.46
	2012-13	13.65	13.83	4.25	31.14	30.73
	2013-14	7.81	11.40	6.81	87.19	59.74
13	CB Wellington					
	2009-10	19.04	12.46	7.35	38.60	58.99
	2010-11	31.63	15.30	14.93	47.20	97.58
	2011-12	37.38	18.86	16.73	44.76	88.71
	2012-13	44.08	26.86	17.74	40.25	66.05
	2013-14	54.54	32.81	21.78	39.93	66.38
14	CB Chakrata					
	2009-10	15.89	15.89	5.90	37.13	37.13
	2010-11	11.72	11.72	7.36	62.80	62.80
	2011-12	16.56	16.56	5.31	32.07	32.07
	2012-13	20.48	20.48	6.86	33.50	33.50
	2013-14	24.10	24.10	10.43	43.28	43.28
15	CB Lansdowne					
	2009-10	8.18	8.18	5.98	73.10	73.10
	2010-11	9.85	9.85	6.52	66.19	66.19
	2011-12	12.64	12.64	7.13	56.41	56.41
	2012-13	13.91	13.91	9.68	69.59	69.59
	2013-14	13.22	13.22	10.51	79.50	79.50
16	CB Dalhousie					
	2009-10	3.16	3.16	2.17	68.67	68.67
	2010-11	3.75	3.75	2.78	74.13	74.13
	2011-12	4.19	4.19	3.07	73.27	73.27

Sl No.	Financial Year	Anticipated Expenditure as per Revised Estimates (₹ in crore)	Allotment of funds by PDDE (₹ in crore)	Actual Expenditure (₹ in crore)	per cent of expenditure vis-a-vis REs	per cent of expenditure vis-a-vis Allotment
	2012-13	5.13	5.13	3.37	65.69	65.69
	2013-14	6.36	6.36	3.85	60.53	60.53
17	CB Jalapahar					
	2009-10	4.71	4.71	2.83	60.08	60.08
	2010-11	4.53	4.53	3.50	77.26	77.26
	2011-12	5.25	5.25	4.29	81.71	81.71
	2012-13	4.64	4.64	3.30	71.12	71.12
	2013-14	6.66	4.89	3.14	47.15	64.21

Budget estimates were not available in respect of CBs Dehradun, Clement Town, Khasyol, Lansdowne and Dalhousie. Therefore figures have been taken from Proforma-XIX submitted by the CBs.

Details of Expenditure of CBs as a percentage of Revised Estimates and Budget Allotment in r/o 17 test checked CBs during the period 2009-10 to 2013-14.

Sl. No	Name of CB	2009-10		2010-11		2011-12		2012-13		2013-14	
		Exp as % of RE	Exp as % of Allotment	Exp as % of RE	Exp as % of Allotment	Exp as % of RE	Exp as % of Allotment	Exp as % of RE	Exp as % of Allotment	Exp as % of RE	Exp as % of Allotment
1	Dehradun	45.50	61.50	49.45	71.21	36.59	61.48	54.90	66.73	51.17	58.12
2	Lucknow	73.92	73.92	60.61	60.61	76.25	76.25	73.67	73.67	72.74	72.74
3	Meerut	73.29	73.29	82.23	79.20	80.22	80.22	82.91	82.91	69.71	69.78
4	Ramgarh	60.40	60.40	60.77	60.77	68.22	68.22	26.87	26.13	39.59	42.77
5	Ahmednagar	69.80	77.78	69.82	80.99	65.39	79.89	57.53	71.84	69.73	74.66
6	Barrackpore	40.00	40.00	53.64	64.50	58.64	58.64	44.28	44.28	57.25	57.25
7	Clement town	62.20	62.20	84.33	84.33	51.14	51.14	63.66	63.66	53.38	53.38
8	Danapur	29.20	38.14	32.83	37.66	29.55	28.53	44.17	43.90	44.77	49.45
9	Khasyol	97.98	69.53	101.67	77.80	98.51	78.78	106.67	87.48	100.76	84.52
10	Pachmarhi	32.07	44.55	93.94	93.94	45.69	81.58	54.79	59.03	73.63	48.84

11	Ranikhet	56.29	56.29	85.99	85.99	70.05	70.05	64.97	64.97	59.42	59.42
12	Shillong	77.62	64.41	54.40	54.40	62.09	60.46	31.14	30.73	87.19	59.74
13	Wellington	38.60	58.99	47.20	97.58	44.76	88.71	40.25	66.05	39.93	66.38
14	Chakrata	37.13	37.13	62.80	62.80	32.07	32.07	33.50	33.50	43.28	43.28
15	Lansdowne	73.10	73.10	66.19	66.19	56.41	56.41	69.59	69.59	79.50	79.50
16	Dalhousie	68.67	68.67	74.13	74.13	73.27	73.27	65.69	65.69	60.53	60.53
17	Jalapahar	60.08	60.08	77.26	77.26	81.71	81.71	71.12	71.12	47.15	64.21

Source document: Annual consolidated Accounts, Budget Estimates and information furnished in Proforma XIX by the 17 CBs for the review period

ANNEXURE-X

(Referred to in Paragraph 4.1.1)

Statement showing the allotment and expenditure under tariff head of budget for the year 2011-12, 2012-13, and 2013-14

(₹ in Lakhs)

Sl No	Name of GE	2011-12		2012-13		2013-14	
		Allotment	Expenditure	Allotment	Expenditure	Allotment	Expenditure
1.	GE (Utility) Meerut	1466.25	1455.19	1528.50	1634.77	2009.20	2009.68
2.	GE (North) Meerut	65.00	59.80	80.00	81.84	102.81	102.81
3.	GE Roorkee	573.230	631.446	650.00	722.028	746.00	838.054
4.	GE (C/T)Dehradun	386.520	386.515	371.00	403.610	380.30	405.47
5.	GE(MCTE) Mhow	721.068	721.068	795.200	795.170	777.105	777.105
6.	GE (East) Bareilly	239.500	191.661	198.500	198.500	302.000	326.018
7.	GE (Army) Suratgarh	750.00	850.00	840.337	992.16	993.00	1002.90
8	GE Chandigarh	510.77	510.77	615.28	615.28	436.58	436.58
9.	GE (South) Jaipur	844.00	892.71	1226.92	1056.63	1274.05	1343.78
10.	GE (East) Jalandhar	1637.20	1637.18	2724.64	2724.69	2274.58	2274.58
11.	GE (CME) Depodi, Pune	927.84	927.82	943.56	943.55	834.97	872.57
12.	GE(I) R&D Pashan, Pune	826.21	744.02	810.80	891.52	810.00	748.00
13.	GE (N) MEG Centre Bangalore	425.40	425.40	557.85	557.85	599.04	599.04
14.	GE (R&D) (RCI) Hyderabad	1569.24	1569.24	1943.38	1943.38	2496.58	2498.58
15.	GE (MES)Kanpur	268.39	268.39	353.47	353.47	461.61	461.61
16.	GE (E) Lucknow	12.00	12.00	9.01	9.01	14.39	14.39
17.	GE (East) Allahabad	483.62	483.62	506.06	506.06	600.00	601.80
18.	GE Babina	502	484.88	511.61	511.31	635.85	647.57
19.	GE Jhansi	900.00	864.97	955.55	939.55	1209.00	1208.80
20.	GE (W) Jabalpur	1288.77	1215.45	1391.34	1432.58	1399.89	1354.09
21.	GE Dipatoli	331.61	319.24	314.07	352.09	338.87	361.59
22.	GE (U) Udampur	2225.00	2046.22	2625.38	2418.67	2597.30	2042.51
23.	GE Satwari	824.20	824.21	1025.69	999.12	1228.93	1228.93
24.	GE (Utility) Delhi Cantt	180.00	177.726	242.424	242.424	265.798	265.798
25.	GE Missamari	256.165	284.74	318.321	352.398	406.06	406.059
26.	GE(I) R&D (East) Bangalore	1720.40	1720.40	1850.00	1850.00	1953.58	1953.58
27.	GE (North) Binnaguri	-	-	1274.000	1261.007	1378.783	1378.766
28.	GE (Central) Kolkata	-	-	439.00	439.00	505.50	505.50
29.	GE Alipore	-	-	793.230	793.229	919.00	918.53
30.	GE 869 EWS	-	-	78.72	78.72	104.00	104.00

Source of data:-The above data has been compiled from the information provided by/obtained from MES authorities.

ANNEXURE-XI*(Referred to in Paragraph 4.1.3.1.A)***Showing excess payment made towards electricity charges due to incorrect application of tariff schedule**

Sl. No.	Station Name of the GE by whom Electricity bills were paid	Tariff schedule under which Electricity billing was done by Electric Supply Agency	Tariff Schedule applicable to MES	Period for which wrong billing was done by State Electricity supply Agency	Excess amount paid due to difference in energy and fixed charges rates of both the Tariff Schedule (₹ in lakhs)
1.	Saharanpur (UP) GE Roorkee	HV-1	LMV-1(b)	10/2012 to 03/2014	93.68
2.	Purkazi (UP) GE Roorkee	HV-1	LMV-1(b)	10/2012 to 03/2014	28.21
3.	Babugarh GE (North), Meerut (UP)	HV-1	LMV-1(b)	10/2012 to 03/2014	53.62
4.	Dabathuwa GE (Utility) E/M Meerut (UP)	HV-1	LMV-1(b)	10/2012 to 01/2014	32.40
5.	Kanpur GE (I) R&D, Kanpur	LMV I A	LMV I (b)	04/2011 to 11/2012	27.89
6.	Mhow GE(MCTE), Mhow(MP)	HV 3.2	HV 6.1	04/2011 to 02/2014	352.26
7.	Pachmari AGE (I) Pachmari (MP)	HV 3.2	HV 6.1	04/2011 to 03/2013	09.96
8.	Dapodi, GE (CME) Dapodi, Pune	Industrial	Residencial	04/2011 to 03/2014	104.06
9.	Pashan, Pune GE (I) R&D Pashan, Pune	Industrial	Residencial	04/2009 to 10/2013	110.19
10.	Dehradun (GE (CT), Dehradun (UK)	RTS-2	RTS-8	04/2011 to 03/2014	31.36
11.	Tawi(Sangroor) GE (U) Udhampur	Schedule-3	Schedule-7	04/2011 to 03/2014	208.49
12.	Dwarka, GE (W) Delhi Cantt	MLHI/NDHT	CGHS(SDR)	04/2011 to 01/2014	132.58
➤				Total	1184.70

Source of data: Monthly bills of electricity paid by the GEs and applicable tariff schedule to the concerned stations

ANNEXURE-XII*(Referred to in Paragraph 4.1.3.2)***Showing GE/Station wise details of avoidable payment of demand/fixed charges**

Sl. No.	Station	Name of GE who made payment for Electric Bills	Period for which avoidable payment made by GEs	Excess amount paid due to payment of fixed/demand charges at inflated/over estimated CMD in comparison to actual maximum demand (₹ in lakhs)
1.	Dabathuwa	GE (Utility) Meerut	10/2012 to 12/2013	40.44
2.	Shahjahanpur	GE (East), Bareilly	04/2011 to 03/2014	14.90
3.	Suratgarh	GE (Army) Suratgarh	04/2009 to 03/2013	63.79
4.	Bangalore	GE (I) R&D (E) Bangalore	01/2013 to 03/2014	34.16
5.	Babina	GE Babina	04/2011 to 03/2014	11.16
6.	Jhansi	GE Jhansi	04/2011 to 03/2014	13.86
7.	Nowgaon (MP)	GE Jhansi	04/2011 to 03/2014	11.83
8.	Kanpur	GE Kanpur	04/2011 to 03/2014	07.17
9.	Jabalpur	GE(W) Jabalpur	04/2011 to 03/2014	76.79
		GE (E) Jabalpur	03/2013 to 03/2014	37.53
10.	Anand Parbat Delhi	GE (North), Delhi Cantt.	04/2011 to 03/2014	12.89
11.	Hiren Kudna Delhi	-do-	04/2011 to 03/2014	05.35
12.	Shillong	GE Shillong	04/2011 to 03/2014	32.69
13.	Dipatoli	GE Dipatoli	04/2011 to 03/2014	26.03
14.	Kolkata	GE (Central) Kolkata	04/2011 to 03/2014	09.76
			Total	398.35

ANNEXURE-XIII*(Referred to in Paragraph 4.1.4.1)***Showing details of fixed charges non/short recovered**

	Station	Name of GE /BSO	Amount (₹ in lakh)	Period
1.	Bareilly	GE (East)	07.08	04/2011 to 03/2014
2.	Kanpur	GE (I) R&D	153.30	01/2003 to 06/2012
3.	Delhi Cantt.	GE (Central)	31.95	03/2008 to 03/2014
		GE (South)	11.39	04/2011 to 12/2013
4.	Alipore	GE Alipore	07.73	04/2011 to 03/2014
5.	Missamari	GE Missamari	12.24	04/2011 to 03/2014
6.	Leinakhong	GE 869 EWS	07.70	04/2011 to 03/2014
7.	Binnaguri	GE (North) Binnaguri	04.77	04/2011 to 03/2014
8.	Nagrota	GE Nagrota	01.29	04/2013 to 03/2014
9.	Udhampur	(i)GE(South) Udhampur	02.05	04/2013 to 03/2014
		(ii)GE(North) Udhampur	01.20	04/2013 to 03/2014
10.	Mamun	GE (North) Mamun	03.92	04/2012 to 03/2014
		Total	244.62	

ANNEXURE-XIV*(Referred to in Paragraph 4.1.4.3)*

Showing details of meter rent not recovered by GEs/BSO from the domestic consumers

Name of GE	Nos of meters installed	Meter rent (per month) as per tariff (in ₹)	Months	Amount (₹in lakh)	Period
GE Chandimandir	4655	11.00 (20-9)	31	15.87	09/2011 to 03/2014
GE Chandigarh	349	10.00 (upto March 2013)	24	1.68	04/2011 to 03/2014
		20.00 (w.e.f. April 2013)	12		
GE (North) Ambala	9131	20.00	31	56.61	09/2011 to 03/2014
GE (East), Jabalpur	3732	10.00	24	08.96	04/11 to 03/13
	3782	10.00	12	04.54	04/13 to 03/14
GE(West) Jabalpur	5092	10.00	12	06.11	04/11 to 03/12
	6135	10.00	24	14.72	04/12 to 03/14
Total				108.49	

ANNEXURE-XV

(Referred to in Paragraphs 7.1.2 and 7.1.6)

Details of Cost of Production and Value of Issues

	M&C	WV&E	A&E	AV	OEF	Total
Cost of Production (₹ in crore)						
2011-12	2074.90	3812.50	5266.52	3818.35	961.17	15933.44
2012-13	2363.68	3693.91	5285.98	3515.71	1113.16	15972.44
2013-14	2286.95	3655.37	5517.54	2930.54	1246.27	15636.67
VOI						
2011-12	2368.64	4165.54	5585.65	4263.68	874.88	17273.20
2012-13	2516.28	4109.93	5540.77	3836.42	1115.90	17119.30
2013-14	2382.40	3966.44	5584.44	2926.91	1261.91	16122.10
Breakup of element-wise cost 2013-14 (₹ in crore)						
Material	1034.76	1928.29	3710.22	2085.45	544.58	9303.30
	(45.25)	(52.75)	(67.24)	(71.16)	(43.70)	(59.50)
Labour	283.95	426.26	436.40	230.25	327.97	1704.83
	(12.42)	(11.66)	(7.91)	(7.86)	(26.32)	(10.90)
Direct Expense	101.35	42.23	66.85	24.23	4.68	239.34
	(4.43)	(1.16)	(1.21)	(0.83)	(0.38)	(1.53)
FOH	618.03	876.16	1040.97	431.97	277.35	3244.48
	(27.02)	(23.97)	(18.87)	(14.74)	(22.25)	(20.75)
VOH	248.86	382.43	263.10	158.64	91.69	1144.72
	(10.88)	(10.46)	(4.77)	(5.41)	(7.36)	(7.32)
Total	2286.95	3655.37	5517.54	2930.54	1246.27	15636.67
Inventory position(₹ in crore)						
Stores in hand	621.12	978.71	2269.56	1596.99	121.47	5587.85
WIP	419.42	881.02	1002.14	1184.65	50.84	3538.07
Finished Stock	335.26	204.35	186.16	559.09	20.11	1304.97
Stores in transit	41.18	133.22	561.69	116.16	0.73	852.98
Total	1388.91	2197.3	4019.55	3456.89	193.15	11255.80

(Source : Annual Accounts of the Ordnance Factories for the year 2013-14)

(Figures in the parenthesis represent the percentage of element-wise cost to cost of production)

ANNEXURE-XVI

(Referred to in Paragraph 7.2.1.4)

Cost of production of selected items

2011-12				
SI. No.	Name of the Weapon/manufacturing factory	Quantity manufactured (Number)	Unit cost of production (₹)	Total cost of production (₹)
Small Arms				
1	5.56 MM Rifle (Fixed Butt) (ARMY)/ RFI	31200	28834	899620800
	5.56 MM Rifle (Fixed Butt) (MHA)/ RFI	31068	28834	895814712
	5.56 MM Rifle (Fixed Butt) (ARMY)/ OFT	5400	29757	160687800
	5.56 MM Rifle (Fixed Butt) (MHA/UT)/ OFT	18603	29757	553569471
	5.56 MM Rifle (Fixed Butt) (ARMY)/ SAF	20000	32221	644420000
2	5.56 MM Rifle (Foldable Butt) (MHA)/ RFI	3548	30182	107086836
3	5.56 mm LMG (Fixed Butt) (Army) /SAF	4050	45344	183643200
4	Gun Machine 7.62mm /SAF	264	401861	106091304
5	Rifle 7.62mm (MHA)/OFT	7774	26020	202279480
6	Pistol Auto 9 mm (Army) /RFI	3000	18552	55656000
7	Carbine 9 mm (MHA)/SAF	6000	21121	126726000
8	12.7 mm Air Defence Gun (ARMY/IFD) /OFT	76	1186996	90211696
9	12.7 mm Prahari (Navy) /GCF	50	2662431	133121550
10	Revolver 0.32" (CT/MHA) /FGK	11065	40080	443485200
	Revolver 0.32" (CT/MHA) / SAF	7820	28800	225216000
11	0.32" Pistol (CT) /GSF	10628	30604	325258781
12	0.315 Sporting Rifle (CT) /RFI	8161	39799	324799369
Medium Calibre				
13	30 mm Cannon for BMP Vehicle (IFD) /OFT	82	2932107	240432774
14	AK-630 Gun (Navy) /GSF	4	65618063	262472250
		4	47075065	188300258
15	40 mm UBGL (Army/MHA) /OFT	2538	29473	74802474
Large Calibre				
16	81 mm Mortar with CES(Army) /GCF	111	1483949	164718339
17	84 MM Rocket Launcher MK-III (Army) /GSF	838	796113	667142694
18	105 mm LFG With CES (ARMY) /GCF	54	23247352	1255357008
19	Final Gun Assembly of T-90 Tank (IFD) /GCF	100	11797962	1179796200
20	Spare Barrel for T-90 (Army) /GCF	50	4118316	205915800
21	Spare Barrel T-72 (ARMY) /GCF	120	3760872	451304640
22	T-90 Ordnance (OE) (IFD) /FGK	26	9645622	250786172
23	Overhaul with old Barrel (IFD) /FGK	26	3477538	90415988
24	Overhaul with new Barrel (IFD) /FGK	8	5198717	41589736
25	105mm LFG Ordnance (IFD) /FGK	32	4067324	130154368
TOTAL				1068,08,76,900

2012-13				
SI. No.	Name of the Weapon/manufacturing factory	Quantity manufactured (Number)	Unit cost of production (₹)	Total cost of production (₹)
	Small Arms			
1	5.56 MM Rifle (Fixed Butt) (NAVY)/ RFI	685	29988	20541780
	5.56 MM Rifle (Fixed Butt) (MHA)/ RFI	39590	29988	1187224920
	5.56 MM Rifle (Fixed Butt) (ARMY)/OFT	3900	32600	127140000
	5.56 MM Rifle (Fixed Butt) (MHA)/OFT	15438	32600	503278800
	5.56 MM Rifle (Fixed Butt) (ARMY)/ SAF	19724	36818	726198232
2	5.56 MM Rifle (Foldable Butt) (MHA)/ RFI	11035	32419	357743665
3	5.56 mm LMG (Fixed Butt) (Army) /SAF	3201	54418	174192018
4	Gun Machine 7.62mm /SAF	300	449612	134883600
5	Rifle 7.62mm (STATE POLICE/UT)/OFT	6586	23210	152861060
6	Pistol Auto 9 MM /RFI (ARMY)	3899	19027	74186273
	Pistol Auto 9 MM /RFI (MHA)	11656	19027	221778712
7	Carbine 9 MM (MHA) /SAF	1234	24363	30063942
8	12.7 MM Air Defence Gun (IFD) /OFT	40	830962	33238480
9	12.7 MM Prahari (Navy) /GCF	14	2739784	38356976
10	Revolver 0.32" (CT) FGK	11224	40366	453067984
	Revolver 0.32" (CT/MHA) / SAF	8399	32241	270792159
11	0.32" Pistol (CT) /GSF	10840	28883	313091720
12	0.315 Sporting Rifle (CT) /RFI	6296	38085	239783160
	Medium Calibre			
13	30 mm Cannon Gun for BMP Vehicle (IFD) /OFT	84	2529893	212511012
14	AK-630 Gun (Navy) /GSF	5	67157451	335787255
15	40 mm UBGL (Army) /OFT	4001	51745	207031745
	Large Calibre			
16	81 mm Mortar with CES (DRDO) /GCF	6	1896092	11376552
	81 mm Mortar with CES (MHA) /GCF	15	1025397	15380955
17	84 MM Rocket Launcher MK-III (Army) /GSF	827	783287	647778349
18	105 MM LFG With CES (ARMY) /GCF	44	23555526	1036443144
19	Final Gun Assembly of T-90 Tank (IFD) GCF	39	12918756	503831484
20	Spare Barrel for T-90 (Army) /GCF	22	4066411	89461042
21	Spare Barrel T-72 (ARMY) /GCF	235	3868338	909059430
22	T-90 Ordnance (OE) (IFD) /FGK	30	8733656	262009680
23	Overhaul with old Barrel (IFD) /FGK	27	2923948	78946596
24	Overhaul with new Barrel (IFD) /FGK	21	4450561	93461781
25	105mm LFG Ordnance (IFD) /FGK	9	4046888	36421992
	TOTAL			949,79,24,498

2013-14				
Sl. No.	Name of the Weapon/manufacturing factory	Quantity manufactured (Number)	Unit cost of production (₹)	Total cost of production (₹)
	Small Arms			
1	5.56 MM Rifle (Fixed Butt) (NAVY)/ RFI	820	32746	26851720
	5.56 MM Rifle (Fixed Butt) (MHA)/ RFI	9739	32746	318913294
	5.56 MM Rifle (Fixed Butt) (STATE POLICE/UT)/ RFI	23982	32746	785314572
	5.56 MM Rifle (Fixed Butt) (MHA/UT)/ OFT	3609	34482	124445538
	5.56 MM Rifle (Fixed Butt) (ARMY)/SAF	5055	43557	220180635
2	5.56 MM Rifle (Foldable Butt) (ARMY)/ RFI	8454	35559	300615786
	5.56 MM Rifle (Foldable Butt) (MHA)/ RFI	2050	35559	72895950
3	5.56 mm LMG (Fixed Butt) (Army) /SAF	6303	65154	410665662
4	Gun Machine 7.62mm /SAF	270	527082	142312140
5	Rifle 7.62mm (UT)/OFT	4239	29134	123499026
6	Pistol Auto 9 MM(MHA) RFI	843	20847	17574021
	Pistol Auto 9 MM(UT) RFI	7545	20847	157290615
7	Carbine 9 MM (MHA) /SAF	2339	28197	65952783
8	12.7 MM Air Defence Gun (ARMY/IFD) /OFT	60	893376	53602560
9	12.7 MM Prahari (Navy) /GCF	34	3462132	117712488
10	Revolver 0.32" (CT) /SAF	8685	37288	323846280
11	0.32" Pistol (CT) /GSF	13952	28284	394618368
12	0.315 Sporting Rifle (CT) /RFI	6740	43926	296061240
	Medium Calibre			
13	30 mm Cannon Gun for BMP Vehicle /OFT	72	3765225	271096200
14	AK-630 Gun (Navy) /GSF	7	81290335	569032345
15	40 mm UBGL /OFT	7000	55557	388899000
	Large Calibre			
16	81 mm Mortar with CES /GCF	182	1929423	351154986
17	84 MM Rocket Launcher MK-III /GSF	757	821830	622125310
18	105 MM LFG With CES (Army) /GCF	13	28114405	365487265
19	Final Gun Assembly of T-90 Tank (IFD) /GCF	28	14480990	405467720
20	Spare Barrel for T-90 (Army) /GCF	24	4664847	111956328
21	Spare Barrel T-72 /GCF	215	4731040	1017173600
22	T-90 Ordnance (OE) (IFD) /FGK	21	9256432	194385072
23	Overhaul with old Barrel (IFD) /FGK	26	3202908	83275608
24	Overhaul with new Barrel (IFD) /FGK	13	5313149	69070937
25	105mm LFG Ordnance (IFD) /FGK	5	4326133	21630665
	TOTAL			842,31,07,714
	GRAND TOTAL			2860,19,09,112
	Total cost of production of 25 selected weapon items			Say ₹2860 crore
	Total cost of production of other 43 weapon items in six factories - ₹758 crore			
	Hence, percentage of cost of production of selected 25 Items to total cost of production of 68 items- 79%			
	<i>(Source: Annual Accounts of OF Organisation Vol. I & II)</i>			

ANNEXURE-XVI(A)*(Referred to in Paragraph 7.2.2.2)***Increase in Army's requirement**

Items	Year	Roll-on Plan	Outstanding dues from past indents	Quantity indented for the year	Date of receipt of indent	Increase in requirement (per cent)
1	2	3	4	5	6	$7 = \frac{(4+5-3)}{3} \times 100$
81mm Mortar	2011-12	150	0	321	05.04.2011	114
	2012-13	150	210	188	15.06.2012	165
84mm Rocket Launcher MK-III	2011-12	600	7	1189	21.04.2011	99
	2013-14	300	2	700	29.07.2013	134
Spare barrel T-72 tanks	2012-13	100	20	128	09.01.2012	172
	2013-14	100	37	192	02.09.2013	129
Spare barrel T-90 tank	2012-13	50	60	30	29.03.2012	80

*(Source: Army's Roll-on-Plan, Army's indent on OFB)***ANNEXURE-XVI(B)***(Referred to in Paragraph 7.2.2.2)***MHA's Roll-on-plan and target fixed in the Target Fixation Meeting between OF Board and MHA**

Sl. No.	Name of the items	Year	Requirement as per Roll-on-plan (Number)	Target as per Target Fixation Meeting (Number)
1.	Rifle 5.56mm INSAS	2011-12	42496	45000
		2012-13	47562	54167
		2013-14	44540	9888
2.	Pistol Auto 9mm	2011-12	21896	10000
		2012-13	23932	10255
		2013-14	26029	2244
3.	LMG 5.56mm INSAS	2011-12	3522	2770
		2012-13	3997	2531
		2013-14	3204	1952
4.	81mm Mortar	2011-12	142	32
		2012-13	161	5
		2013-14	140	4
5.	7.62mm MAG	2011-12	81	200
		2012-13	93	48
		2013-14	65	--
6.	Carbine machine 9mm	2011-12	7404	4530
		2012-13	7957	6096
		2013-14	8565	2935

(Source: - MHA's Roll-on-plan (2010) and Minutes of Target Fixation Meetings)

ANNEXURE-XVII-A

(Referred to in Paragraph 7.2.2.2, 7.2.2.3, 7.2.2.4, 7.2.2.5 and 7.2.2.6)

Statement showing total requirement by the Indentors, targets, production capacity and achievement

Item (Factory)	Year	Requirement (Number)				Targets to Factories (No.)				Target as a % of requirement	Capacity		Achievement		
		Army	MHA	Others*	Total	Army	MHA	Others*	Total		Production Capacity (No.)	Target as a % of Capacity	Number	Achievement as a % of Target	
5.56mm Rifle Fixed Butt (RFI, SAF, OFT)	2011-12	77733	45000		122733	45000	55000		100000	81	(combined capacity of 5.56mm Fixed and Foldable Butt)	118	106781	107	
	2012-13	31133	54167		85300	27733	70000		97733	115		114	97161	99	
	2013-14	0	9888		9888	0	72000		72000	728		96	43260	60	
5.56mm Rifle Foldable Butt (RFI)	2011-12	8454	4500		12954	4454	5000		9454	73				3548	38
	2012-13	8454	11200		19654	4000	4747		8747	45				11035	126
	2013-14	8454	1100		9554	8454	9083		17537	184				13722	78
5.56mm LMG (SAF)	2011-12	8132	2770		10902	0	4000		4000	37	8000	50	3639	91	
	2012-13	8132	2531		10663	0	3997		3997	37	8000	50	3360	84	
	2013-14	9232	1952		11184	5000	5620		10620	95	8000	133	6293	59	
Rifle 7.62mm (OFT)	2011-12		6000		6000		10000		10000	167	5000	200	7774	78	
	2012-13		14990 (Projection)		14990		8000		8000	53	5000	160	6586	82	
	2013-14		0		0		4000		4000		5000	80	4239	106	
Gun Machine 7.62mm (SAF)	2011-12	378	200		578	0	300	60	360	62	300	120	264	73	
	2012-13	378	48		426	160	160	40	360	85	300	120	300	83	
	2013-14	721	558 (Projection)	221	1500	400	0	0	400	27	300	133	265	66	
Pistol Auto 9mm (RFI)	2011-12	5806	10000		15806	3000	11000		14000	89	9600	146	13208	94	
	2012-13	3899	10255		14154	3899	13661		17560	124	9600	183	15555	89	
	2013-14	0	2244		2244	0	16000		16000	713	9600	167	8332	52	

Item (Factory)	Year	Requirement (Number)				Targets to Factories (No.)				Target as a % of requirement	Capacity		Achievement	
		Army	MHA	Others*	Total	Army	MHA	Others*	Total		Production Capacity (Number)	Target as a % of Capacity	Number	Achievement as a % of Target
Carbine 9mm (SAF)	2011-12		4530		4530		6000		6000	132	7680	78	4458	74
	2012-13		6096		6096		7592		7592	125	7680	99	3632	48
	2013-14		2935		2935		2935		2935	100	7680	38	2640	90
12.7mm Prahari (GCF)	2011-12				0			30	30		60	50	0	0
	2012-13				0			35	35		40	88	64	183
	2013-14			10	10			140	140	1400	40	350	40	29
40mm UBGL (OFT)	2011-12	11581	0		11581	4000	0		4000	35	1500	267	2549	64
	2012-13	9032	0		9032	4607	0		4607	51	1500	307	4001	87
	2013-14	6732	0		6732	7000	239		7239	108	1500	483	7055	97
AK-630 Gun (GSF)	2011-12				0			15	15		10	150	4	27
	2012-13				0			18	18		10	180	5	28
	2013-14				0			15	15		10	150	10	67
81mm Mortar with CES (GCF)	2011-12	321	32		353	111	32		143	41	150	95	145	101
	2012-13	398	5		403	150	50	6	206	51	150	137	146	71
	2013-14	273	4		277	150	50	6	206	74	150	137	182	88
105mm LFG with CES (GCF)	2011-12	106			106	54			54	51	34	159	54	100
	2012-13	52			52	52			52	100	34	153	44	85
	2013-14	8			8	54			54	675	34	159	13	24
84mm Rocket Launcher MK-III (GSF)	2011-12	1196	55		1251	600	405		1005	80	1800	56	804	80
	2012-13	542	0		542	2000	300		2300	424	1800	128	806	35
	2013-14	702	575 (Projection)		1277	2500	300		2800	219	1800	156	612	22

Item (Factory)	Year	Requirement (Number)				Targets to Factories (No.)				Target as a % of requirement	Capacity		Achievement	
		Army	MHA	Others*	Total	Army	MHA	Others*	Total		Production Capacity (Number)	Target as a % of Capacity	Number	Achievement as a % of Target
Spare Barrel for T-72 (GCF)	2011-12	140			140	80		6	86	61	120	72	136	158
	2012-13	272			272	120		20	140	51	200	70	247	176
	2013-14	229			229	270		20	290	127	280	104	215	74
Spare Barrel for T-90 (GCF)	2011-12	110			110	40			40	36	33	121	50	125
	2012-13	90			90	40			40	44	33	121	22	55
	2013-14	68			68	40			40	59	33	121	24	60
Revolver 0.32" (SAF, FGK)	2011-12							19000	19000		20700	92	20474	108
	2012-13							20000	20000		20700	97	19623	98
	2013-14							20000	20000		20700	97	19153	96
0.32" Pistol (GSF)	2011-12							12000	12000		15000	80	9882	82
	2012-13							12500	12500		12000	104	11563	93
	2013-14							12000	12000		12000	100	13409	112
0.315" Sporting Rifle (RFI)	2011-12							10000	10000		15000	67	8171	82
	2012-13							10000	10000		15000	67	6296	63
	2013-14							10000	10000		15000	67	6785	68

* Others = Navy + ODD + PSU/CT

(Source: Army's Roll-on-Plan, Army's indent on OFB, Board's Production Performance Reports for Army items and Board's targets on weapon factories, Factories' Achievement Reports, Committee Report on assessment of capacity in Ordnance Factories)

ANNEXURE-XVII(B)

(Referred to in Paragraph 7.2.2.3, 7.2.2.5&7.2.2.6)

Details of Targets by OFB, Capacity and Achievement (IFD Items)

Sl. No.	Item	Year	Target by OFB (Number)		Capacity		Achievement	
			Original Target	Revised Target	Production Capacity (Number)	Target as a % of Capacity	Physical (Number)	As % of Revised/Original Target
1	12.7mm Air Defence Gun (OFT)	2011-12	50		120	42	91	182
		2012-13	100		120	83	40	40
		2013-14	150		120	125	60	40
2	30mm Cannon for BMP vehicle (OFT)	2011-12	70	105	110	95	87	83
		2012-13	105		110	95	84	80
		2013-14	105	72	110	65	72	100
3	Final Gun Assembly to T-90 Tanks (GCF)	2011-12	100		100	100	100	100
		2012-13	100		234	43	39	39
		2013-14	100		234	43	53	53
4	T-90 Ordnance (FGK)	2011-12	40	30	33	91	26	87
		2012-13	50		33	152	30	60
		2013-14	50		33	152	10	20
5	Overhaul without Barrel (FGK)	2011-12	15	45	120 (combined capacity)	50	26	58
		2012-13	45			50	27	60
		2013-14	45			50	14	31
6	Overhaul with New Barrel (FGK)	2011-12	45	15			8	53
		2012-13	15				21	140
		2013-14	15				42	280
7	105 mm LFG Ordnance (FGK)	2011-12	36		36	100	32	89
		2012-13	13		36	36	9	69
		2013-14	27		36	75	5	19

(Source: Board's targets on weapon factories, Factories' Achievement Reports, Committee Report on assessment of capacity in Ordnance Factories)

ANNEXURE-XVIII (A)

(Referred to in Paragraph 7.2.2.6)

Item-wise analysis of production performance

Item	Achievement (Number) (Percentage of Achievement against Targets ¹⁸²)			Change in targets over 2011-14 (%)	Change in production 2011-14 (%)
	2011-12	2012-13	2013-14		
5.56mm Rifle (Foldable Butt)	3548 (38)	11035 (126)	13722 (78)	85	287
Pistol Auto 9mm	13208 (94)	15555 (89)	8332 (52)	14	(-)37
0.315" Sporting Rifle	8171 (82)	6296 (63)	6785 (68)	0	(-)17
5.56mm LMG	3639 (91)	3360 (84)	6293 (59)	166	73
7.62mm Machine Gun	264 (73)	300 (83)	265 (66)	11	0
9mm Carbine	4458 (74)	3632 (48)	2640 (90)	(-)51	(-)41
30mm Canon (BMP)	87 (83)	84 (80)	100 (100)	(-)31	(-)17
40mm UBGL	2549 (64)	4001 (87)	7055 (97)	81	177
81mm Mortar	145 (101)	146 (71)	182 (88)	44	26
Gun Assembly T-90	100 (100)	39 (39)	53 (53)	0	(-)47
Spare Barrel T-90	50 (125)	22 (55)	24 (60)	0	(-)52
T-90 Ordnance (OE)	26 (87)	30 (60)	10 (20)	67	(-)62
105mm LFG Ordnance	32 (89)	9 (69)	5 (19)	(-)25	(-)84
84mm Rocket Launcher Mark III	804 (80)	806 (35)	612 (22)	179	(-)24
AK 630 Gun	4 (27)	5 (28)	10 (67)	0	150
0.32" Pistol	9882 (82)	11563 (93)	13409 (112)	0	36

(Source: Board's Production Performance Reports for weapon items and Board's targets on weapon factories, Factories Achievement Reports)

The analysis showed that:

- For three of 16 items analysed in audit, the Board reduced the targets over the period 2011-14, in some cases substantially *e.g.* 9 mm carbine (by 51 per cent) and 30mm Canon (31 per cent). The Factories could not meet even the reduced targets and in fact, the achievement worsened over the past years by 17 to 84 per cent. For instance, targets of 105mm LFG Ordnance and 9mm Carbine were reduced by 25 and 51 per cent in

¹⁸²As per capacity data furnished by OFB, there was no change in capacity over the period 2011-14 except for two items. Hence, it is presumed that there was no capacity augmentation during 2011-14.

2013-14 against 2011-12 but the production of these items further fell in 2013-14 by 84 and 41 *per cent* respectively due to late receipt (October 2013) of formal order from Army, and less receipt of payment from MHA and non-availability of trigger assembly for 9mm Carbine.

- The Factories could step up the production in select items, meeting targets even when the targets were raised. For instance, 5.56mm Rifle (Foldable Butt), 5.56mm LMG, 81mm Mortar and 40mm UBGL registered a step-up in production, meeting 44 to 166 *per cent* increase in targets over the period 2011-14.
- The Factories showed consistent achievement of 60 *per cent* and above for six items.¹⁸³ However, only two items *viz.* 30mm Canon and 0.32” Pistol marked a consistent high performance at the level of 80 *per cent* and above each year during 2011-14. The achievement of Gun Shell Factory Cossipore for 84 mm Rocket Launcher Mark-III series was only 22 *per cent* in 2013-14 with 66 *per cent* RFR in quality controls during the year, which merits a re-look by the Board.

¹⁸³ 0.315” Sporting Rifle, 7.62mm Machine Gun, 30mm Canon, 40mm UBGL, 81mm Mortar and 0.32” Pistol

ANNEXURE-XVIII (B)

(Referred to in Paragraph 7.2.2.6)

Reasons for shortfall in achievement of targets

Factory	Items	Reasons for shortfall
Rifle Factory, Ishapore	5.56mm Rifle (Foldable Butt)	Belated receipt of bulk production clearance in October 2012 and short closure of indent by the Army due to quality issues
	9mm Pistol	Bottlenecks in procurement of input stores from trade Less off-take by MHA due to high issue price.
	0.315" Sporting Rifle	Less off-take by private indentors due to quality problems.
	5.56mm Rifle (Fixed Butt)	No payment from MHA.
Small Arms Factory, Kanpur	5.56mm LMG	Late receipt of components (in the metal injection mould mode)
	7.62mm MAG	Quality problems due to low rate of firing.
Ordnance Factory, Trichy	30mm Canon	Non-availability of ammunition for proof trials and delayed placement of import orders for components from Russia.
	40mm UBGL	Problems in the coating process (in manufacture) and delayed supply of proof ammunition from sister factory.
Gun Shell Factory, Cossipore	84mm Rocket Launcher/AK 630 Gun	Delay in processing of orders for imported product support. Non-availability of barrel ex-import.
Gun Carriage Factory, Jabalpur	12.7mm Prahari	Non-availability of formal order from Navy; Delays in receipt of design modifications.
	81mm Mortar	Belated procurement of base plate ex-import and delays in proof inspection and post-proof activities.
	Spare Barrel T-90	Priority given to production of Spare Barrel T-72 and T-90 Gun, less availability of input barrels from sister factories.
	Spare Barrel T-72	Less receipt of input barrels from Ordnance Factory Kanpur and Field Gun Factory Kanpur, casing from Metal & Steel Factory Ishapore.
	T-90 Gun	Constraint of ammunition for proof of ordnance and gun.
	105mm LFG	Delay in inspection and post proof activities and late receipt of formal orders.
Field Gun Factory, Kanpur	T-90 Ordnance	Late receipt of input items from M/s MIDHANI
	T-72 Barrel	Late receipt of forgings from Metal & Steel Factory, Ishapore.

(Source: Board's Production Performance Reports for weapon items, Factories' Achievement Reports and Board's/Factories reply)

ANNEXURE-XIX (A)

(Referred to in Paragraph 7.2.3.2)

Procurement: Delayed Placement of Supply Orders
(Cumulative over 2011-14)

Factory (No. of Orders)	Time taken (in months)	Delayed issue of Tender Enquiry (No.)	Orders placed with delay (No.)
RFI (1402)	1-2	788	-
	2-5	471	-
	5-8	56	327
	>8	7	136
	Total		1322(94%)
SAF (266)	1-2	75	-
	2-5	89	-
	5-8	30	81
	>8	9	26
	Total		203(76%)
GSF (665)	1-2	257	-
	2-5	84	-
	5-8	63	67
	>8	59	132
	Total		463(70%)
OFT (26)	1-2	2	-
	2-5	2	-
	5-8	0	10
	>8	0	8
	Total		4 (15%)
FGK (29)	1-2	4	-
	2-5	8	-
	5-8	1	5
	>8	0	9
	Total		13(45%)
GCF (34)	1-2	2	-
	2-5	20	-
	5-8	1	10
	>8	7	23
	Total		30(88%)

(Source: Supply order database of factories)

ANNEXURE-XIX (B)*(Referred to in Paragraph 7.2.3.3)***Receipt of Components from Sister Factories**

IFD items	Year-wise requirement	Quantity received
Receipt of components in FGK from Metal and Steel Factory Ishapore		
Barrel forging (T-72)	2013-14 : 261	2013-14 : 142
Casing forging (T-72)	2013-14 : 364	2013-14 : 184
Receipt of components in GCF from Ordnance Factory Kanpur		
Spare Barrel T-90	2013-14 : 21	2013-14 : 6
Spare Barrel T-72	2012-13 : 118	2012-13 : 107
T-90 Ordnance	2012-13 : 36	2012-13 : 30
Receipt of components in GCF from Field Gun Factory, Kanpur		
Spare Barrel T-90	2013-14 : 29	2013-14 : 20
Spare Barrel T-72	2012-13 : 155 2013-14 : 150	2012-13 : 138 2013-14 : 139
T-90 Ordnance	2012-13 : 50 2013-14 : 17	2012-13 : 30 2013-14 : 10
105mm LFG Ordnance	2012-13 : 21 2013-14 : 8	2012-13 : 9 2013-14 : 5

*(Source :Factories' Achievement Report)***ANNEXURE-XIX(C)***(Referred to in Paragraph 7.2.3.4)***Time taken in inspection of input materials**

Factory	Number of cases examined	Time Taken (in days)					Total No. of cases with delays (percentage)
		No. of cases					
		≤15	16-30	31-60	61-90	>91	
RFI	7342	3729	2619	841	109	44	3613(49)
SAF	9392	4222	3119	1504	393	154	5170(55)
GSF	3080	1841	665	367	101	106	1239 (40)
OFT	15048	8887	3472	1816	530	343	6161(41)
FGK	498	183	10	36	46	223	315(63)
GCF	5117	1856	1099	1145	582	435	3261(63)
Total	40477	20718	10984	5709	1761	1305	

(Source: Receipt voucher database of factories)

ANNEXURE-XX (A)

(Referred to in Paragraph 7.2.3.6)

Labour efficiency and Production Achievement

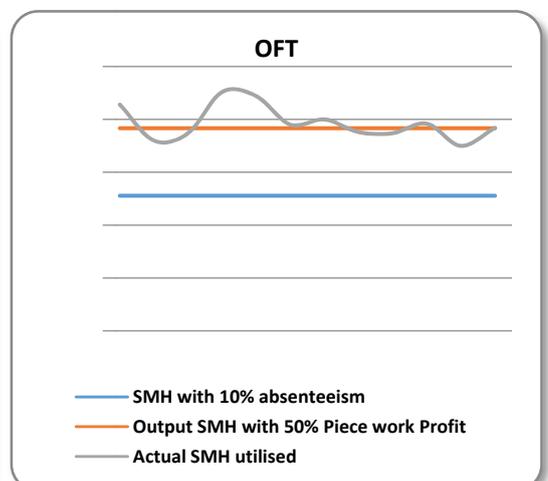
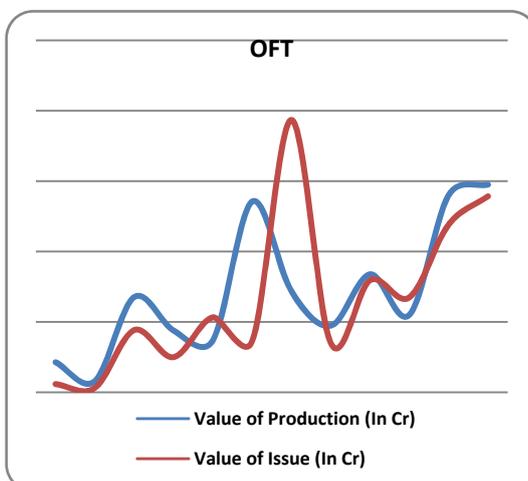
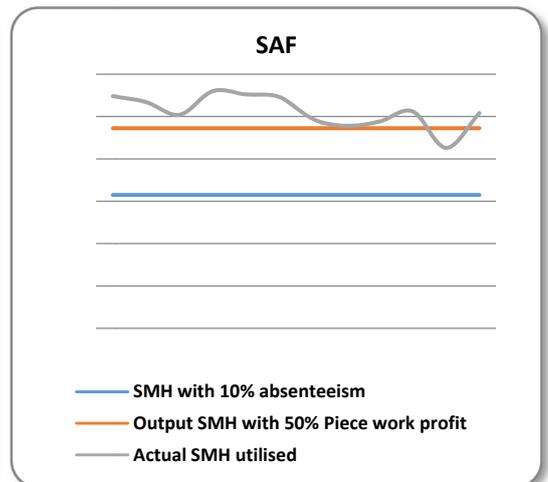
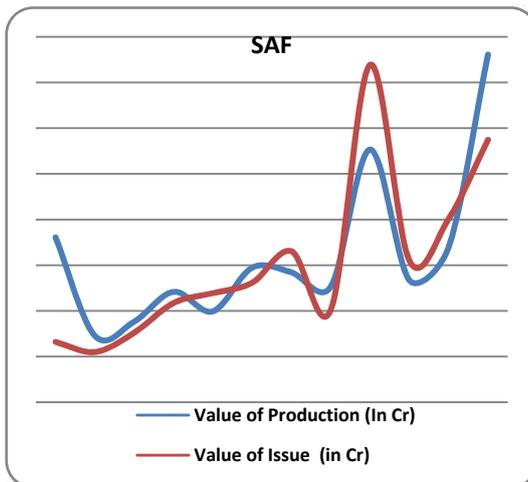
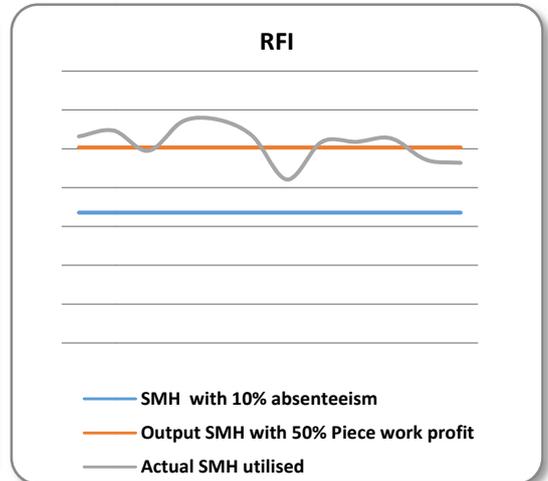
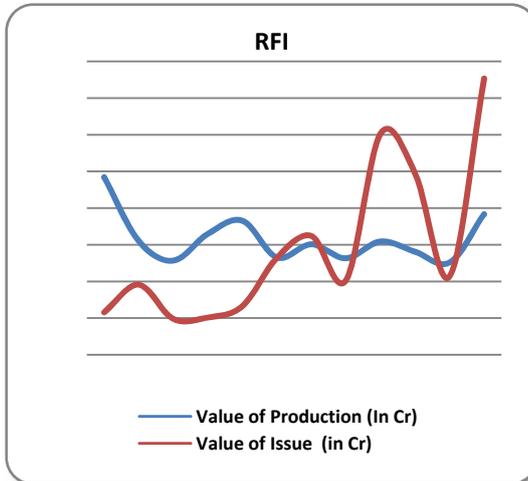
Performance in 2013-14	RFI	SAF	OFT	GSF	FGK	GCF
No. of months where labour efficiency was more than 150 <i>per cent</i>	8	11	6	2	4	0
Achievement of target by March	Percentage of sampled items					
100 <i>per cent</i> of the target	25	0	40	33	40	0
99-60 <i>per cent</i> of the target	50	80	20	33	0	50
Below 60 <i>per cent</i> of the target	25	20	40	33	60	50
Cost of production (₹ in crore)	340	197	167	479	204	501
Number of direct labour	1863	877	710	1723	576	1488

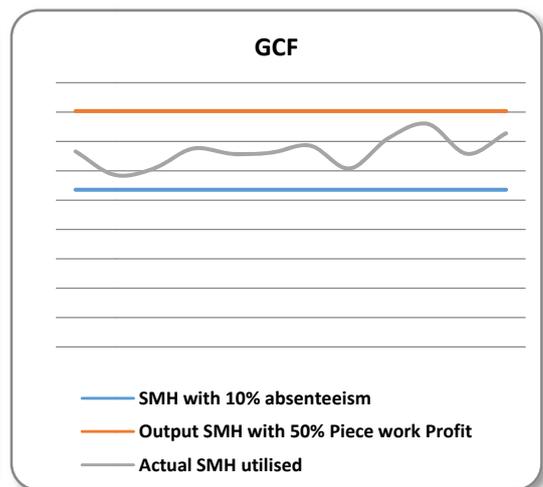
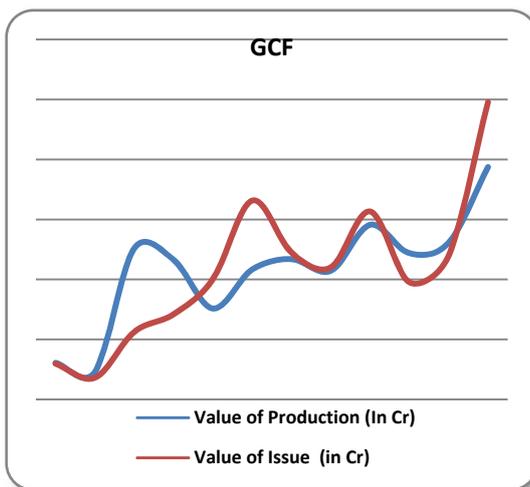
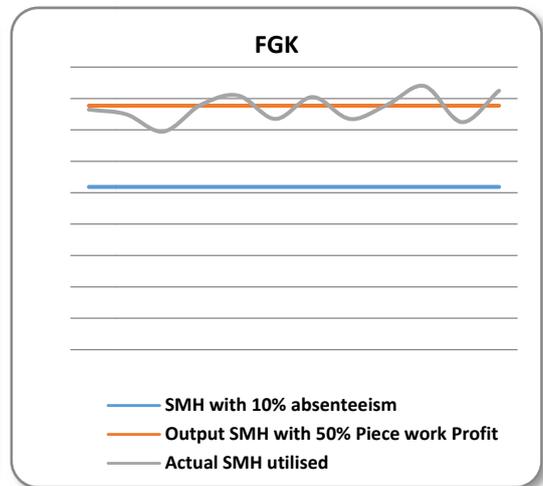
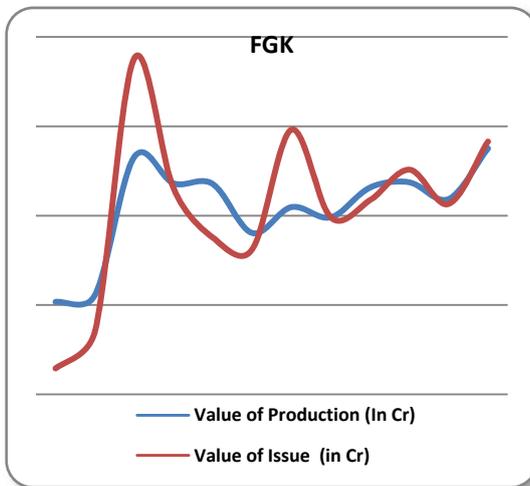
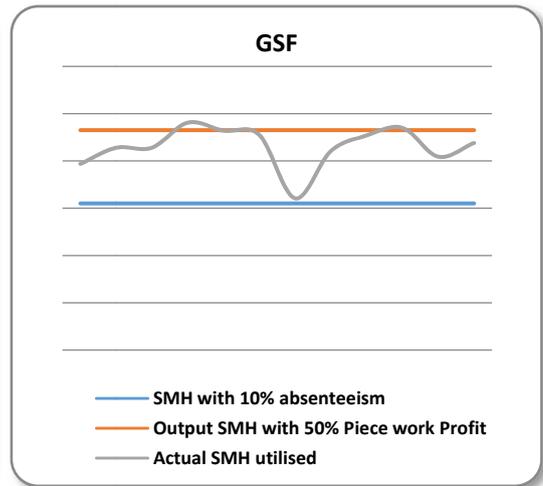
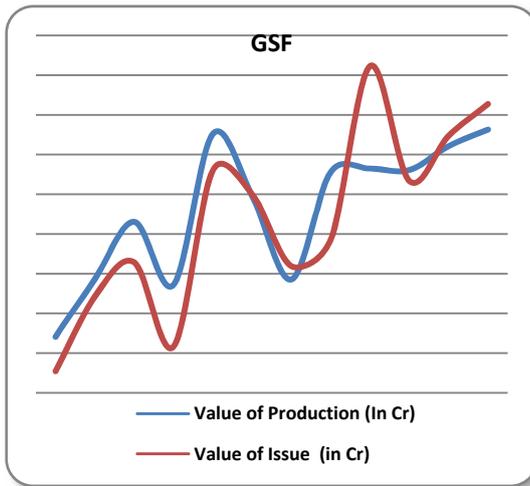
(Source: Standard Man Hours (SMH) available/ utilised at six weapon factories as furnished by OFB & Annual Accounts Vol-I of OFO rganisation)

ANNEXURE-XX (B)

(Referred to in Paragraph 7.2.3.6)

Value of Production/Issue vis-a-vis SMH Utilisation





(Source: Value of production /issue and SMH available/ utilised at six weapon factories as furnished by OFB, Annual Accounts Vol-I)

ANNEXURE-XXI

(Referred to in Paragraph 7.2.4.3)

Case Study 1: Quality of 5.56mm Rifles manufactured in the Board

5.56mm Rifle- Fixed Butt accounts for 47, 28 and 30 *per cent* of the production in the Rifle Factory Ishapore, Small Arms Factory Kanpur and Ordnance Factory Trichy respectively during 2011-14.

RFR and Rejection of 5.56mm Rifle

Factory	RFR		Rejection	
	Incidence (in %)	Value (cr.)	Incidence (in %)	Value (cr.)
RFI	6 ¹⁸⁴	35	1	4.83
SAF	11	22	24	57
OFT	16	30	1	2.8
Total		87		64.63

The SQAЕ registered RFR for 6-16 *per cent* of the Rifles valued at ₹ 87 crore during 2011-14. During the same period, Rifles worth ₹65 crore were rejected by the SQAЕ, with highest incidence of 24 *per cent* rejection by SQAЕ in SAF.

The RFR and rejection were attributed to jamming of components like the hammer¹⁸⁵ (linked to the trigger) and the breech block¹⁸⁶; the stoppage of the moving parts of a barrel (over-riding); poor (trajectory of) ejection¹⁸⁷ of cartridge case after firing; blemishes in the barrel bore (the inner chamber of the barrel) and low rate of firing or erratic shooting; damage to various parts like piston extension, breech block, trigger guard etc.

The SQAЕ mentioned in the Quality Improvement Notes, defects such as deviations in the gauge of the barrel (in Rifle Factory Ishapore; 2011-12) and in material composition of the Flash absorber (that absorbs the “flash” while firing to prevent detection by the enemy) in SAF 2011-12. But repetitions of the defects were noticed. In 2013-14, the SQAЕ raised issues on breech block which were rectified by the Rifle Factory Ishapore.

In addition, the indentors(Army, Air Force & Para-military Forces) returned 456 rifles worth ₹1.3 crore during 2011-14 to Rifle Factory Ishapore, of which 323 rifles were found beyond economical repair. The complaints were that the barrel bore had developed bulges (which could damage the weapon) and that components were scratched or cracked. The Factory rectified these defects and re-issued the rifles to the indentors. Similarly, 70 rifles worth ₹23 lakh were returned by CRPF in 2011-14 to Small Arms Factory Kanpur because the barrel extension was found to be broken.

Quality issues raised at different “check-points” must grasp the attention of the Board considering this item continues, despite flagging demand from Army, one of the main items in the Board’s production profile.

¹⁸⁴In addition, 4 *per cent* of the items , re-issued after rectification valued at ₹1.4 crore were again returned for RFR

¹⁸⁵The hammer swings to impart a blow (impact) that will initiate a firing when the trigger is pulled

¹⁸⁶With the pressing of the trigger, three rounds of the bullet move to the barrel and then the breech should close. If it doesn’t close, the weapon can be damaged

¹⁸⁷Deviations in ejection of the empty cartridge case could hurt the soldier

ANNEXURE-XXII

(Referred to in Paragraph 7.2.4.3)

Items wise incidence of RFR and Rejection

Item	Nature	Extent		Reasons
		Incidence (in percentage)	Value (₹ in cr.)	
Rifle Factory, Ishapore				
9mm Pistol	RFR	13	14	Poor ejection of empty cartridge case; breech not closed; jamming of slide ¹⁸⁸ ; no feed (of bullet from magazine)
	Rejection	3	3	
Small Arms Factory, Kanpur				
5.56mm LMG	RFR	14	11	Poor ejection of empty cartridge cases, erratic shooting, mal-functioning of breech, etc.
	Rejection	22	28	Functional defects in components (<i>viz.</i> breech block, piston extension, bracket, trigger, barrel extension), gauge deviation in plug gauge and Cartridge Head Spacing, blemishes in barrel bore, etc.
7.62mm Machine Gun	RFR	52	75	Poor ejection of cartridge cases, low rate of firing, erratic shooting, etc.
	Rejection	53	43	Functional defects in various components <i>viz.</i> ejector, trigger, back-sight, handle of the butt, crack in piston extension, etc.
9mm Carbine	RFR	16	5	Defects in components namely trigger, case, chamber of barrel and erratic shooting, etc.
	Rejection	19	6	Functional defects in trigger assembly, lever lock, muzzle support, ejector, breech block and cut mark/ scratch in barrel board, etc.
Ordnance Factory, Trichy				
40mm UBGL	RFR	8	4	Damage/ crack in barrel, body housing, erratic shooting, mal-functioning of components like safety catch, sear, recoil unit, breech, dimensional deviation in barrel bore and cartridge head spacing, poor accuracy, etc.
30mm Cannon	RFR	34	21	Dull chromium plating in gas cylinder, barrel, mal-functioning of barrel assembly, piston, feeding, safety lever, line/ pit/tool

¹⁸⁸Movement of the slide in a pistol serves three functions: ejecting the empty cartridge casing, cocking the hammer or striker for the next shot, and loading another cartridge into the chamber when the slide comes forward

Item	Nature	Extent		Reasons
		Incidence (in percentage)	Value (₹ in cr.)	
				marks in barrel catch, squib holder and breech
12.7mm AD Gun	RFR	100	16	Mal-functioning/ defects in components viz. pin firing, safety lock, piston, bracket back side and poor painting/ polish in lock barrel, piston, link remover, sear etc. and dimensional deviation in ejector, regulator gas, plunger pin, tray feed assembly.
Gun Shell Factory, Cossipore				
84mm RL-Mark III	RFR 2011-12	19	2	Bulge in the sub-assembly of the barrel, deviations from specifications on "commencement of rifling" in the barrel
	2012-13	58	24	
	2013-14	66	21	
Gun Carriage Factory, Jabalpur				
105mm LFG	RFR	26	67	Restricted movement of the ammunition in the barrel, improper functioning of breech block
Spare Barrel T-72	RFR	9	20	Blemishes in the barrel bore
Spare Barrel T-90	RFR	63	21	Blemishes in the barrel bore
81mm Mortar	RFR	2	2	Blemishes in the barrel bore
Total: RFR (including 5.56mm Rifle)			390	
Total: Rejection (including 5.56mm Rifle)			145	
Field Gun Factory, Kanpur				
No data on RFR/rejection provided for the end products by the Factory and QAE(FG)				
Dimensional deviation in various components; bore of T-72 and T-90 barrel along with gap in breech (from where the ammunition is loaded) were noted in quality inspection notes. But repetition of same defects showed that corrective action was inadequate.				

(Source: SQAE letters showing RFR and Rejections)

ANNEXURE-XXIII

(Referred to in Paragraph 7.2.5.2)

Factory-wise analysis of trends in profits

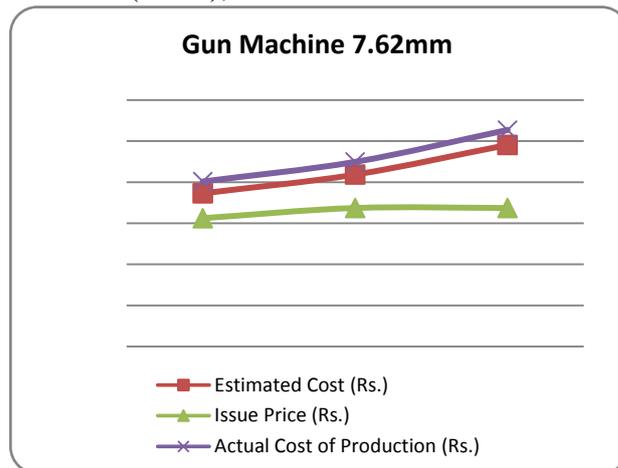
Small Arms Factory Kanpur

Six principal items in its product profile remained static during 2011-14. The 5.56mm Rifle, 5.56mm Light Machine Gun (LMG), 9mm Carbine and 7.62mm Medium Machine Gun (MAG) together account for 53 per cent of the production of items issued to the Army and MHA. Various classes of revolvers issued in civil trade are also an important part of the Factory's portfolio.

We noticed that the cost of labour exceeded the material cost in all principal products, except 5.56mm Rifle in 2012-13. In fact, the labour cost of 7.62mm MAG was 400 per cent of the material cost. The

overheads was also high, particularly the fixed overheads, at levels between 51 per cent and 63 per cent for the six principal products. The 7.62mm MAG registered 60 per cent overheads in relation to cost of production. The Factory suffered losses due to the high labour and overhead costs, further compounded by conservatism in price fixation. For instance, the issue price of 7.62mm MAG was always fixed lower than the estimated cost by 16 to 31 per cent despite the actual cost exceeding the issue price by 29 to 56 per cent.

The Factory marked a steady decline in its main products: issue of 5.56mm Rifle decreased by 75 per cent and 9mm carbine by 62 per cent during 2011-14. The high production costs in 7.62 MAG and 9mm carbine made their production uneconomical. Profit ranging from ₹43,605 to 25,712 on each revolver in 2013-14 has kept the Factory afloat. Despite the high profits made on revolvers in civil trade, the Factory went into a loss of ₹13 crore in 2013-14, mainly, due to 30 per cent increase in cost (labour & overhead) of 7.62mm MAG and 9mm Carbine but fixing less issue price by the Board as compared to their estimated/actual cost.

**Rifle Factory Ishapore**

While Army's demand for the Factory's principal products (INSAS rifles and 9mm pistol) came down substantially, its products for civil trade have increased. The dip in profits in 2013-14 was because of 81 per cent reduction and 39 per cent reduction in quantum of issues of 5.56mm rifle- foldable butt and 5.56mm fixed butt respectively to the MHA. Despite a high demand for 9mm Pistol, problems in timely receipt of payments forced the Factory to reduce the issues to MHA by 35 per cent in 2013-14 as compared to 2012-13. The sustained demand and the margin in its sale of the 0.315" rifle marginally offset the shrink in demand and margins on other products.

Field Gun Factory Kanpur

The Factory is essentially an IFD Factory, with its products, the barrel, casing and ordnance being assembled into high calibre guns at the Gun Carriage Factory Jabalpur. There was a significant diversification of the product profile of the Factory, from nine principal items in 2011-12 to 19 and 22 in 2012-13 and 2013-14 respectively. The changes in the product profile, reveals a picture of a Factory in a flux. The Factory produced barrels for 120mm gun for MBT Arjun but the Board did not receive further indent beyond 124 MBT for which production came to a standstill since 2009-10. On the other hand, a new item where production started in 2012-13 and increased substantially in 2013-14, was barrels for indigenised version of the Russian Anti-Submarine Rocket Guided Bomb 60 (RGB 60), for catering to the needs of Indian Navy. However, the increase in the number of products did not bring in reduction of fixed overheads apportioned on the principal items.

Despite modest increase in issue price, the Factory clocked 66 *per cent* increase in profit over 2011-14. Sale of revolver 0.32” in civil trade accounted for 40 *per cent* of its profits in 2013-14.

Ordnance Factory Trichy

After an increase of profit by 33 *per cent* in 2012-13, the profit shrunk by 27 *per cent* in 2013-14. Apart from IFD items (30mm cannon for infantry combat vehicle BMP-II and 12.7mm Air Defence Gun) its main products are INASAS rifles, 40mm Under Barrel Grenade Launcher and sporting rifle. Item-wise cost of production, issue price and profit/loss are depicted below:

Items	INSAS Rifles (Army)	INSAS Rifles (MHA)	40mm UBGL	0.315” Sporting Rifle	30mm Cannon
2011-12					
Cost of Production	29757	29757	29473	35019	2932107
Issue Price	28710	30800	51710	43200	2726947
Profit/loss	(-)1047	1043	22237	8181	(-) 205160
2012-13					
Cost of Production	32600	32600	51745	13754	2529893
Issue Price	31007	33264	55400	43200	2972815
Profit/loss	(-) 1593	664	3655	29446	442922
2013-14					
Cost of Production	No Production	34482	55557	11776	3765225
Issue Price		35925	59832	47700	3207355
Profit/loss		1443	4275	35924	(-) 557870

The INSAS rifles were issued to the Army at a loss but the bulk of its production was for issue to MHA, with a significant profit margin. UBGL was priced 75 *per cent* higher than the cost in 2011-12. Although the cost of production rose by 89 *per cent* over 2011-14 and issue price increased marginally by average 7.9 *per cent* each year, the Factory continued to make profits on this item, mainly due to the high initial issue price. Another profit-earning item was 0.315” sporting rifle due to marginal increase in issue price and 66 *per cent* reduction in cost of production mainly in material (79%) and labour (66%) over 2011-14. The heavy loss on 30mm cannon was the largest contributor to the 27 *per cent* fall in profits in 2013-14. Despite eight *per cent* increase in the issue price in 2013-14 over 2012-13, the major factor for loss was 49 *per cent* increase in cost of production mainly due to 75 *per cent* increase in overheads and 49 *per cent* increase in labour.

Gun & Shell Factory Cossipore

The Factory reported the highest profits in the weapon group of Factories. Substantial profits in sale of 0.32” pistol buoyed the Factory: the profit being ₹41 crore, ₹43 crore and ₹57 crore in 2011-12, 2012-13 and 2013-14 respectively due to fixation of issue price at 125 *per cent* higher than the cost of production in 2011-12 followed by further eight *per cent* reduction in cost over 2011-14. Another product: the AK-630 gun was exported in 2011-12 under the offset¹⁸⁹ policy of the Government of India. The reduction in profits from ₹76 crore (2011-12) to ₹56 crore in 2012-13 was mainly because of earning profit of ₹19 crore against the offset exports in 2011-12. The Factory earned substantial profit every year in issue of 84mm RL (MK-III) to the Army due to fixing issue price higher than the estimated cost by 33 and 27 *per cent* during 2012-13 and 2013-14 respectively. However, the Factory made losses in sale of AK 630 gun to the Navy during 2013-14 due to no change in issue price despite 11 and 21 *per cent* increase in estimated and actual cost of production. The Factory also suffered losses for the items issued to sister factories. Hence, overall profits fell marginally by 10 *per cent* to ₹47 crore in 2013-14.

Gun Carriage Factory Jabalpur

The Factory showed declining trend of profit from ₹ 35 crore (2011-12) to ₹15 crore in 2013-14. The number of principal items remained almost the same during 2011-14. The main products of the Factory are the (new) Kavach¹⁹⁰ modified rocket launcher (Navy), 105mm Light Field Gun, Spare Barrels for T-90 & T-72 Tanks, Gun Assembly of T-90 Tank, 81mm Mortar and 12.7mm Prahari (Navy).

Over 2011-14, the production of Spare Barrel T-90 was reduced by 52 *per cent*; the dip in production coupled with increase in cost of production by 13 *per cent*, led to loss on issue of T-90 barrels. The production of 105mm LF Gun was also decreased by 19 *per cent* in 2012-13. In 2013-14, the cost of production rose significantly, across the product line, being 19 *per cent*, 15 *per cent* and 22 *per cent* in respect of 105mm Gun, Spare Barrel T-90 and Spare Barrel T-72 respectively. A substantial reduction of production in 105mm LF Gun: by 70 *per cent* helped to contain the loss on this item.

¹⁸⁹Under the offset, a foreign seller is mandated to purchase some items from the buyer in return for the business

¹⁹⁰**Kavach** is a naval decoy system to distract radar-guided missiles from their targets and act as a system for self-defence. The product is an indigenised version of the Russian Anti-submarine Warfare Rockets ("ASW"). The Kavach decoy system releases chaff made up of silver coated glass fiber. The chaff forms a clutter which remains suspended in the air so that the incoming guided missile confuses the chaff as the actual target and gets locked onto the chaff instead of the actual target. The chaff rockets are of three different ranges: from medium to long range.

ANNEXURE-XXIV

(Referred to in Paragraph 7.2.6.2)

Implementation status of development of new products

Items (Expected commencement of production)	Implementation status
(A) Small Arms	
5.56mm Rifle (Folding Butt) (2008-09)	Against Army's indent (2006) of 20,000 Rifles, Board offered the product in June 2012. Army gave bulk production clearance in October 2012. Citing delays in production, the Army short-closed the indent to 8454 in April 2011. RFI after having delivered 8454 rifles (2013-14), awaited further indent from the Army.
5.56mm Carbine (Joint venture protective) (2009-10)	Against Ministry's approval (2006) of demand, the carbine developed (October 2011) by the Board and DRDO was found unsatisfactory in the initial trial (October 2012) as it did not meet the laid down specifications of reliability and weight. After modification of design, next phase of trials was expected to be completed by May 2015. Delays in development and trials derailed the milestones of production indicated in the perspective plan.
5.56mm Carbine (Close Quarter Battle) (2009-10)	Mention was made in Paragraph 7.2 of Audit Report No. 12 of 2010-11 of the Comptroller and Auditor General of India about flawed decision to set up a Factory at Korwa for production of Carbines before finalisation of the product design. Production of the carbine was planned with transfer of technology (ToT) to the Board after global purchase by the Army. Army's request for proposals (RFP) of April 2007 and April 2008 were withdrawn twice (December 2007/June 2009) due to change in scope of ToT and problems of global rights. Against the third RFP (2010), the offers were evaluated and trials conducted, but the purchase was yet to be finalised as the carbine was still in general staff evaluation as of March 2015. A new Factory built up at Korwa (Amethi) at an expenditure of ₹237 crore (March 2015) to produce the carbine, remained almost idle with production of 12 bore pump action gun valuing only ₹2.59 crore in 2013-14.
12.7mm Prahari (2007-08)	The production of the Prahari gun started in 2012-13 in Gun Carriage Factory Jabalpur. The Factory achieved 59 per cent of the targets during 2012-14 due to late receipt of formal indent from Navy.
(B) Medium Calibre Weapons	
30mm Automatic Grenade Launching System (2010-11)	Ordnance Factory Trichy undertook development of the item through reverse engineering in 2008. During demonstration trials (December 2008), frequent stoppages after sustained firing were observed. Five prototypes were test fired during April 2010. After finalising specifications (Sept. 2013), fresh manufacture of three guns started in June 2014, which were planned to be test fired in-house in May 2015 and subjected to DGQA endurance test in July 2015. The Board stated (May 2015) that the developed weapons could not be proved due to non-availability of practice ammunition ex-import.

40mm UBGL (2009-10)	The Army placed (June 2009) an indent on Ordnance Factory Trichy, for 11,719 for phased issue during 2011-14. The production picked up with the achievement against targets from 64 <i>per cent</i> in 2011-12 to 97 <i>per cent</i> in 2013-14. The process of MAO (Micro Arc Oxidation) coating could not be stabilised for indigenous production of UBGL. Hence, a taskforce recommended (February 2012) hard anodised (HA) coating. Accordingly, OF Trichy produced UBGL with HA coating till 2013-14. The Board stated (May 2015) that the requirement of MAO coating was not envisaged any more as barrels coated with hard anodising met the stipulated life.
Anti-material rifle (2009-10)	The rifle meant for destroying tankers, oil installations, bunkers <i>etc.</i> , of the enemy was developed (2005) in Ordnance Factory Trichy. MHA's order for 100 rifles was completed in 2008-09. No further indent was received from the Army or the MHA. Army decided not to bring the rifle into use as it did not meet the weight requirement.
AK-630 Gun (2007-08)	Gun and Shell Factory Cossipore commenced indigenous production since 2009-10 based on ToT from a Russian firm. Import continued for critical items including barrel till 2013-14. The Board stated (May 2015) that Gun & Shell Factory along with BEL and OF Medak indigenised 90 <i>per cent</i> of assemblies of the gun. Abnormal delay in indigenisation and deficient ToT contract led to continuous import of product supports. Details are discussed in Annexure-XXV
(C) High Calibre Weapons	
84mm Rocket Launcher (2007-08)	Gun and Shell Factory Cossipore commenced indigenous production since 2007-08 (with 75% imported product support) based on ToT from a Swedish firm. Import continued for critical items including barrel, sight system till 2013-14. The Board stated (May 2015) that development of indigenous barrel was expected by 2016. Delayed indigenisation due to non-transfer of design of 70% components of weapons and 50% components of telescopic sights derailed the targeted indigenise production. Details are discussed in Annexure-XXV .
130mm Up-gunning to 155mm (2010-11)	The project has not been successful so far partly due to ban on the Israeli firm, SOLTAM. Gun Carriage Factory Jabalpur produced two guns on trial basis in 2010-11 but the Army did not place any indent as of December 2014. The Board informed (May 2015) that users' trials of 130/155 up-gunning were expected from October 2015 onwards. Delayed development and trials affected induction of the gun in the Services.
155 gun up-gradation (2010-11)	The up-graded 155mm (45 calibre) gun 'Dhanush', developed in February 2012 and subjected to various demonstration and user's trials during 2012-15 performed satisfactorily. Although Army gave indent of 114 guns, it was still under confirmatory trials and bulk production clearance was awaited (May 2015). Delay of four years in development and trials derailed the envisaged timeline.
125mm Gun for T-90 Tank (2008-09)	The Russian firm, the original manufacturer did not share the material specification of the gun barrel in ToT for T-90 Tank which was the main hurdle in indigenisation. There were delays in decision making on alternatives by the Ministry which together led to import of 175 guns and manufacture of 125 guns with imported barrels (2007-13). There were slippages in production of spare barrels for T-90, achievement being 55-60 <i>per cent</i> in 2012-14 The execution of this project has already been commented in Paragraph 8.3.3 of Audit Report No. 35 of 2014. Details are discussed in Annexure-XXV .

ANNEXURE-XXV

(Referred to in Paragraph 7.2.6.3 and Annexure-X)

Case Study of ToT on AK 630gun, 84mm RL Mark-III and T-90 Tank

(A) Development of AK 630 gun

AK 630 gun mounted on ships, such as the Kolkata Class guided missile destroyers (being built by Mazgaon Dock Limited for the Indian Navy), is used as anti-aircraft and anti-missile defence. It consists of a cluster of six concentric barrels of 30mm bore with a firing rate of 4000 to 5000 rounds per minute with range of 4 to 5 km.

Based on the Ministry's decision (January 1995) for indigenous production of the gun through ToT from M/s Rosoboronexport, Moscow (M/s ROE), the Board concluded (May 2004) the ToT agreement along with import of 16 guns¹⁹¹ at a total cost of ₹97 crore. The validity of the license was for 100 guns within 20 years.

The design documents were received by May 2006; another two years passed in translation of the documents. The contract on ToT was deficient as it did not cover 17 units of the guns involving 148 parts and equipment for proof testing of sub-assemblies of the gun, necessitating additional imports of equipment worth ₹2 crore.

The gun had 40 major sub-assemblies which involved two factories and a defence PSU, being:

- Gun & Shell Factory Cossipore for manufacture of 24 sub-assemblies as well as assembly of the fully formed gun and its issue to the Navy;
- Ordnance Factory Medak for manufacture of three sub-assemblies viz. cradle, carriage and race ring; and
- Bharat Electronics Limited (BEL) for 13 sub-assemblies relating to electronics and electro-hydraulic/ pneumatic units.

The original plan was to start indigenous production by 2007-08. The Factory claimed (January 2015) indigenisation of 75 per cent, covering 31 assemblies including those in the domain of BEL. However, import continued for critical items including barrel. In all, import worth ₹155 crore was made for various components during 2011-14, for production of 19 guns.

The Board stated (May 2015) that Gun & Shell Factory along with BEL and OF Medak indigenised 90 per cent of assemblies of the gun.

¹⁹¹6 fully finished (FF) Guns, 4 SKD and 6 CKD Guns, 3 group SPTA sets and non-standard (special) equipment

(B) Development of 84mm Rocket Launcher Mark III

84mm Rocket Launcher is a recoilless gun, primarily an antitank weapon but also suited for attacking armoured personnel carriers, machine gun posts and troops in the open. The Rocket Launcher is fired from the shoulders of a soldier; Mark III version was more compact (the gun being 60mm smaller) and lighter than its older version: 9 kg as against 15 kg in the Mark II version. Its most important features are the advanced telescopic sight and use of light materials in the barrel: a steel liner with a laminate of epoxy and carbon fibre.

The Mark III version was developed by M/s FFV Ordnance Sweden in 1985. After 17 years, in March 2003, the Army considered induction of 2000 rocket launchers and 24,000 ammunitions along with ToT at a total cost of ₹347 crore. The ToT agreement in February 2005 was for indigenous manufacture of:

- 84mm HEAT 551 ammunition at Ordnance Factory Khamaria;
- Rocket Launcher at Gun and Shell Factory Cossipore; and
- Telescopic sights at Ordnance Factory Dehradun.

In March 2005, the Board procured 100 sets of SKD (semi-knocked down) and 200 sets of CKD (completely knocked down) of the rocket launchers at a total cost of ₹19 crore from the firm (OEM) to give an impetus to the indigenisation. The documents were received by January 2006. These covered drawings in respect of 240 items. For remaining 168 items, the OEM had not transferred the designs (70 per cent components of weapon and 50 per cent components of telescopic sights¹⁹²) since these were proprietary items from other firms. In addition, 78 per cent of the designs of the ammunition were also not transferred.

Three important assemblies viz. Barrel, Front sight and Aperture sight, constituting 41 per cent in terms of cost, have not been indigenised. The carbon filament required for barrel was not available locally and could not be imported either due to ban on import from the countries of origin (France and Japan). Use of barrel forgings with alternate carbon fibre produced in Metal and Steel Factory Ishapore (2006-09), was not successful. A project for indigenous development of the barrel with the DRDO was undertaken at a cost of ₹83 lakh during 2010-11, and Gun & Shell Factory incurred ₹3 crore. A Failure Analysis Board reported (January 2013) problems with manufacturing practices, quality of materials being used, surface preparation of liner and other design flaws.

Against an indent of 1489, Gun & Shell Factory Cossipore produced 1782, mainly, with import of components worth ₹121 crore from the OEM during 2011-14. The Board claimed 59 per cent indigenisation of as of March 2014. Quality problems with regard to “unpredictable firing results in accuracy firing” were also reported.

¹⁹² The front sight and the aperture sights with the illuminating point

In a parallel programme, the DRDO was in the process of a developing a light weight weapon equivalent to the 84mm RL Mark III since periods prior to 2000. Trials held in 2012 were not successful and further modifications were carried out by the Gun & Shell Factory.

The Board stated (May 2015) that development of indigenous barrel was expected by end of 2016.

(C) Indigenous production of T-90 tanks: *Extracts from Audit Report No: 35 of 2014*

The Transfer of Technology for indigenous production of T-90 tank was marred by delays in translation of design documents and the Russian firm's failure to share designs on critical assemblies like the gun assembly. The problem was compounded by delays in decisions on alternative solutions on these designs. A case in point is the DGQA thwarting the proposal by the Ordnance Factories for using "modified chemistry" proposed for the barrel for T-90 tank. This was despite the fact that the Factories had experience with "modified chemistry" for barrel of T-72 tanks (precursor to T-90 tank); the T-72 and T-90 tank use similar gun barrel. Impact of delays was mitigated by fresh import of T-90 tanks (and kits) from the very same firm in November 2007 worth ₹4913 crore, which was unjustified given the production profile of MBT Arjun (production began to keep pace with the planned schedules by 2005-06) and the inexplicable delays in decision-making on the issues of T-90 tank production. In addition, ₹2372 crore was spent on import of critical assemblies/components of T-90 tank, which formed 62 *per cent* of the total cost of indigenous production of T-90 tanks.

ANNEXURE-XXVI

(Referred to in Paragraph 7.2.6.3)

Challenges and Opportunities

	Item Value of Issue (₹in crore)	Challenges & Opportunities
Rifle Factory Ishapore		
1.	5.56mm Rifle Fixed Butt 2011-12 = 184 2012-13 = 191 2013-14 = 124	Capacity: A significant backlog from past indents in 2010-11, led to capacity shortages during 2012-14. Quality: Problems due to jamming of components like hammer, breech block, poor ejection, blemishes in barrel bore, low rate of firing or erratic shooting, damage to various parts like piston extension, breech block, trigger guard etc. Demand: Since Army currently has adequate quantity of rifles in stock for next 7-8 years, the Factory finds itself short of work, with only MHA as its sole client for this item. Challenge: Army nominated the Board as the Nodal Production agency for the Multi Role Assault Rifle. RFI developed 'Export Model of 5.56mm Excalibur Rifle MK-I', its trial evaluation was carried out by various State Police Organisations. However, substantial orders are yet to be received. Only 1852rifles were supplied to Assam Rifles and four SPOs.
2.	5.56mm Rifle Foldable 2011-12 = 11 2012-13 = 37 2013-14 = 36	Demand: Army's indent for 20000 Rifles was short-closed to 8454 in April 2011 due to delay in production. Demand from MHA was reduced in 2013-14. Further, the State Police Organizations did not lift the weapons because of non-availability of funds resulting in huge blocked inventory, e.g. AP Police could not lift 6743 Rifles (₹33 crore) during 2013-14.
3.	Pistol Auto 9mm 2011-12 = 26 2012-13 = 33 2013-14 = 2	Capacity: Requirements was in excess of the capacity by 46% to 83% during 2011-14. Demand: No fresh indent from Army received so far. Army intimated (December 2013) that it was no longer viable. Most of the state/central police forces bought Glock Pistol and there was decrease in demand for 9mm Pistol from MHA. Moreover, MHA felt that the price of 9mm Pistol was on the higher side, which forced the Factory to cut the price. Quality: 3% rejection during 2011-14 mainly due to poor ejection of empty cartridge case, breech not closed, jamming of slide, etc. Opportunity: The Board has approached MHA to procure Glock Pistol with clause for ToT for production. However, till such time, there will be under-utilisation of capacity created for 9mm Pistol. The continued import of pistols by MHA is a source of worry for the Board.
	Total Value of Principal Products (% of total issues of factory)	2011-12 = 221 (72%) 2012-13 = 261 (71%) 2013-14 = 162 (46%)
Small Arms Factory Kanpur		
1.	Gun Machine 7.62mm 2011-12 = 8 2012-13 = 10 2013-14 = 9	Capacity: Indentors' requirement (578 to 1500 nos during 2010-13) was beyond the capacity of the factory (300 nos). Demand: Army's roll-on requirement of 500 guns (approx.) per year assured but only an indent for 781guns in April 2011 with no further indents. Quality: 53% rejection (₹43 cr.) mainly due to low rate of firing. SAF was unable to supply a single gun to Army against indent of April 2011 till March 2014. Challenge: Once the quality issues are sorted out, this weapon and its spares may find sustained demand.
2.	Rifle 5.56mm Fixed Butt 2011-12 = 72 2012-13 = 61 2013-14 = 16	As discussed against sl. no 1 of RFI
3.	5.56mm LMG 2011-12 = 20 2012-13 = 19 2013-14 = 37	Capacity: Target of 2013-14, 10620 in number, was 133 % of the capacity. Demand: Demand from Army/MHA is consistent. SAF needs to address quality issues of the weapon. Quality: Rejection of 22% (₹57 crore) during 2011-14 which was quite high.
	Total Value of Principal Products (% of total of issues of factory)	2011-12 = 101 (51%) 2012-13 = 90 (47%) 2013-14 = 62 (34%)

	Item Value of Issue (₹in crore)	Challenges & Opportunities
Ordnance Factory Trichy		
1.	5.56mm Rifle Fixed Butt 2011-12 =73 2012-13 =63 2013-14 =13	As discussed against sl. no 1 of RFI
	Small arms as % of total issues of the factory	2011-12 =38% 2012-13 =33% 2013-14 =8%
Medium Calibre weapons		
1.	40mm Under Barrel Grenade Launcher 2011-12 =13 2012-13 =22 2013-14 =42	Capacity: Targets in the range of 267% to 483% of capacity (1500 nos) during 2011-14. In view of the increased demand, capacity of the factory needs to be enhanced. Quality: The main constraint is MAO (micro-arc oxidation) coating of barrels, to prevent metallic fouling. Establishment of MAO coating facility was yet to come up. The Board stated (May 2015) that the requirement of MAO coating was not envisaged any more as barrels coated with hard anodising met the stipulated life. Opportunity: There is demand for the product from the Army and the MHA. Further, an option of fitting the UBGL with TAVOR Assault Rifle was being explored.
2.	30mm Canon for the combat vehicle BMP 2011-12 = 22 2012-13 = 25 2013-14 = 23	Dependence on import: An issue on the springs (a hot rolled spring with special material) of the gun remained unaddressed, which is a perennial import item from the Russian firm, M/s ROE. Alternatives from local trade sources were rejected in inspection. The Board (May 2015) told us that the springs had since been indigenized and the problem resolved. Challenge: The Factory incurred loss in production of this item especially in 2013-14 with a 49 per cent increase in cost of production over the year 2012-13.
3.	12.7mm Air Defence Gun 2011-12 = 6 2012-13 = 4 2013-14 = 6	Capacity: Despite capacity to produce 120 guns annually and target of 50,100 and 150 guns respectively in the three years 2011-14, OFT produced 91, 40 and 60 guns respectively. Opportunity: Several options have been explored for the use of the gun: by mounting on helicopter (CGHQ). BEML had placed order for 200 guns for the Remote Controlled Weapon Systems. The Army was also proposing for mounting the gun on Maruti Gypsy.
	Total Value of medium caliber products (% of total issues of the fys.)	2011-12 = 42 (22%) 2012-13 = 51 (26%) 2013-14 = 71 (28%)
Gun & Shell Factory Cossipore		
1.	AK-630 Gun 2011-12 =66 2012-13 =50 2013-14 =21	Demand: Targets (15, 18 and 15 nos) were higher than the capacity (10 nos) during 2011-14. However, achievement was less (4, 5 and 10 nos) during 2011-14. Challenge: 27 out of 40 major assemblies were to be indigenized by OFB by June 2012 against ToT of May 2006. Only 19 assemblies were indigenized up to January 2015 (67% by value). The Factory still relies on import for the remaining assemblies.
	Total % of value of issues of factory	2011-12 =16% 2012-13 =11% 2013-14 =4%
High Calibre Guns		
Gun & Shell Factory Cossipore		
1	84mm Rocket Launcher MK-III 2011-12 =92 2012-13 =90 2013-14 =82	Capacity: Targets of 2300 and 2800 nos for the year 2011-12 and 2012-13 were in excess of the capacity (1800 nos). Achievement lower than capacity: 612 to 806 during 2011-14. Quality: High incidence of RFR: 19% in 2011-12, 58% in 2012-13 and 66% in 2013-14 mainly due to bulge in the sub-assembly of the barrel, deviations from specifications on "commencement of rifling" in the barrel. Challenge: Due to non-receipt of ToT from the Swedish manufacturer, three important assemblies viz. Barrel, Front sight and Aperture sight were not indigenised. The Factory had to import these components worth ₹168 crore during 2011-14. Factory's attempt for in-house development of barrel is yet to be successful.
	Total % of value of issues of factory	2011-12 =22% 2012-13 =21% 2013-14 =16%

	Item Value of Issue (₹in crore)	Challenges & Opportunities
Gun Carriage Factory Jabalpur		
1.	81mm Mortar with CES* 2011-12 =18 2012-13 =23 2013-14 =35	Demand: Army projected substantial reduction of demand in the Roll-on plan: from 150 nos annually for 2011-13 to 25 nos annually from 2013-16. Challenge: Production capacity is 150 per annum. The Factory is essentially assembling the product with most of the components being manufactured by GSF; hence, the product would be shifted to GSF from 2015-16. There will be idle capacity at GCF from 2015-16 onwards.
2.	105mm Light Field Gun 2011-12 = 133 2012-13 = 108 2013-14 = 34	Demand: Production capacity is 34 nos per annum. In Roll-on Plan, Army projected annual requirement of 30 LFGs from 2013-14 onwards. But indent of only 8 guns was received in 2013-14. Quality: High incidence of RFR 26% (₹ 67 crore) during 2011-14 mainly due to restricted movement of the ammunition in the barrel, improper functioning of breech block.
3.	Spare Barrel for T-72 tank 2011-12 = 48 2012-13 =101 2013-14 =100	Quality: Besides RFR of 9% during 2011-14, there were several incidents of barrel burst. An investigation revealed that specifications provided in the ToT, needed to be changed. Challenge: Inadequate capacity of MSF in supplying the forgings for the barrels was main constraint in production of T-72 barrels at OFC and FGK. Issue of spare barrel to Army was held up during 2013 due to damage of firing butt at LPR thereby badly affecting the proof.
	Total Value of Products (as % of total issues of factory)	2011-12 = 199 (36%) 2012-13 = 233 (52%) 2013-14 = 169 (33%)

ANNEXURE-XXVII

(Referred to in Paragraph 7.3.1.4)

Cordite Factory Aruvankadu	High Explosive Factory Kirkee	Ordnance Factory Bhandara	Ordnance Factory Itarsi
(i) 105 mm IFG/NC	(i) Slab Demolition	(i) Charge M4A2	(i) Charge INC for cartg
(ii) Charge INC for Cartg 130mm FVC	(ii) Aug for 81mm	(ii) Tear Gas	130mm RVC
(iii) Prop for 130mm RVC	(iii) Aug for 120mm	(iii) Cord detonating	(ii) Prop for 130mm FVC
(iv) Auxiliary Ignitor for cartg 130mm FVC	(iv) PEK	(iv) KBS naked	(iii) Akash S propellant
(v) Prop for SPA II	(v) TNT	(v) NGB 204,	(iv) Akash B propellant
(vi) Prop for SPA III	(vi) DNR	(vi) NGB 221	(v) SD-122 for 155mm ERFB (BB)
(vii) Prop for AK 100 Naval	(vii) DNT flakes	(vii) NGB 241	(vi) Ball powder for 5.56mm
(viii) Prop NQ/M for cartg 120M	(viii) Intermediate products viz Lead Styphnate, Basic Lead Az, HNS, Lead Azide, Mercury Fulminate, Composite Explosive and Tetrazene	(viii) 30mm BMP-II	(vii) Ball powder 7.62mm
(ix) Loose Prop NQ/M 254 for cartg 130mm FVC		(ix) NC-1066	(viii) Ball powder for A-7
		(x) NC- 688	(ix) Pinaka propellant
		(xi) Prop 68MM SNEB	(x) Picrite/NIGU
		(xii) ME 305 and	(xi) Rifle Blend NC
		(xiii) Hexolite A	(xii) Charge 8
		(xiv) PFFC	
		(xv) RDX/TNT 60:40 A	
		(xvi) RDX/TNT 60:40 B	
		(xvii) RDX/WAX 88:12	
		(xviii)RDX/WAX 95:5	
		(xix) Hexolite B	

ANNEXURE-XXVIII

(Referred to in Paragraph 7.3.2.4 and 7.3.2.5)

Showing the Achievement of Chemical Factories during 2011-14
(March Achievement)

Sl No	Name of the item		Original	Revised	Issue	Shortfall	Percentage of	
			Target	Target (RT)			w.r.t. RT	shortfall
2011-12								
	OFBa							
1	M4A2 Charge	Nos	15000	29603	580	-29023	98.04	1.96
2	Tear Gas	Tonne	10	10	10	0	0.00	100.00
3	Cord detonating	Metres	526000	526329	506515	-19814	3.76	96.24
4	KBS naked	Numbers	0	2500	1452	-1048	41.92	58.08
5	NGB 204	MT	72	72	85.83	13.83	-19.21	119.21
6	NGB 221	MT	40	112.7	67.5	-45.2	40.11	59.89
7	NGB 241	MT	20	67	40	-27	40.30	59.70
8	30mm BMP-II	MT	53	64	24	-40	62.50	37.50
9	NC 1066	MT	100	125	84	-41	32.80	67.20
10	NC 688	MT	22	30	30	0	0.00	100.00
11	RDX/TNT 60:40 A	MT	211	266	64.5	-201.5	75.75	24.25
12	RDX/TNT 60:40 B	MT	316	388	119	-269	69.33	30.67
13	RDX/WAX 88:12	MT	101	149.5	81	-68.5	45.82	54.18
14	RDX/WAX 95:5	MT	57	57	0	-57	100.00	0.00
15	Hexolite A	MT	0	27	0	-27	100.00	0.00
16	Hexolite B	MT	148.5	150	109	-41	27.33	72.67
17	Prop 68MM SNEB	Nos	6000	6000	3414	-2586	43.10	56.90
18	ME 305	MT	7.3	9.5	6.66	-2.84	29.89	70.11
19	PFFC	Tonne	21	15	5	-10	66.67	33.33
	OFI							
20	105mm IFG NC	Nos	45000	50500	40000	-10500	20.79	79.21
21	Prop 130mm RVC	Nos	67000	80000	72000	-8000	10.00	90.00
22	Picrite	MT	360	500	400	-100	20.00	80.00
23	Ball Powder 5.56mm	MT	490	515	486.47	-28.53	5.54	94.46
24	Ball Powder 7.62 mm	MT	100	150	119.31	-30.69	20.46	79.54
25	Ball Powder AK 47	MT	20	20	8.005	-11.995	59.98	40.03
26	SD 122 for 155mm ERFB	Nos	15000	20000	20460	460	-2.30	102.30
27	Pinaka	Set	1100	1500	1416	-84	5.60	94.40
28	Akash B	Nos	8	8	4	-4	50.00	50.00
29	Akash S	Nos	80	80	44	-36	45.00	55.00
30	Rifle Blend	Nos	0	0	0	0	0	0
31	Charge 8	Nos	2000	200	200	0	0.00	100.00

	HEF							
32	TNT/TNT spl	MT	2677	3030	2784	-246	8.12	91.88
33	Slab Demolition	Nos	332740	293398	294709	1311	-0.45	100.45
34	CE 14/100	MT	89.65	112	62	-50	44.64	55.36
35	HNS	Kgs	1036	1490	1160	-330	22.15	77.85
36	PEK	MT	7.316	7.316	12.881	5.565	-76.07	176.07
37	DNT flake	MT	139	139	147	8	-5.76	105.76
38	Aug Charge for 81mm	Nos	0	0	0	0	0	0
39	Aug Charge for 120mm	Nos	0	0	0	0	0	0
	CFA							
40	105mm IFG NC	Nos	90000	110000	110000	0	0.00	100.00
41	130mm RVC	Nos	65000	69000	69000	0	0.00	100.00
42	Auxiliary Igniter for 130mm	Nos	20000	32059	22500	-9559	29.82	70.18
43	Charge INC for 130mm	Nos	20000	32059	22500	-9559	29.82	70.18
44	SPA II	Kgs	4135	6000	6000	0	0.00	100.00
45	SPA III	Kgs	13280	14000	14000	0	0.00	100.00
46	AK 100 Naval	Nos	0	0	0	0	0	0
47	Prop NQ/M 110 for 120M	Kgs	5000	6025	5500	-525	8.71	91.29
48	Loose Prop NQ/M 254	Nos	0	250265	249930	-335	0.13	99.87
2012-13								
	OFBa							
1	M4A2 Charge	Nos	20000	15000	15008	8	-0.05	100.05
2	Tear Gas	Tonne	16	16	16	0	0.00	100.00
3	Cord detonating	Metres	1000194	600000	599810	-190	0.03	99.97
4	KBS naked	Numbers	2500	2500	2062	-438	17.52	82.48
5	NGB 204	MT	182.5	99	84	-15	15.15	84.85
6	NGB 221	MT	112.33	56	32.5	-23.5	41.96	58.04
7	NGB 241	MT	79.7	19.7	20	0.3	-1.52	101.52
8	30mm BMP-II	MT	68.03	68.03	49.9	-18.13	26.65	73.35
9	NC 1066	MT	100	100	84.9	-15.1	15.10	84.90
10	NC 688	MT	29.1	29.1	30.2	1.1	-3.78	103.78
11	RDX/TNT 60:40 A	MT	164.98	164.98	78	-86.98	52.72	47.28
12	RDX/TNT 60:40 B	MT	295.13	295.13	148	-147.13	49.85	50.15
13	RDX/WAX 88:12	MT	98.2	98.2	50	-48.2	49.08	50.92
14	RDX/WAX 95:5	MT	55.6	55.6	21.625	-33.975	61.11	38.89
15	Hexolite A	MT	15	15	4	-11	73.33	26.67
16	Hexolite B	MT	212.2	212.2	89	-123.2	58.06	41.94
17	Prop 68MM SNEB	Nos	7750	7750	4000	-3750	48.39	51.61
18	ME 305	MT	12.5	12.5	8.37	-4.13	33.04	66.96
19	PFFC	Tonne	37	37	20	-17	45.95	54.05
	OFI							
20	Picrite	MT	320	387	353.54	-33.46	8.65	91.35
21	Ball Powder 5.56mm	MT	488	488	419.66	-68.34	14.00	86.00

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22	Ball Powder 7.62mm	MT	140	140	104.13	-35.87	25.62	74.38
23	Ball Powder AK 47	MT	63	63	55.545	-7.455	11.83	88.17
24	SD 122 for 155 mm ERFB (BB)	Nos	20000	10000	10230	230	-2.30	102.30
25	Pinaka Propellant	MT	1500	1500	1061	-439	29.27	70.73
26	Akash B	MT	8	8	8	0	0.00	100.00
27	130mm RVC	Nos	70000	66000	68000	2000	-3.03	103.03
28	105mm IFG NC	Nos	50000	80000	80000	0	0.00	100.00
29	130mm FVC	Nos	0	1000	1000	0	0.00	100.00
30	Rifle blend NC	Nos	0	24	24	0	0.00	100.00
31	Akash S	No	134	134	134	0	0.00	100.00
32	Charge 8	No	644	644	644	0	0.00	100.00
	HEF							
33	TNT/TNT spl	MT	2593	2593	1703	-890	34.32	65.68
34	Slab Demolition	Nos	125000	132500	141886	9386	-7.08	107.08
35	CE 14/100	MT	85	85	85	0	0.00	100.00
36	HNS	Kgs	1032	1032	1032	0	0.00	100.00
37	PEK	MT	6.588	6.588	12.136	5.548	-84.21	184.21
38	DNT flake	MT	139	139	121.8	-17.2	12.37	87.63
39	Aug Charge for 81mm	Nos	0	400000	200000	-200000	50.00	50.00
40	Aug Charge for 120mm	Nos	0	70000	16170	-53830	76.90	23.10
	CFA							
41	105mm IFG NC	Nos	100400	134900	104900	-30000	22.24	77.76
42	130mm RVC	Nos	80000	74000	74000	0	0.00	100.00
43	Auxiliary Igniter for 130mm	Nos	16000	20000	20030	30	-0.15	100.15
44	Charge INC for 130mm	Nos	16000	20000	20030	30	-0.15	100.15
45	SPA II	Kgs	4540	2000	2000	0	0.00	100.00
46	SPA III	Kgs	16320	16320	16320	0	0.00	100.00
47	AK 100 Naval	Kgs	0	7000	6045	-955	13.64	86.36
48	Prop NQ/M 110 for 120M	Kgs	34680	34680	34680	0	0.00	100.00
49	Loose Prop NQ/M 254	Nos	0	219620	219955	335	-0.15	100.15
2013-14								
	OFBa							
1	M4A2 Charge	Nos	22000	15000	14084	-916	6.11	93.89
2	Tear Gas	Tonne	10	10	10	0	0.00	100.00
3	Cord detonating	Metres	686900	446965	472830	25865	-5.79	105.79
4	KBS naked	Numbers	2750	2750	2745	-5	0.18	99.82
5	NGB 204	MT	160	120	120	0	0.00	100.00
6	NGB 221	MT	55.8	63	68	5	-7.94	107.94
7	NGB 241	MT	57.76	35	35	0	0.00	100.00
8	30mm BMP-II	MT	55.2	65	21.65	-43.35	66.69	33.31
9	NC 1066	MT	110	85	63	-22	25.88	74.12
10	NC 688	MT	25	28	26.8	-1.2	4.29	95.71

11	RDX/TNT 60:40 A	MT	91.55	85.24	88	2.76	-3.24	103.24
12	RDX/TNT 60:40 B	MT	184	192	171	-21	10.94	89.06
13	RDX/WAX 88:12	MT	98	70	64	-6	8.57	91.43
14	RDX/WAX 95:5	MT	21.8	42.8	37	-5.8	13.55	86.45
15	Hexolite A	MT	6	10	6	-4	40.00	60.00
16	Hexolite B	MT	180	180	181	1	-0.56	100.56
17	Prop 68MM SNEB	Nos	5000	7000	434	-6566	93.80	6.20
18	ME 305	MT	12.96	16.5	9.99	-6.51	39.45	60.55
19	PFFC	Tonne	0	18	8.9	-9.1	50.56	49.44
	OFI							
20	105mm IFG NC	Nos	77000	40000	39000	-1000	2.50	97.50
21	Pinaka	MT	1500	1500	1164	-336	22.40	77.60
22	Akash B	MT	0	50	0	-50	100.00	0.00
23	Propellant 130mm RVC	Nos	76000	64000	86200	22200	-34.69	134.69
24	Picrite	MT	524	425	425	0	0.00	100.00
25	Ball Powder 5.56mm	MT	420	432	432.54	0.54	-0.13	100.13
26	Ball Powder 7.62 mm	MT	100	128	128.16	0.16	-0.12	100.13
27	Ball Powder A7	MT	82	41	40.03	-0.97	2.37	97.63
28	SD 122mm 155mm	Nos	22000	2000	2046	46	-2.30	102.30
29	Akash S	MT	0	120	125	5	-4.17	104.17
30	Rifle Blend NC	Nos	0	0	0	0	0	0
31	Charge 8	Nos	900	900	900	0	0.00	100.00
	HEF							
32	TNT/TNT spl	MT	3123	1307	1648.95	341.95	-26.16	126.16
33	Slab Demolition	Nos	202147	78290	78290	0	0.00	100.00
34	CE 14/100	MT	70.4	36	42.5	6.5	-18.06	118.06
35	HNS	Kgs	285	1360	1179	-181	13.31	86.69
36	PEK	MT	12.18	12.397	11.509	-0.888	7.16	92.84
37	DNT flake	MT	154	154	156.45	2.45	-1.59	101.59
38	Aug Charge for 81mm	Nos	1500000	2400000	2400000	0	0.00	100.00
39	Aug Charge for 120mm	Nos	250000	250000	249934	-66	0.03	99.97
	CFA							
40	105mm IFG NC	Nos	134000	176500	174880	-1620	0.92	99.08
41	130mm RVC	Nos	70000	46756	38836	-7920	16.94	83.06
42	Auxiliary Igniter for 130mm	Nos	20000	15000	15030	30	-0.20	100.20
43	Charge INC for 130mm	Nos	20000	15000	15030	30	-0.20	100.20
44	SPA II	Kgs	6400	2000	7000	5000	-250.00	350.00
45	SPA III	Kgs	12900	12000	12000	0	0.00	100.00
46	AK 100 Naval	Nos	0	0	0	0	0	0
47	Prop NQ/M 110 for 120M	Kgs	34400	27000	27000	0	0.00	100.00
48	Loose Prop NQ/M 254	Nos	0	163025	163370	345	-0.21	100.21

**Statement Showing the Achievement of Chemical Factories during 2011-14
(January Achievement)**

SI No	Name of the item		Original Target	Revised Target (RT)	Issue	Shortfall	Percentage of	
							w.r.t. RT	shortfall
2011-12								
OFBa								
1	M4A2 Charge	Nos	15000	29603	0	-29603	100.00	0.00
2	Tear Gas	Tonne	10	10	10	0	0.00	100.00
3	Cord detonating	Metres	526000	526329	383385	-142944	27.16	72.84
4	KBS naked	Numbers	0	2500	915	-1585	63.40	36.60
5	NGB 204	MT	72	72	71.828	-0.172	0.24	99.76
6	NGB 221	MT	40	112.7	59.5	-53.2	47.20	52.80
7	NGB 241	MT	20	67	28	-39	58.21	41.79
8	30mm BMP-II	MT	53	64	20.5	-43.5	67.97	32.03
9	NC 1066	MT	100	125	63	-62	49.60	50.40
10	NC 688	MT	22	30	24	-6	20.00	80.00
11	RDX/TNT 60:40 A	MT	211	266	46.5	-219.5	82.52	17.48
12	RDX/TNT 60:40 B	MT	316	388	87	-301	77.58	22.42
13	RDX/WAX 88:12	MT	101	149.5	61	-88.5	59.20	40.80
14	RDX/WAX 95:5	MT	57	57	0	-57	100.00	0.00
15	Hexolite A	MT	0	27	0	-27	100.00	0.00
16	Hexolite B	MT	148.5	150	24	-126	84.00	16.00
17	Prop 68MM SNEB	Nos	6000	6000	2500	-3500	58.33	41.67
18	ME 305	MT	7.3	9.5	4.77	-4.73	49.79	50.21
19	PFFC	Tonne	21	15	5	-10	66.67	33.33
	OFI							
20	105mm IFG NC	Nos	45000	50500	40000	-10500	20.79	79.21
21	Prop 130mm RVC	Nos	67000	80000	60000	-20000	25.00	75.00
22	Picrite	MT	360	500	352	-148	29.60	70.40
23	Ball Powder 5.56mm	MT	490	515	368.46	-146.54	28.45	71.55
24	Ball Powder 7.62 mm	MT	100	150	87.61	-62.39	41.59	58.41
25	Ball Powder AK 47	MT	20	20	24.19	4.19	-20.95	120.95
26	SD 122 for 155mm ERFB	Nos	15000	20000	16368	-3632	18.16	81.84
27	Pinaka	Set	1100	1500	1107	-393	26.20	73.80
28	Akash B	Nos	8	8	0	-8	100.00	0.00
29	Akash S	Nos	80	80	21	-59	73.75	26.25
30	Rifle Blend	Nos	0	0	0	0	0	0
31	Charge 8	Nos	2000	200	200	0	0.00	100.00

SI No	Name of the item		Original	Revised	Issue	Shortfall	Percentage of	
			Target	Target (RT)			w.r.t. RT	shortfall
	HEF							
32	TNT/TNT spl	MT	2677	3030	2087	-943	31.12	68.88
33	Slab Demolition	Nos	332740	293398	181810	-111588	38.03	61.97
34	CE 14/100	MT	89.65	112	50	-62	55.36	44.64
35	HNS	Kgs	1036	1490	456	-1034	69.40	30.60
36	PEK	MT	7.316	7.316	4.98	-2.336	31.93	68.07
37	DNT flake	MT	139	139	108.15	-30.85	22.19	77.81
38	Aug Charge for 81mm	Nos	0	0	0	0	0	0
39	Aug Charge for 120mm	Nos	0	0	0	0	0	0
	CFA							
40	105mm IFG NC	Nos	90000	110000	88315	-21685	19.71	80.29
41	130mm RVC	Nos	65000	69000	42337	-26663	38.64	61.36
42	Auxiliary Igniter for 130mm	Nos	20000	32059	16342	-15717	49.03	50.97
43	Charge INC for 130mm	Nos	20000	32059	16342	-15717	49.03	50.97
44	SPA II	Kgs	4135	6000	6000	0	0.00	100.00
45	SPA III	Kgs	13280	14000	11000	-3000	21.43	78.57
46	AK 100 Naval	Nos	0	0	0	0	0	0
47	Prop NQ/M 110 for 120M	Kgs	5000	6025	0	-6025	100.00	0.00
48	Loose Prop NQ/M 254	Nos	0	250265	0	-250265	100.00	0.00
2012-13								
	OFBa							
1	M4A2 Charge	Nos	20000	15000	6911	-8089	53.93	46.07
2	Tear Gas	Tonne	16	16	9.48	-6.52	40.75	59.25
3	Cord detonating	Metres	1000194	600000	471000	-129000	21.50	78.50
4	KBS naked	Numbers	2500	2500	1541	-959	38.36	61.64
5	NGB 204	MT	182.5	99	36	-63	63.64	36.36
6	NGB 221	MT	112.33	56	28.5	-27.5	49.11	50.89
7	NGB 241	MT	79.7	19.7	12	-7.7	39.09	60.91
8	30mm BMP-II	MT	68.03	68.03	38.85	-29.18	42.89	57.11
9	NC 1066	MT	100	100	59.4	-40.6	40.60	59.40
10	NC 688	MT	29.1	29.1	23.7	-5.4	18.56	81.44
11	RDX/TNT 60:40 A	MT	164.98	164.98	55	-109.98	66.66	33.34
12	RDX/TNT 60:40 B	MT	295.13	295.13	109	-186.13	63.07	36.93
13	RDX/WAX 88:12	MT	98.2	98.2	39	-59.2	60.29	39.71
14	RDX/WAX 95:5	MT	55.6	55.6	19.125	-36.475	65.60	34.40
15	Hexolite A	MT	15	15	4	-11	73.33	26.67

SI No	Name of the item		Original	Revised	Issue	Shortfall	Percentage of	
			Target	Target (RT)			w.r.t. RT	shortfall
16	Hexolite B	MT	212.2	212.2	80	-132.2	62.30	37.70
17	Prop 68MM SNEB	Nos	7750	7750	0	-7750	100.00	0.00
18	ME 305	MT	12.5	12.5	6.75	-5.75	46.00	54.00
19	PFFC	Tonne	37	37	10	-27	72.97	27.03
	OFI							
20	Picrite	MT	320	387	255.54	-131.46	33.97	66.03
21	Ball Powder 5.56mm	MT	488	488	306.83	-181.17	37.13	62.88
22	Ball Powder 7.62mm	MT	140	140	72.09	-67.91	48.51	51.49
23	Ball Powder AK 47	MT	63	63	39.535	-23.465	37.25	62.75
24	SD 122 for 155 mm ERFB (BB)	Nos	20000	10000	8184	-1816	18.16	81.84
25	PinakaPropell	MT	1500	1500	704	-796	53.07	46.93
26	Akash B	MT	8	8	4	-4	50.00	50.00
27	130mm RVC	Nos	70000	66000	35520	-30480	46.18	53.82
28	105mm IFG NC	Nos	50000	80000	63000	-17000	21.25	78.75
29	130mm FVC	Nos	0	1000	1000	0	0.00	100.00
30	Rifle blend NC	Nos	0	24	24	0	0.00	100.00
31	Akash S	No	134	134	98	-36	26.87	73.13
32	Charge 8	No	644	644	644	0	0.00	100.00
	HEF							
33	TNT/TNT spl	MT	2593	2593	1173	-1420	54.76	45.24
34	Slab Demolition	Nos	125000	132500	116444	-16056	12.12	87.88
35	CE 14/100	MT	85	85	57	-28	32.94	67.06
36	HNS	Kgs	1032	1032	384	-648	62.79	37.21
37	PEK	MT	6.588	6.588	2.089	-4.499	68.29	31.71
38	DNT flake	MT	139	139	103.95	-35.05	25.22	74.78
39	Aug Charge for 81mm	Nos	0	400000	44160	-355840	88.96	11.04
40	Aug Charge for 120mm	Nos	0	70000	7504	-62496	89.28	10.72
	CFA							
41	105mm IFG NC	Nos	100400	134900	82295	-52605	39.00	61.00
42	130mm RVC	Nos	80000	74000	51180	-22820	30.84	69.16
43	Auxiliary Igniter for 130mm	Nos	16000	20000	16332	-3668	18.34	81.66
44	Charge INC for 130mm	Nos	16000	20000	16332	-3668	18.34	81.66
45	SPA II	Kgs	4540	2000	2000	0	0.00	100.00
46	SPA III	Kgs	16320	16320	12000	-4320	26.47	73.53
47	AK 100 Naval	Kgs	0	7000	0	-7000	100.00	0.00
48	Prop NQ/M	Kgs	34680	34680	34680	0	0.00	100.00

SI No	Name of the item		Original	Revised	Issue	Shortfall	Percentage of	
			Target	Target (RT)			w.r.t. RT	shortfall
	110 for 120M							
49	Loose Prop NQ/M 254	Nos	0	219620	0	-219620	100.00	0.00
2013-14								
	OFBa							
1	M4A2 Charge	Nos	22000	15000	6069	-8931	59.54	40.46
2	Tear Gas	Tonne	10	10	10	0	0.00	100.00
3	Cord detonating	Metres	686900	446965	298260	-148705	33.27	66.73
4	KBS naked	Numbers	2750	2750	2745	-5	0.18	99.82
5	NGB 204	MT	160	120	92	-28	23.33	76.67
6	NGB 221	MT	55.8	63	60	-3	4.76	95.24
7	NGB 241	MT	57.76	35	32	-3	8.57	91.43
8	30mm BMP-II	MT	55.2	65	16.5	-48.5	74.62	25.38
9	NC 1066	MT	110	85	60.5	-24.5	28.82	71.18
10	NC 688	MT	25	28	21.7	-6.3	22.50	77.50
11	RDX/TNT 60:40 A	MT	91.55	85.24	49	-36.24	42.52	57.48
12	RDX/TNT 60:40 B	MT	184	192	88	-104	54.17	45.83
13	RDX/WAX 88:12	MT	98	70	50	-20	28.57	71.43
14	RDX/WAX 95:5	MT	21.8	42.8	25	-17.8	41.59	58.41
15	Hexolite A	MT	6	10	4	-6	60.00	40.00
16	Hexolite B	MT	180	180	87	-93	51.67	48.33
17	Prop 68MM SNEB	Nos	5000	7000	310	-6690	95.57	4.43
18	ME 305	MT	12.96	16.5	3.51	-12.99	78.73	21.27
19	PFFC	Tonne	0	18	0	-18	100.00	0.00
	OFI							
20	105mm IFG NC	Nos	77000	40000	39000	-1000	2.50	97.50
21	Pinaka	MT	1500	1500	684	-816	54.40	45.60
22	Akash B	MT	0	50	0	-50	100.00	0.00
23	Propellant 130mm RVC	Nos	76000	64000	64000	0	0.00	100.00
24	Picrite	MT	524	425	380	-45	10.59	89.41
25	Ball Powder 5.56mm	MT	420	432	360.45	-71.55	16.56	83.44
26	Ball Powder 7.62 mm	MT	100	128	88.11	-39.89	31.16	68.84
27	Ball Powder A7	MT	82	41	40.03	-0.97	2.37	97.63
28	SD 122mm 155mm	Nos	22000	2000	2046	46	-2.30	102.30
29	Akash S	MT	0	120	83	-37	30.83	69.17
30	Rifle Blend NC	Nos	0	0	0	0	0	0
31	Charge 8	Nos	900	900	800	-100	11.11	88.89

SI No	Name of the item		Original	Revised	Issue	Shortfall	Percentage of	
			Target	Target (RT)			w.r.t. RT	shortfall
	HEF							
32	TNT/TNT spl	MT	3123	1307	1251.96	-55.04	4.21	95.79
33	Slab Demolition	Nos	202147	78290	34210	-44080	56.30	43.70
34	CE 14/100	MT	70.4	36	42.5	6.5	-18.06	118.06
35	HNS	Kgs	285	1360	1160	-200	14.71	85.29
36	PEK	MT	12.18	12.397	11.241	-1.156	9.32	90.68
37	DNT flake	MT	154	154	118.65	-35.35	22.95	77.05
38	Aug Charge for 81mm	Nos	1500000	2400000	1218360	-1181640	49.24	50.77
39	Aug Charge for 120mm	Nos	250000	250000	190025	-59975	23.99	76.01
	CFA							
40	105mm IFG NC	Nos	134000	176500	119180	-57320	32.48	67.52
41	130mm RVC	Nos	70000	46756	34816	-11940	25.54	74.46
42	Auxiliary Igniter for 130mm	Nos	20000	15000	9431	-5569	37.13	62.87
43	Charge INC for 130mm	Nos	20000	15000	9431	-5569	37.13	62.87
44	SPA II	Kgs	6400	2000	7000	5000	-250.00	350.00
45	SPA III	Kgs	12900	12000	10000	-2000	16.67	83.33
46	AK 100 Naval	Nos	0	0	0	0	0	0
47	Prop NQ/M 110 for 120M	Kgs	34400	27000	27000	0	0.00	100.00
48	Loose Prop NQ/M 254	Nos	0	163025	0	-163025	100.00	0.00

(Source :-(i) Ordnance Factory Board letter Nos (i) 110/Prod/PX dated 23 February 2011, 5/10 January 2012 and 26 October 2012 for original targets (ii) Ordnance Factory Board letter Nos (i) 110/Prod/PX dated 20 May 2011, 26 May 2011, 20 June 2012, 27 July 2012, 10/22 May 2013 and 21 March 2014 for revised targets (iii) Achievement report of the factory for the months of January 2012, 2013 and 2014 for January achievement and (iv) Achievement report of the factory for the months of March 2012, March 2013 and March 2014 for March achievement)

ANNEXURE-XXIX

(Referred to in Paragraph 7.3.3.2)

Time taken for placement of TE from SHIS

Factory	Year	No. of SHIS against which TE issued	Time for issue of TE after preparation of SHIS (in months)					Total exceeding 1 month
			<1	1-2	3-5	6-8	>9	
CFA	2011-12	1129	5	687	269	29	2	987
	2012-13	671	129	300	46	22	15	383
	2013-14	636	100	256	68	25	36	385
OFI	2011-12	103	18	61	5	9	10	85
	2012-13	138	9	78	41	8	2	129
	2013-14	97	24	53	16	3	1	73
OFBa	2011-12	108	10	8	24	43	23	98
	2012-13	52	7	12	4	8	21	45
	2013-14	102	9	43	28	13	9	93
HEF	2011-12	454	45	89	153	84	83	409
	2012-13	504	119	107	194	63	21	385
	2013-14	320	109	99	76	25	11	211
Total	2011-12	1794	78	845	451	165	118	1579
	2012-13	1365	264	497	285	101	59	942
	2013-14	1155	242	451	188	66	57	762

(Source:-Supply Order Data- Base maintained by respective factories)

ANNEXURE-XXX

(Referred to in Paragraph 7.3.3.2)

Time taken for placement of order from SHIS date

Factory	Year	Number of SHIS against which Supply orders placed	Time for placing supply orders after SHIS (months)			Total exceeding 6 months
			< 6	6-8	>9	
CFA	2011-12	1129	923	146	60	206
	2012-13	671*	538	100	32	132
	2013-14	636	434	77	125	202
OFI	2011-12	103	67	14	22	36
	2012-13	138	112	16	10	26
	2013-14	97	68	15	12	27
OFBa	2011-12	108	20	29	59	88
	2012-13	52	13	10	29	39
	2013-14	102	46	30	26	56
HEF	2011-12	454	163	125	160	285
	2012-13	504	246	174	73	247
	2013-14	320	155	94	55	149
Total	2011-12	1794	1173	314	301	615
	2012-13	1365	909	300	144	444
	2013-14	1155	703	216	218	434

* Nil Tender Enquiry date in one case in the database

(Source :-Supply Order Data- Base maintained by respective factories)

ANNEXURE-XXXI

(Referred to in Paragraph 7.3.3.2)

Time taken for clearance of stores in inspection

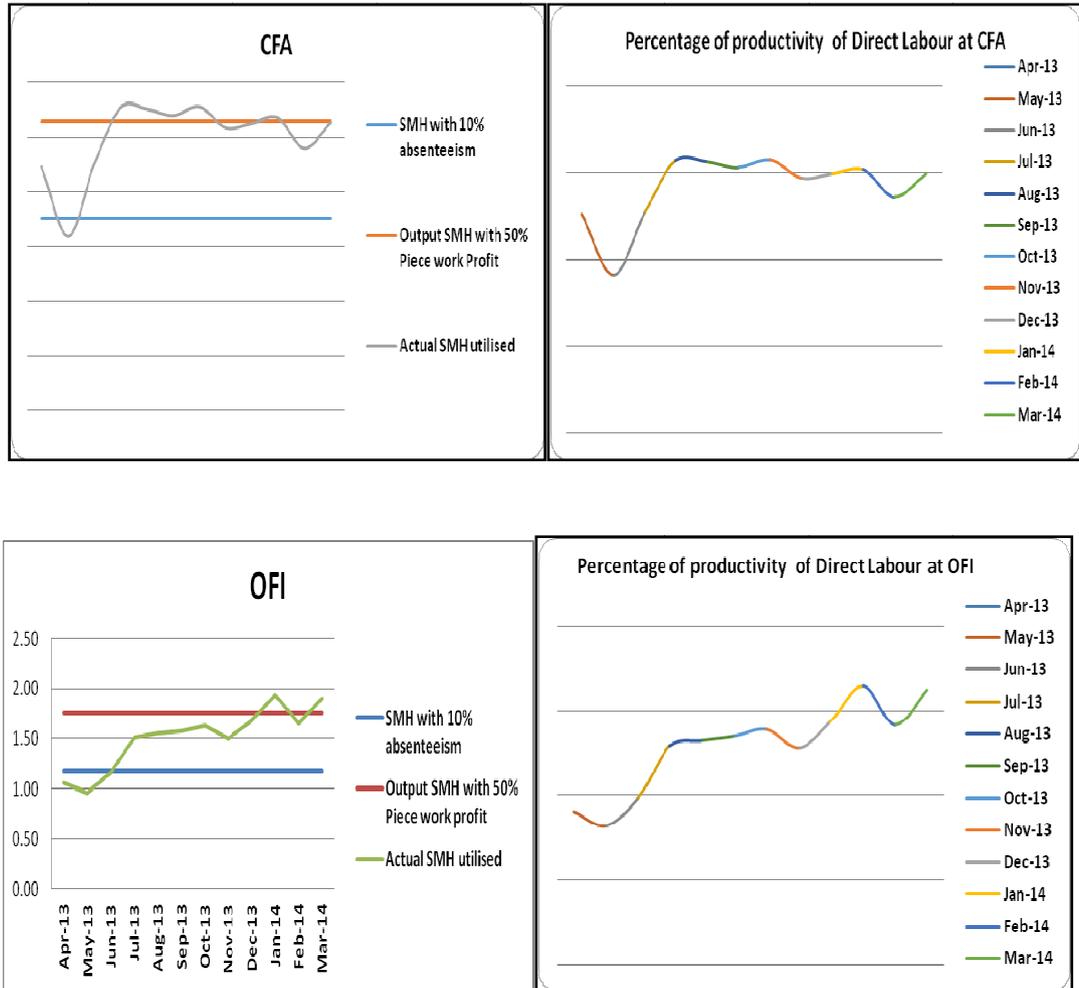
Factory	Year	Number of Receipt voucher examined	Time Taken (in days)					Total
			<16	16-30	31-60	61-90	>91	
CFA	2011-12	2133	1903	174	37	6	13	230
	2012-13	1861	1725	103	23	1	9	136
	2013-14	1488	1303	133	44	8	0	185
OFI	2011-12	639	566	65	8	0	0	73
	2012-13	473	410	61	1	0	1	63
	2013-14	471	325	125	19	0	2	146
OFBh	2011-12	3471	3041	302	117	7	4	430
	2012-13	3532	2954	446	109	16	7	578
	2013-14	4357	3608	522	172	35	20	749
HEF	2011-12	1666	1557	68	28	11	2	109
	2012-13	1287	1180	82	20	4	1	107
	2013-14	1148	971	144	24	2	7	177
Total	2011-12	7909	7067	609	190	24	19	842
	2012-13	7153	6269	692	153	21	18	884
	2013-14	7464	6207	924	259	45	29	1257

(Source :-Receipt Voucher Data Base maintained by respective factories)

ANNEXURE-XXXII

(Referred to in Paragraph 7.3.3.3)

(Showing the trend of Standard Manhour Utilised with 10 per cent absenteeism in respect of Cordite Factory Aruvankadu and Ordnance Factory Itarsi during 2013-14)



(Source: -Piece work Profit and Actual SMH utilisation Statement of the factories collected from Finance Section of Ordnance Factory Board)

ANNEXURE-XXXIII

(Referred to in paragraph 7.3.4.3)

Instances of rejections at Ordnance Factory Bhandara

1. Three lots comprising 16MT propellant (out of 92.60MT produced during the year) for 30mm BMP-II manufactured by the factory during 2011-14 at a total cost of ₹4.6 crore were rejected by the DGQA as the propellants failed to achieve the specified muzzle velocity and pressure during proof.
2. Out of 63MT produced during 2013-14, two lots comprising 21 tonne propellant NC 1066 (nitro-cellulose based propellant) manufactured at a total cost of ₹4.2 crore was rejected by DGQA as it failed in wool witch test, climatic hut test and accelerated ageing test for determination of shelf life of propellant.
3. Four lots comprising 16.68 tonne propellant NC 688 (nitro-cellulose based propellant) manufactured at a total cost of ₹3.9 crore was rejected by DGQA in 2013-14 as it failed in wool witch test, climatic hut test and accelerated ageing test for determination of shelf life of propellant.

ANNEXURE-XXXIV

(Referred to in paragraph 7.3.4.4)

Lead time for inspection Lead time in quality inspections

Time taken for proof (in days)	No. of lots where time>30 days
Propellant –NGB 221 Total no of lots: 42	
30-45	7
46-60	1
61-120	10
>120	1
Total lots	19
Propellant –NGB 204 Total no of lots: 89	
30-45	17
46-60	16
61-120	31
>120	17
Total lots	81
Propellant M4A2 Charge Total no of lots: 46	
30-45	13
46-60	8
61-120	6
>120	6
Total lots	33

(Source: Data Base provided to Audit by Ordnance Factory Bhandara)

ANNEXURE-XXXV

(Referred to in Paragraph 7.3.4.5)

Rejections in Ordnance Factory, Itarsi

1. Out of ten lots comprising 80,000 numbers of propellant for 105mm IFG NC manufactured during 2012-13, three lots comprising 33,000 numbers valuing ₹ 10 crore, were rejected by the Controllerate of Quality Assurance Establishment (Ammunition) Kirkee between September 2012 and June 2013 owing to high Mean Deviation and unsatisfactory overall performance of propellants.
2. One lot comprising 8.015 tonne propellant of A-7 manufactured in 2013-14 (out of 43 tonne manufactured) at a cost of ₹ 0.66 crore was rejected by the Senior Quality Assurance Establishment (Armament) Varangaon as the velocity was not found to be within the prescribed limits;
3. One lot (132 grains) of Pinaka propellant out of 20 lots (with 1164 grains) manufactured during 2013-14 at a cost of ₹ 4.29 crore was rejected and advised for disposal, by Senior Quality Assurance Establishment (Military Explosive) Itarsi due to voids and cracks. Another lot comprising 62 sets manufactured at a cost of ₹2.18 crore in 2012-13 was also rejected by HEMRL in September 2012 as the propellant failed in ambient test.
4. One lot comprising 8.01 tonne of 7.62mm ball powder propellant (out of 17 lots comprising 119.31 tonne manufactured during 2011-12) valuing ₹ 0.55 lakh and issued to Ordnance Factory Varangaon was rejected by the filling factory. Another two lots comprising 15.995 tonne of 7.62mm ball powder propellant manufactured (out of 135 tonne manufactured) at a cost of ₹ 0.84 crore during 2010-11 and issued to the Ordnance Factory Varangaon was also rejected by the consignee.
5. Two lots comprising 16.02 tonne propellant for 5.56 mm ball powder (out of 68 lots comprising 486.47 tonne manufactured during 2011-12) valuing ₹ 97 lakh was rejected Ordnance Factory Varangaon due to its failure to meet the ballistic requirements as specified. The Factory told us that these two lots were rectified and re-issued to the filling factory

ANNEXURE-XXXVI

(Referred to in Paragraph 7.3.5.1)

(Showing the details of delays in procurement of machines)

I. Abnormal delay in replacement of TNT Plant.

The existing TNT Plant at HEF was procured in 1974-75 and commissioned in 1976-77. Regular production started in 1978. Due to continuous running and exposure to acidic fumes the plant is in a very bad condition. HEF took action in December 2002 for a new plant by approaching nine reputed plant suppliers. Only one firm M/s SWS, Defence AB, Sweden responded with budgetary quotation. But the offered plant was found to be technically inferior compared to the existing plant. Efforts to obtain a better technology plant were not successful as European and American companies have stopped production of TNT. In the meantime, HEF took action to keep the plant running by replacing some critical parts.

OFB constituted (September 2006) a committee to study and examine the physical condition of the plant, study technologies available, identify the critical areas needing replacement/revamping, identify suitable site and layout and suggest viable action plan for revamping/replacement on technical as well as economic considerations. The committee recommended setting up of a parallel nitration facility and revamping of washing and flaking buildings. HEF therefore raised a demand for replacement of TNT plant, reaction building along with construction of a new separate building to accommodate new plant at an estimated cost of ₹ 23.96 crore based on the budgetary offer received from M/s GEA process Engineering (India) Pvt. LTD, Vadodara in April 2008. The demand was approved by OFB in May-2009.

GTEs were issued twice in November 2010 and in Nov-2011 but order could not be finalized. TEC/OFB reviewed the technical specification prepared by factory and directed (July 2012) to include NO_x absorption tower to comply with pollution norms and re-tender the case.

Accordingly, HEF obtained budgetary quotation from M/s Nuberg, Noida for ₹47.59 cr. However, OFB approved estimated cost of ₹43.89 crore for TNT plant with NO_x tower and new reaction building in October 2013.

We observed that specification of the proposed TNT plant is yet to be finalized. The Senior General Manager stated in October 2014 that the action for replacement of TNT plant was as per OFB approval and TNT requirement varies as per demand for sister factories.

Thus, due to abnormal delay in replacement of TNT plant, benefit of reduction of manpower, cost saving, improvement of productivity and reduction in

rejection could not be achieved. Besides delay in finalization of order there is cost overrun of ₹19.93 crore.

II Delay in replacement of DENSAC plant

The De-nitration and Sulphuric Acid Concentration (DENSAC) plant is used for carrying out two operations viz De-nitration of waste acid generated and Sulphuric Acid Concentration.

The existing plant was commissioned in 1954 at HEF and its present condition was dilapidated. The acceptance of necessity for procurement of DENSAC plant was raised by HEF in May 2008 which was approved by the OFB in October 2009 at an estimated cost of ₹48.03 crore.

GTE was issued against which two offers were received from (i) M/s Archivista, Pune in collaboration with M/s De-Dietrich, Germany and (ii) M/s Aker Solutions, Mumbai. The offer of M/s Aker was rejected by TEC-II/OFB and the resultant single offer of M/s Archivista and De-Dietrich was forwarded to MOD for approval. The Collegiate Committee Meeting held on 07-03-2012 decided to retender the case.

As some items were not included in the earlier budgetary quotation which was more than three years old and also there was rise in Euro value, revised estimated cost of ₹60.69 crore submitted to OFB in May 2012 and the same was approved by OFB in June 2012.

Against TE of September 2012, four firms submitted their quotation for supply of DENSAC plant. The technical bids were opened on 06-06-2013, Fy TEC-I recommended in November 2013 to all four firm's offer to OFB for negotiation and for opening of price bids. OFB intimated(December 2013) HEF to sort out certain ambiguous issues and assess the offers again. In line with OFB guidelines, TEC-I decided in February 2014 and recommended the offer of M/s Archivista, Pune. OFB however directed(April 2014) HEF to call the firms once again to sort out deviations /assess the capabilities of the firms.

Accordingly, HEF sorted out deviations to assess the capabilities of the firms. Meanwhile on factory's request, all the firms extended their offer up to November 2014.

Thus, due to delay in finalization of order there was cost overrun of ₹12.66 crore (₹60.69 crore - ₹48.03 crore) besides delay in finalization/ placement of order anticipated savings of ₹15.31 crore per annum could not be achieved.

ANNEXURE-XXXVII

(Referred to in Paragraph 7.3.5.3)

(Showing the trends of cost of production, overheads and profit/loss in issue of products during 2011-14)

(i) Trends of cost of production of four Chemical factories during 2011-14

HEF

Item of expenditure	2011-12	2012-13	2013-14
Cost of production (₹ in crore)	163.23	137.40 (-15.82 per cent)	161.16 (17.29 per cent)
FOH (₹ in crore)	49.93	62.55 (25.28 per cent)	27.61 (- 55.86 per cent)
VOH (₹ in crore)	11.61	6.90 (- 40.57 per cent)	37.02 (436.52 per cent)
TOH (₹ in crore)	61.54	69.45 (12.85 per cent)	64.63 (-6.94 per cent)
FOH as a percentage of CoP	30.59	45.52	17.13
VOH as a percentage of CoP	7.11	5.02	22.97
TOH as a percentage of CoP	37.70	50.54	40.10

CFA

Item of expenditure	2011-12	2012-13	2013-14
Cost of production (₹ in crore)	144.32	159.73 (10.68 per cent)	157.84 (-1.18 per cent)
FOH (₹ in crore)	67.77	71.88 (6.06 per cent)	73.23 1.88 per cent
VOH (₹ in crore)	8.69	8.39 (- 3.45 per cent)	9.11 (8.58 per cent)
TOH (₹ in crore)	76.46	80.27 (4.98 per cent)	82.34 (2.58 per cent)
FOH as a percentage of CoP	47	45	46
VOH as a percentage of CoP	6	5	6
TOH as a percentage of CoP	53	50	52

OFBa

Item of expenditure	2011-12	2012-13	2013-14
Cost of production (₹ in crore)	191.64	207.22 (8.13 per cent)	257 (24.02 per cent)
FOH (₹ in crore)	85.74	85.64 (-0.12 per cent)	103.67 (21.06 per cent)
VOH (₹ in crore)	53.75	12.94 (- 51.74 per cent)	32.53 (25.44 per cent)
TOH (₹ in crore)	139.49	111.58 (-20.01 per cent)	136.22 (22.08 per cent)
FOH as a percentage of CoP	45	41	40
VOH as a percentage of CoP	28	13	13
TOH as a percentage of CoP	73	54	53

OFI

Item of expenditure	2011-12	2012-13	2013-14
Cost of production (₹ in crore)	217.20	216.87 (- 0.15 per cent)	252.54 (16.45 per cent)
FOH (₹ in crore)	86.35	95.46 (11 per cent)	101.94 (7 per cent)
VOH (₹ in crore)	16.23	18.74 (15.74 per cent)	23.79 (26.95 per cent)
TOH (₹ in crore)	102.57	114.20 (11.33 per cent)	125.73 (10.10 per cent)
FOH as a percentage of CoP	40	44	40
VOH as a percentage of CoP	7	9	9
TOH as a percentage of CoP	47	53	49

(ii) Trend of overheads with reference to Direct Labour

In the ordnance factories, overheads are levied as a percentage of direct labour. Thus, there is linear relation between FOH/VOH with Direct Labour. Audit Examination of the case reveals the following:

Factory	2011-12 (percentage Change over Previous Year)			2012-13 (percentage Change over Previous Year)			2013-14 (percentage change to Previous Year)		
	DL	FOH	VOH	DL	FOH	VOH	DL	FOH	VOH
HEF	30.76	134.19	-62.06	-9.54	25.28	-40.57	15.01	-55.86	436.52
CFA	13.09	13.35	24.86	17.27	6.06	-3.45	5.89	1.88	8.58
OFBa	15.76	18.52	5.60	18.00	-0.12	-51.74	17.88	21.06	25.44
OFI	24.79	12.26	-5.47	-13.42	10.55	15.47	21.84	6.79	26.95

(iii) Trends in profit/loss in issue of products (sampled items) to indentors

Factory	2011-12 (₹ in crore)		2012-13 (₹ in crore)		2013-14 (₹ in crore)	
	IFD Issue	Direct to Indentors	IFD Issue	Direct to Indentors	IFD Issue	Direct to Indentors
OFBa	-10.70	1.11	-0.69	5.87	4.80	6.18
OFI	23.12	0.02	0.69	27.38	-15.89	-0.65
HEF	-8.53	10.28	-31.73	-0.90	-3.63	-1.31
CFA	3.51	0	-1.79	0	-8.24	0
Total	7.40	11.41	-33.59	32.35	-22.96	4.22

(Source :-Summary of Outturn Statement of each Factory collected from the Annual Account of Ordnance Factory Organisation for the years 2011-14)

ANNEXURE-XXXVIII

(Referred to in Paragraph 7.3.6.2)

(Showing the consolidation of applicable environmental legislative framework)

1. Several national laws govern the activities of the factories with regard to environment. In addition, each State has its own laws. The national laws include:

- I. The Water (Prevention and Control of Pollution) Act, 1974.
- II. The Water (Prevention and Control of Pollution) Cess Act, 1977.
- III. The Water(Prevention and control of Pollution) Cess (Amendment) Act, 2003.
- IV. The Air (Prevention and Control of Pollution) Act, 1981.
- V. The Environment (Protection) Act, 1986.
- VI. The Hazardous Wastes (Management and Handling) Rules, 1989 as amended in 2000.
- VII. The Manufacture, Storage and Import or Hazardous Chemical Rules, 1989 as amended in 2000.
- VIII. The Public Liability Insurance Act, 1991.
- IX. Emergency Planning Preparedness & Response For Chemical Accidents Rules, 1996.
- X. The National Environment Tribunal Act, 1995.
- XI. The Chemical Accident (Emergency Planning, Preparedness and Response) Rules 1996.
- XII. The Recycled Plastics Manufacture and Usage Rules, 1999.
- XIII. The Indian Boiler Act, 1923
- XIV. The Gas Cylinder Rules, 1981 Fly Ash Notification, 1999.
- XV. The Municipal Solid Wastes (Management and Handling) Rules, 2000.

2. The salient features of each Law are:

I. The Water (Prevention and Control of Pollution) Act, 1974

This Act provides for the prevention and control of water pollution and the maintenance or restoration of wholesomeness of water. As such, all human activities having a bearing on water quality are covered under this Act. Subject to the provisions in the Act, no person without the previous consent of the State Pollution Control Board (SPCB) can establish any industry, operation or process, or any treatment and disposal system or an extension or addition thereto which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land and have to apply to the SPCB concerned to obtain the 'Consent to establish' as well as the 'Consent to operate' the industry after establishment.

II. The Water (Prevention and Control of Pollution) Cess Act, 1977

The main purpose of this Act is to levy and collect cess on water consumed by certain categories of industry specified in the schedule appended to the Act.

The money thus collected is used by the SPCBs to prevent and control water pollution.

III. The Air (Prevention and Control of Pollution) Act, 1981

The objective of the Air Act, 1981 is to prevent, control and reduce air pollution including noise pollution. Under the provisions of this Act, no person shall, without the previous consent of the SPCB, establish or operate any industrial plant in air pollution control area. The factory operator has to apply to the SPCB/ Pollution Control Committee (PCC) to obtain consent. No person operating any industrial plant shall emit any air pollutant in excess of the standards laid down by the SPCB and have to comply with the stipulated conditions.

IV. The Environment (Protection) Act, 1986

This is an umbrella Act for the protection and improvement of environment and for matters connected with it. It provides that no person carrying on any industry, operation or process should discharge or emit or permit to be discharged or emitted any environmental pollutant in excess of such standards as may be prescribed.

Several sets of rules relating to various aspects of management of hazardous chemicals, wastes etc. have also been notified. Under this Act, Central Govt. has restricted, prohibited the location in the industries and have also permitted processes discharge of liquid effluent and noise have been evolved and notified so far. The standards in respect of pollutants are to be achieved within a period of one year from the date of their notification, especially by those industries identified as highly polluting. However, if a particular SPCB desires, it may reduce the time limit and also specify more stringent standards in respect of specified category of industries within their jurisdiction. The SPCB, however, can not relax either the time limit or the standards stipulated by the GOI. Under Section 15, punishment, fine and imprisonment for the violation of the provision of this Act.

Subject to the provision of this Act, Central Govt. has the power to take all measures as it deemed necessary or expedient for the purpose of protection and improving the environment and preventing, controlling and abating environmental pollution.

Procedures, safeguards, prohibition and restriction on the handling of hazardous substances alongwith the prohibition and restriction on the location of industries and carrying on processes and operations in different areas have been notified. Restrictions have been imposed on various activities in fragile areas i.e. Doon Valley in U.P., Aravali Regions in Alwar, Rajasthan, Coastal zones and Ecologically sensitive zones etc. (MOEF, 1989 and 1992 a). Besides, Public Liability Insurance (PLI) Act, 1991 is constituted to provide immediate relief to the persons affected by accident occurring while handling any hazardous substance (MOEF, 1991 and 1992 b).

V. The Hazardous Wastes (Management and Handling) Rules, 1989 & 200

In nutshell, project proponents handling hazardous wastes must report to the concerned authorities in Form-I regarding handing of wastes, obtain authorization for handling wastes in Form-2, maintain proper records in Form-3, file annual returns in Form-4, label all packages, consignments etc., report any accident immediately in Form-5 report import-export of hazardous waste in Form-6 under HW Rules, 1989. Hazardous wastes have been categorized in 18 categories.

Recently, MOEF has notified the HW (M&H) Amendment Rules on January 6, 2000 (MOEF, 2000a). Under these rules toxic chemicals, flammable chemicals and explosives have been redefined to be termed as 'hazardous chemical'. As per new criteria, 684 hazardous chemicals instead of 4343 chemicals listed in HW Rules, 1989 have been identified. All the hazardous substances have been kept in 3 categories (i) Process specific industrial wastes, (ii) Waster substances with concentration limits and (iii) Waste applicable only for imports and exports. Authorization application shall be processed by the SPCB within 90 days. It will be valid for 5 years and its renewal will depend on steps taken for reduction in the waste generated, recycled or reused. Disposal sites for hazardous waste disposal shall be identified by the State Govt. operator of a facility or occupier. EIA is to be carried out for selecting the appropriate site. Public hearing for objections and suggestions has to be arranged by the SPCB within 30 days. SPCB will monitor the setting up and operation of a facility regularly. Operation and closure of landfill site is to be carried out as per Rule 8A by the SPCB. Import and export of hazardous waste for dumping and disposal is strictly prohibited. It is permitted only if raw material is used for recycling or reuse.

VI. The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 & 2000 .

Under these rules, project proponents of any kind of hazardous industry have to identify likely hazard and their danger potential. They also have to take adequate steps to prevent and limit the consequences of any accident at site. Information regarding accidents is to be updated as per Schedule-7. Material Safety Data Sheets (MSDS) for all the chemicals in handling has to be prepared. Workers on site are required to be provided with information, training and necessary equipments to ensure their safety. On-site Emergency Plan is to be prepared before initiating any activity at the site. Off-site Emergency Plan is to be prepared by the District Collector in close collaboration with the Project proponents for any accident envisaged on site. The public in the vicinity of the plant should be informed of the nature of major accidents that may occur on site and the Do's and Dont's to be followed in case of such an occurrence. Import of hazardous chemicals is to be reported to the concerned authority within 30 days from the date of import.

Recently, MOEF has made significant amendments in the MSIHC Rules, 1989 on January 20, 2000. Under new amendments, new Schedule-I is incorporated with the increase in the number of hazardous chemicals. Renewal of Authorization will be subject to submission of 'Annual Returns' for disposal of hazardous waste; production of evidence of reduction in the waste generated or

recycled or reused; fulfilment of authorization conditions and remittance of processing and analysis fee. State Govt. as well as occupier or its association shall be responsible for the identification of site for common waste disposal facility. Public hearing is also made mandatory to be conducted by the State Govt. before notifying any common hazardous waste disposal site as per procedure laid down in Gazette Notification dated April 10, 1997 (MOEF, 1997; Rastogi, 1997a and 2000c). Central/ State Govt. will provide guidance for the design, operation and closure of common waste facility/ landfill site. It is mandatory to obtain prior approval from the SPCB for design and layout of the proposed hazardous waste disposal facility. Comprehensive procedure have also been laid down in the MSIHC Rules, 2000 for the regulation of export and import of hazardous wastes.

VII. Public Liability Insurance Act, 1991

This Act, unique to India, imposes on the owner the liability to provide immediate relief in respect of death or injury to any person or damage to any property resulting from an accident while handling any of the notified hazardous chemicals. This relief has to be provided on 'no fault' basis. The owner handling hazardous chemical has to take an insurance policy to meet this liability of an amount equal to its "paid up capital" or upto ₹500 millions, whichever is less. The policy has to be renewed every year. New undertaking will have to take this policy before starting their activity. The owner also has to pay an amount equal to its annual premium to the Central Government's Environment Relief Fund (ERF). The reimbursement of relief to the extent of ₹25,000/- per person is admissible in case of fatal accidents in addition to the reimbursement of medical expenses upto ₹12,500/-. The liability of the insurance is limited to ₹50 million per accident upto ₹150 millions per year or upto the tenure of the policy. Any claims in excess to this liability will be paid from the ERF. In case the award still exceed, the remaining amount shall have to be met by the owner. The payment under the Act is only the immediate relief, owners shall have to provide the final compensation, if any, arising out of legal proceedings (MOEF, 1991 and 1992; Singh et al, 1994).

VIII. The National Environment Tribunal Act, 1995

The National Environment Tribunal Act, 1995 is enacted to setup legal institution across the country to provide for strict liability for damages arising out of accidents occurring during handling of hazardous substances and for establishment of National Environment Tribunal for effective and expunction disposal of cases arising from such accidents, with a view to giving relief and compensation for damages to person, property and the environment.

(Source: - Respective Environmental Acts of the Government of India)

ANNEXURE-XXXIX

(Referred to in Paragraph 8.1.2.2)

Details of Total population and Sample selected

(₹ in crore)

Mfg Units / Divisions at	Number of Purchase orders	Value of purchase orders	Number of sample purchase orders	Value of Sample purchase orders
Bangalore	14,911	2,958.61	420	2,000.10
Mysore	23,691	1,908.31	390	1,063.71
Kolar Gold Fields	34,129	1,952.15	553	766.76
Marketing divisions	14,063	2,188.61	214	1,667.94
Total	86,794	9,007.68	1,577	5,498.51

APPENDIX-I*(Referred to in Paragraph 7.2.1.8)***List of Abbreviation****A**

AD	:	Air Defence
AGS	:	Automatic Grenade Launching System
AHSP	:	Authority Holding Sealed Particular
AMR	:	Anti-material Rifle
ATN	:	Action Taken Note

B

BE	:	Budget Estimate
BEL	:	Bharat Electronics Limited
BPC	:	Bulk Production Clearance

C

CKD	:	Complete Knocked Down
CQA	:	Controller of Quality Assurance
CQB	:	Close Quarter Battle

D

DGQA	:	Directorate General of Quality Assurance
DRDO	:	Defence Research and Development Organisation

E

ESR	:	Electro Slag Remelting
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F

FAB	:	Failure Analysis Board
FDI	:	Foreign Direct Investment
FGK	:	Field Gun Factory, Kanpur

G

GCF	:	Gun Carriage Factory, Jabalpur
GSF	:	Gun & Shell Factory, Cossipore
GSQR	:	General Staff Qualitative Requirement

H

HA	:	Hard Anodised
HEAT	:	High Explosive Anti-Tank

I

IE	:	Industrial Employee
IFD	:	Inter Factory Demand
INSAS	:	Indian Small Arms System

J

JVPC	:	Joint Venture Protective Carbine
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L

LAO	:	Local Accounts Office
LFG	:	Light Field Gun
LMG	:	Light Machine Gun
LTE	:	Limited Tender Enquiry
LTIPP	:	Long Term Integrated Perspective Plan

M

MAG	:	Machine Gun
MAO	:	Micro Arc Oxidation
MBT	:	Main Battle Tank
MHA	:	Ministry of Home Affairs
MPS	:	Material Planning Sheet
MRAR	:	Multi Role Assault Rifle

O

OEM	:	Original Equipment Manufacturer
OFT	:	Ordnance Factory, Trichy
OTE	:	Open Tender Enquiry

P

PCA (Fys.)	:	Principal Controller of Accounts (Factories)
PSU	:	Public Sector Undertaking
PYT	:	Pre-Yield Trial

Q

QA	:	Quality Assurance
QAG	:	Quality Audit Group
QC	:	Quality Control
QIN	:	Quality Improvement Note

R

RFI	:	Rifle Factory, Ishapore
RFP	:	Request for Proposal
RFR	:	Return for Rectification
RL	:	Rocket Launcher

S

SAF	:	Small Arms Factory, Kanpur
SHIS	:	Store Holder Inability Sheet
SKD	:	Semi-Knocked Down
SMH	:	Standard Man-Hour
SOP	:	Standard Operating Procedures
SQAE	:	Senior Quality Assurance Establishment
SRCG	:	Stabilized Remote Controlled Gun
STE	:	Single Tender Enquiry

T

TEC	:	Technical Evaluation Committee
ToT	:	Transfer of Technology
TPC	:	Tender Purchase Committee

U

UBGL	:	Under Barrel Grenade Launcher
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APPENDIX-II

(Referred to in Paragraph 7.2.1.8)

GLOSSARY OF TERMS

1.	Roll-on-Plan	Army's plan which projects the multi-year requirement indicating minimum essential requirement based on trends in wastage.
2.	Indent	Army's firm order placed on Board duly mentioning nomenclature of item, cost and delivery schedule.
3.	Advance Issue Voucher	Prepared by Factory to raise demands for payment from the Army w/o physical issue of the stores.
4.	Small Arms	Weapons with barrel bore diameter up to 12.7mm are categorised as Small Arms.
5.	Medium Calibre	Weapon with bore diameter above 12.7mm up to 51mm are categorised as Medium Calibre.
6.	High Calibre	Weapons with bore diameter above 51mm and up to 155mm are categorised as High Calibre.
7.	Quality Control	A section of the factory where first tier quality checks are done before submission to DGQA Authority.
8.	Quality Assurance	This is second tier quality checks carried out by SQA attached to each factory under DGQA.
9.	Returns for Rectification	The stores which are not accepted in the Quality Control inspection are categorised as Returned for Rectification (RFR).
10.	Fixed Overheads	Fixed charges which are invariably or do not vary to any appreciable extent with the load of the factory <i>e.g.</i> pay & allowance of staff, training, maintenance of roads, buildings <i>etc.</i>
11.	Variable Overheads	Represent the overhead charges that fluctuate in sympathy with the load of the factory. <i>e.g.</i> Cost of utilisation (electricity, water, steam) <i>etc.</i>
12.	SHIS	Document prepared by the Store holder to report his inability to supply a store when the stock has gone below a fixed limit, so that arrangements may be made for replenishment. It shows stock in hand, due, average consumption, inabilities in sight and requirements to meet liabilities.
13.	Tender Purchase Committee	For all purchases of stores more than ₹ 10 lakh, a TPC of appropriate level is formed to scrutinise the tender received and to recommend the name of vendor for supply of stores.
14.	AHSP	The establishment responsible for maintaining technical information, including drawings and specifications in respect of stores of their responsibility. The AHSP is also responsible for scrutiny of tenders against defence demands; laying down inspection criteria; drafting technical documents

		for introduction of stores; and guidance for procurement and production of stores by the industry.
15.	QIN	Issued by DGQA authority to factory management suggesting measures for quality improvement. This is based on inspection at control points in the production shop or at the time of inspection of final products.
16.	Alteration Committee	In 2008, the Ministry issued directions on the composition of the <i>alteration committee</i> with General Manager of the Factory and representatives from DGQA and users who would be responsible for identifying potential improvements in design, which may, <i>inter-alia</i> , be necessitated by investigation of quality defects.
17.	Shop Budget Committee	Each production shop of a Factory has a Shop Budget Committee comprising the Works Manager and the Local Accounts Officer which estimates the rate of apportionment of overheads, based on the actual in the previous year and on the estimates of direct labour in the current year.
18.	Price Fixation Committee	The committee consisting of Controller of Finance, Director of the Operating Divisions, Nominee of the factory management, Local Accounts Office and Jt. Controller of Finance. The issue price of the products is fixed by this committee at the beginning of the year.
19.	Quarterly Financial Review	Prepared by the Principal Controller of Accounts which provides Factory-level data on aggregate costs recorded in the relevant quarter, segregated across different elements of labour, materials and overheads along with comparative figures for the last quarter and the corresponding period in the previous year.
20	ESR	Electro Slag Remelting process is used to remelt and refine steels and various super-alloys, resulting in high quality ingots
21	Piece Work Profit	A labour (Piece worker) is entitled to set piece work profit when he produces more output than what authorised in the estimate.

APPENDIX-III

(Referred to in Paragraph 7.3.1.8)

List of Abbreviations

A

A&E	:	Ammunition and Explosive
AFK	:	Ammunition Factory, Kirkee
APR	:	Annual Provision Review
ATN	:	Action Taken Note

B

BB	:	Base Bleed
BE	:	Budget Estimate
BMP	:	Bayavayika Machina Pekhoty (Russian Name for Infantry Combat Vehicle)
BSS	:	British Standard Specification
BT	:	Ballastite

C

CE	:	Composite Explosive
CFL	:	Chloro Fluorescence Lamp
CGDA	:	Controller General of Defence Accounts
CPE	:	Central Proof Establishments, Itarsi
COP	:	Cost of Production
CQA (ME)	:	Controller of Quality Assurance (Military Explosive)
CFA	:	Cordite Factory Aruvankadu
CFEES	:	Centre for Fire, Explosive and Environment Safety

D

DAVP	:	Directorate of Advertising and Visual Publicity
DENSAC	:	De-Nitration and Sulphuric Acid Concentration
DGQA	:	Directorate General of Quality Assurance
DGQAE	:	Directorate General of Quality Assurance Establishment
DGOF	:	Director General, Ordnance Factories
DNR	:	Di-Nitro Resorcinol
DNT	:	Di- Nitro Toluene

E

ERFB	:	Extended Range Fast Bore
ERF	:	Environment Relief Fund
ETP	:	Effluent Treatment Plant

F

FOH : Fixed Overhead
FVC : Fixed Variable Charge

H

HEF : High Explosive Factory Kirkee
HNS : Hexa Nitro Stilbene

I

IFD : Inter Factory Demand
IFG : Indian Field Gun
ISO : International Standardisation Organisation

L

LAO : Local Accounts Office
LED : Light Emitting Diode
LPR : Long Proof Range, Khamaria
LTE : Limited Tender Enquiry
LTPE : Low Temperature Plastic Explosive

M

M&C : Material and Components
MHA : Ministry of Home Affairs
MMPM : Material Management and Procurement Manual
MOD : Ministry of Defence
MOEF : Ministry of Environment and Forest
MPS : Material Planning Sheet
MSHIC : Manufacture, Storage and Import of Hazardous
Chemical
MT : Metric Tonne

N

NC : Nitro Cellulose or Normal Charge
NG : Nitro Glycerine
NGB : Nitro Glycerine Ballastite
NIGU : Nitro Guanidine
NO_x : Nitrous Oxide
NQDBMS : Networked Quality Data Base Management System

O

OFB : Ordnance Factory Board
OFBa : Ordnance Factory, Bhandara
OFI : Ordnance Factory, Itarsi
OH : Overhead
OTE : Open Tender Enquiry

P

PA	:	Performance Audit
PCA (Fys.)	:	Principal Controller of Accounts (Factories)
PCB	:	Pollution Control Board
PCC	:	Pollution Control Committee
PF	:	Pre-Fragmented
PFFC	:	Pre-Formed Fragmentation with Tungsten Cubes
PM	:	Procurement Manual
P&M	:	Plant and Machinery

Q

QA	:	Quality Assurance
QAG	:	Quality Audit Group
QC	:	Quality Control
QFR	:	Quality Financial Review

R

RCS	:	Regional Controller of Safety
RDX	:	Research and Development Explosive
RVC	:	Reducing Variable Charge

S

SHIS	:	Store Holder Inability Sheet
SMH	:	Standard Man-Hour
SOP	:	Standard Operating Procedures
SPCB	:	State Pollution Control Board
SQAE	:	Senior Quality Assurance Establishment

T

TE	:	Tender Enquiry
TEC	:	Tender Evaluation Committee
TNT	:	Tri Nitro Toluene
TPC	:	Tender Purchase Committee
TR	:	Ton of Refrigeration

V

VOH	:	Variable Overhead
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APPENDIX-IV

(Referred to in Paragraph 7.3.1.8)

GLOSSARY OF TERMS

1.	Roll-on-Indent	Army's firm order which projects the multi-year requirement indicating minimum essential requirement based on trends in wastage.
2.	Indent	Army's firm order placed on Board duly mentioning nomenclature of item, cost and delivery schedule.
3.	Advance Issue Voucher	Prepared by Factory to raise demands for payment from the Army w/o physical issue of the stores.
4.	Quality Control	A section of the factory where first tier quality checks are done before submission to DGQA Authority.
5.	Quality Assurance	This is second tier quality checks carried out by SQAE attached to each factory under DGQA.
6.	Fixed Overheads	Fixed charges which are invariably or do not vary to any appreciable extent with the load of the factory <i>e.g.</i> pay & allowance of staff, training, maintenance of roads, buildings etc.
7.	Variable Overheads	Represent the overhead charges that fluctuate in sympathy with the load of the factory. <i>e.g.</i> Cost of utilisation (electricity, water, steam) etc.
8.	SHIS	Document prepared by the Store holder to report his inability to supply a store when the stock has gone below a fixed limit, so that arrangements may be made for replenishment. It shows stock in hand, due, average consumption, inabilities in sight and requirements to meet liabilities.
9.	Tender Purchase Committee	For all purchases of stores more than ₹ 10 lakh, a TPC of appropriate level is formed to scrutinise the tender received and to recommend the name of vendor for supply of stores.
10.	Shop Budget Committee	Each production shop of a Factory has a Shop Budget Committee comprising the Works Manager and the Local Accounts Officer which estimates the rate of apportionment of overheads, based on the actual in the previous year and on the estimates of direct labour in the current year.
11.	Quarterly Financial Review	Prepared by the Principal Controller of Accounts which provides Factory-level data on aggregate costs recorded in the relevant quarter,

		segregated across different elements of labour, materials and overheads along with comparative figures for the last quarter and the corresponding period in the previous year.
12	Piece Work Profit	A labour (Piece worker) is entitled to set piece work profit when he produces more output than what was authorised in the estimate.