CHAPTER VI: ORDNANCE FACTORY ORGANISATION

6.1 General Performance of Ordnance Factory Organisation

6.1.1 Introduction

The Ordnance Factory Board (OFB) functioning under the administrative control of the Department of Defence Production, Ministry of Defence is headed by the Director General Ordnance Factories. There are 39 factories divided into five products based Operating Groups[28] as given below:

Sl. No.	Name of Group	Number of Factories
(i)	Ammunition & Explosives	10
(ii)	Weapons, Vehicles and Tank	10
(iii)	Materials and Components	8
(iv)	Armoured Vehicles	6
(v)	Ordnance Tank (Clothing & General Stores)	5

Two more factories *viz.* Ordnance Factory Nalanda and Ordnance Factory Korwa are under project stage for which ₹812.82[29] crore and ₹120.36 crore respectively, had been spent up to March 2012 against the original sanctioned cost of ₹941.14 crore (revised subsequently to ₹2160.51 crore in February 2009) and ₹408.01 crore. The Ordnance Factory Nalanda - earmarked to manufacture two lakh Bimodular Mass Charge System per annum and Ordnance Factory Korwa - being set up to manufacture 45,000 carbines per annum, were scheduled to be completed by November 2005 (revised to August 2011) and October 2010 (revised to May 2012) respectively. But they were yet to start regular production (October 2013).

6.1.2 Core activity

Ordnance Factories were basically set up to cater to the requirement of Indian Armed Forces. The core activity of Ordnance Factories is to produce and supply arms, ammunition, armoured vehicles, ordnance stores, *etc.* based on the requirements projected by Indian Armed Forces during the Annual Target Fixation meeting held every year. These requirements are later on confirmed by Indian Armed Forces in the form of Indents.

[28] On a functional basis, the factories are grouped into Metallurgical (5 factories), Engineering (13 factories), Armoured Vehicles (6 factories), Filling (5 factories),Chemical (4 factories), Equipment and clothing (6 factories)

[29] Since advance payment Bank Guarantee for BMCS plant has been invoked, total expenditure reduced to ₹ 812.82 crore in 2011-12.

However, to utilise spare capacity, the Ordnance Factories also supply arms and ammunition to Paramilitary Forces of the Ministry of Home Affairs, State Police, and Other Government Departments and also for Civil Indenters including Export.

During 2011-12, Ordnance Factories manufactured 903 principal items as against 938 items during 2010-11. The above items include anti Tank guns, anti-aircraft guns, field guns, mortars, small arms, sporting arms including their ammunitions, bombs, rockets, projectiles, grenades, mines, demolition charges, depth charge, pyrotechnic stores, transport vehicles, optical and fire control instruments, bridges, assault boats, clothing and leather items, parachutes, etc. These product ranges collectively constitute nearly 87 *per cent* of the gross value of production of ₹15,933.44 crore of all the Ordnance Factories for the year ended 31 March 2012.

6.1.3 Manpower

The employees of the Ordnance Factories are classified as (i) "Officers" of senior supervisory level, (ii) "Non-Gazetted" (NGO) or "Non-Industrial" (NIEs) employees who are of junior supervisory level and the clerical establishment and (iii) "Industrial Employees" (IEs), who are engaged in the production and maintenance operations. The number of employees of various categories during the last five years is given in the Table below:

Category of employees	2007-08	2008-09	2009-10	2010-11	2011-12
Gazetted Officers	4036	3947	3481	8306	7917
Percentage of gazetted officers to total manpower	3.77	3.84	3.50	8.40	8.20
NGO/NIEs	32359	31105	30482	25302	25058
Percentage of NGOs/NIEs to total manpower	30.22	30.27	30.67	25.58	25.95
Industrial Employees (IEs)	70666	67717	65411	65306	63572
Percentage of IEs to total manpower	66.01	65.89	65.82	66.02	65.85
Total	**107061**	**102769**	**99374**	**98914**	**96547**

As evident from the foregoing Table, there had been a steady decline in the manpower of Ordnance Factory organization. When compared to 2007-08, the manpower strength decreased by nearly 10 *per cent* in 2011-12. The number of Group A and B Gazetted officers increased significantly by 96.16 *per cent* from 4036 in 2007-08 to 7917 in 2011-12. The number of NGOs/NIEs and IEs declined by 22.56 *per cent* and 10.04 *per cent* respectively in 2011-12, as compared to 2007-08.

While accepting the facts, OFB stated (October 2013) that sharp increase in number of gazetted officer was due to the fact that posts of Assistant Foreman/Foreman/Store Holder, all Gr B non-gazetted posts were merged with the grade of Junior Works Manager/Technical and Non-Technical (Group B gazette posts) in February 2011.

6.1.4 Analysis of the performance of OFB

6.1.4.1 Revenue Expenditure

The revenue expenditure[30] of the Ordnance Factory Board, from 2007-08 to 2011-12 is given in the Table below:

(₹ in crore)

Year	Total expenditure incurred by ordnance factories	Receipts against products supplied to Armed Forces	Other receipts and recoveries [31]	Total receipts	Net surplus of ordnance factories (5-2)
1	2	3	4	5	6
2007-08	7125.63	5850.65	1464.12	7314.77	189.14
2008-09	9081.28	6123.38	1474.54	7597.92	(-) 1483.36
2009-10	10812.10	7531.08	1545.01	9076.09	(-) 1736.01
2010-11	10903.21	9824.99	1665.78	11490.77	587.56
2011-12	12140.91	10702.79	2172.99	12875.78	734.87

The expenditure for the year 2011-12 increased 11.35 *per cent* over that of 2010-11. Similarly, the total receipts against issue of supplies to the Armed Forces, other indentors and miscellaneous increased by 12.05 *per cent* from ₹11490.77 crore in 2010-11 to ₹12875.78 crore in 2011-12.

We observed that the Accounts Officers of the six Ordnance Factories, in violation of the instruction issued by the Chief Controller of Defence Accounts (CGDA) in October 2007 and further, by Principal Controller of Accounts (Factories) Kolkata (PCA) in March 2011 accepted advance issue vouchers submitted to them by the factories during the month of February/March of 2012 and debited the Armed Forces/other establishment ₹1581.12 crore towards issue of stores to them despite the fact that these items were not physically issued to them during 2011-12 (See details in **Annexure-II**). Repeated Audit observations on the issue were overlooked. Persistent deficiency in accounting the issues to different indenters had thus inflated the total receipts by ₹1581.12 crore enabling OFB to show a surplus during 2011-12.

OFB attributed (October 2013) their inability to physically issue the items to the indentor by 31 March 2012 owing to certain practical difficulties and non-accounting of expenditure incurred for production and supplies to indentors would affect the Net Budget. Principal Controller of Accounts (Fys) Kolkata (PCA) stated that booking of issue values by their Branch Accounts Office was based on documentary evidences.

[30] Source-Appropriation Accounts

[31] Other receipts and recoveries includes receipt on account of transfer of RR funds, sale of surplus/obsolete stores, issues to MHA including Police, Central and State Governments, Civil trade including Public Sector Undertaking, export and other miscellaneous receipts.

Replies of OFB and PCA are not acceptable because acceptance of advance issue vouchers without corresponding physical issue of stores is contrary to the accepted accounting principles. Further, Branch Accounts Office had prepared Issue Vouchers without physical issue of products to the indentors in gross violation of CGDA's instruction of October 2007. Reply is silent on corrective action taken to avoid this deficient accounting despite our repeated comment.

6.1.4.2 Trend of revenue expenditure

The trend of revenue expenditure during 2010-11 and 2011-12 was as indicated in the Table below:

(₹in crore)

Sl No	Revenue Head of Expenditure	Expenditure		Increase (+) / Decrease (-)	
		2010-11	**2011-12**	**Total**	**Per cent**
1	Direction and Administration	74.36	79.68	(+) 5.32	(+) 7.15
2	Research	39.95	35.71	(-) 4.24	(-) 10.61
3	Maintenance	20.86	21.78	(+) 0.92	(+) 4.41
4	Manufacture	3502.60	4416.14	(+) 913.54	(+) 26.08
5	Transportation	110.73	115.98	(+) 5.25	(+) 4.74
6	Stores	5706.32	6101.69	(+) 395.37	(+) 6.93
7	Works	57.81	75.93	(+) 18.12	(+) 31.34
8	Renewal and Replacement	207.82	310.25	(+) 102.43	(+) 49.29
9	Transfer to Renewal and Replacement (RR) Fund	600.00	325.00	(-) 275.00	(-) 45.83
10	Other Expenditure	582.76	658.75	(+) 75.99	(+) 13.04
	Grand Total	**10903.21**	**12140.91**	**(+) 1237.70**	**(+) 11.35**

As can be seen from the Table above that –

- The total revenue expenditure during 2011-12 increased by ₹1237.70 crore (11.35 *per cent*) over 2010-11. Analysis of trend of element-wise expenditure revealed that in 2011-12 expenditure on stores, manufacture and renewal/replacement had increased by 6.93 *per cent*, 26.08 *per cent* and 49.29 *per cent* respectively as compared to 2010-11, while there was decrease under the Head "Transfer to Renewal/Replacement Fund" (45.83 *per cent*) and "Research" (10.61 *per cent*).

- At the beginning of the year, based on the budget estimate, certain sum of money is earmarked for parking in the "Renewal and Replacement Fund" under Minor Head No 797 (Transfer to RR Fund) of the Major Head 2079. When plant and machinery are procured, booking is made by making a credit to Minor Head No 797 of Major Head 2079 *viz.* Transfer from RR Fund with corresponding debit to Minor Head 106 of Major Head 2079 *viz.* Renewal and Replacement. We noticed that there was an opening balance of ₹490.45 crore under Depreciation

Reserve Fund under the Public Fund Accounts as of 1 April 2011. Ordnance Factory Board got an allotment of ₹325 crore under the Budget head 'Transfer to RR Fund' and drew only ₹311.42 crore during 2011-12 for purchase of plant and machinery and parked the remaining amount of ₹13.58 crore in the Public Fund of India instead of surrendering the same to the Consolidated Fund of India as required under General Financial Rules. Resultantly, the closing balance under the Depreciation Fund Reserve stood inflated by ₹504.03 crore. However, the same had been shown as incurred towards 'Transfer to RR Fund' in the Appropriation Account. Consequently, the expenditure in the Appropriation Account was overstated to the extent of ₹504.03 crore cumulatively as of 31 March 2012.

Justifying the excess transfer of funds, the Principal Controller of Accounts (Fys) (PCA) stated (18 October 2012) that the Renewal and Reserve fund, created under the Public Account in compliance with Government of India, Ministry of Finance (Department of Economic Affairs) order (30 January1991) for financing the replacement of the ageing plants and machinery, is financed by transfers from revenue head under the Consolidated Fund of India and it is a non-lapsable, revolving and non-interest bearing fund. PCA also added (October 2013) that fund in the Public Account was not getting accumulated but is being utilized for modernization endeavours of the OFB and issue of surrender of unspent RR amount does not arise. The contention of PCA is not acceptable because in violation of provisions of GFR the unspent fund was not surrendered to the Consolidated Fund of India at the closure of each financial year. Further, the balance of amount shown in the Depreciation Fund Reserve in the Public Fund Account was not revolving but only getting accumulated as is evident from the fact that Depreciation Fund Reserve in the Public Account enhanced from ₹98.39 crore as of April 2010 to ₹504.03 crore as 31 March 2012. Further, OFB stated (October 2013) that the accumulated balance is expected to be utilized during 2014-15 based on investment plan. However, reply did not indicate any details of the investment plan during 2014-15.

As per the instructions, Ordnance Factories are required to recover from Armed Forces the actual cost of issues. We noted 20 cases where six factories *viz.* Ordnance Factory Khamaria, Ordnance Factory Chanda, Ordnance Factory Badmal, Ordnance Factory Trichy, Gun Carriage Factory Jabalpur and Heavy Vehicle Factory Avadi had under-recovered ₹201.58 crore due to acceptance of issue prices lower than the estimated cost. In respect of 35 other cases involving supplies to the Armed Forces/other Government organizations, 12 ordnance factories[32] fixed issue prices at abnormally higher rates than the estimated cost resulting in earning an abnormal profit of ₹1229.24 crore.

[32] Ordnance Factory Medak, Vehicle Factory Jabalpur,Heavy Vehicles Factory Avadi,Ordnance Factory Dehu Road,Opto Electronic Factory Dehra Dun,Gun and Shell Factory Cossipore,Gun Carriage Factory Jabalpur,Machine Tool Prototype Factory Ambarnath, Ordnance Factory Khamaria, Small Arms Fact ory Kanpur, Ammunition Factory Kirkee and Ordnance Cable Factory Chandigarh

PCA while accepting the audit observation stated (October 2012) that the matter regarding anomaly in price fixation was highlighted to the executives through Review of Accounts every year. The fact, however, remains that after considering the excess booking on account of issues by ₹1581.12 crore and net abnormal profit of ₹1027.66 crore earned due to non-adoption of OFB's pricing policy, the total recoveries under various heads for the year 2011-12 worked out to ₹10267.00 crore instead of ₹12875.78 crore as shown by OFB in the Appropriation Accounts for the year 2011-12. Thus, while the OFB had obtained budgetary support of ₹1873.91 crore from the Government of India, it had reflected a contribution of ₹734.87 crore to the Consolidated Fund of India in their Appropriation Accounts (2011-12) which is not factually correct.

6.1.5 Cost of production

The following Table indicates the group-wise/element-wise analysis of cost incurred as well as the percentages of various elements of cost to the total cost of production, during 2011-12.

(₹in crore)

Sl No	Group of Factories	Cost of Product-ion	Direct Store	Direct Expense	Direct Labour	Overhead Charges		
						Fixed Overhead	Variable Overhead	Total Overhead
1	Material & Components (M&C)	2074.91	968.47 **(46.68)**	84.82 **(4.09)**	248.24 **(11.96)**	539.13 **(25.98)**	234.25 **(11.29)**	773.38 **(37.27)**
2	Weapons, Vehicles and Tank (WV&E)	3812.50	2176.03 **(57.08)**	19.09 **(0.50)**	407.11 **(10.68)**	811.74 **(21.29)**	398.53 **(10.45)**	1210.27 **(31.74)**
3	Ammunition and Explosive (A&E)	5266.51	3613.24 **(68.61)**	38.04 **(0.72)**	390.47 **(7.41)**	1004.25 **(19.07)**	220.51 **(4.19)**	1224.76 **(23.26)**
4	Armoured Vehicles (AV)	3818.35	2932.42 **(76.80)**	16.64 **(0.44)**	183.74 **(4.81)**	544.66 **(14.26)**	140.88 **(3.69)**	685.54 **(17.95)**
5	Ordnance Tank (OE)	961.17	380.18 **(39.55)**	0.36 **(0.04)**	260.53 **(27.10)**	246.39 **(25.63)**	73.71 **(7.67)**	320.10 **(33.30)**
	Total	15933.44	10070.34 **(63.20)**	158.96 **(0.99)**	1490.09 **(9.35)**	3146.17 **(19.75)**	1067.88 **(6.70)**	4214.05 **(26.45)**

Note : Figures in the bracket represent the percentage of particular element of cost to total cost of production

As can be seen from the Table above, amongst all the five group of factories A&E group of factories registered the highest cost of production at ₹5266.51 crore. The OE group of factories, on the other hand, registered the lowest cost of production at ₹961.17 crore. The average overhead charge of OFB across all groups was 26.45 *per cent* of cost of production. The M&C, WV&E and OE group of factories had exceeded the average overhead cost, while in the A&E and AV group of factories it was below the average.

6.1.6 High Supervision and Indirect Labour Charges

The details of direct/indirect labour charges, supervision charges and percentage of indirect labour to direct labour as well as percentage of supervision charges to direct labour charges are given in the **Annexure -III**.

It can be seen that except for OE Group, in all other Groups the supervision charges as a percentage of the direct labour charges during 2011-12 was high. For every ₹1.00 spent on direct labour, the supervision charges ranged between ₹1.18 and ₹1.41.

On this being pointed out (October 2012) by us, PCA stated (October 2012) that pay and allowances of supervisors were quite high in comparison to IEs and this, being one of the factors, escalated supervision charges.

The fact, however, remains that since the number of Group 'A' and 'B' officers whose remuneration forms a major element of supervision charges was only 7917 and as the Industrial Employees whose remuneration forms a significant factor of direct labour were 63572 in number, the correlation of supervision charges to direct labour cost was out of pattern. Hence, the supervision charges to the direct labour charges need to be brought down to a reasonable level.

OFB stated (October 2013) that high supervision charges were partly attributed to payment of OT areas in respect of NGO, NIE category and DSC. However, OFB accepted the audit recommendation for detailed examination.

6.1.7 Production profile

The production programme for ammunition, weapons and vehicles, materials and components and armoured vehicles was fixed for one year, which in the case of Tank items has been fixed for four years. The details of demand, targets fixed and shortfall in achievement of the targets during the last five years are shown in the Table below:

Year	Number of items for which demands existed	Number of items for which target fixed	Number of items manufactured as per target	Number of items for which target were not achieved	Percentage of shortfall with reference to target fixed
2007-08	628	507	360	147	28.99
2008-09	419	419	296	123	29.36
2009-10	605	434	300	134	30.88
2010-11	1016	639	416	223	34.90
2011-12	982	547	195	352	64.35

During 2011-12, demand of items had marginally declined by 3.35 *per cent* to 982 items over 2010-11. However, targets were fixed mutually only in respect of 547 items. Even then, there was a shortfall of 64.35 *per cent* in achieving the target.

Failure of OFB to achieve the targets on all the items for which the demand existed foreclosed the possibility of offloading fixed cost burden to these items as well as escalated the cost of other products due to excessive apportionment of overheads.

OFB stated (October 2013) that major reasons for shortfall in some of the targeted stores were attributed to (i) less supply of Tank and Mortar Ammunition on account of prolonged breakdown of RDX plant; (ii) non-receipt of bulk production clearance of certain stores like MultiMode Grenade; (iii) indent coverage not sufficient to complete the target for certain items; (iv) non-availability of input material ex-import/trade in time; (v) delay in proof due to inadequate proof infrastructure and (vi) capacity constraint in few cases and also due to design problem in some areas.

6.1.8 Capacity utilization

The Table below indicates the extent of utilization of the machine hour capacity during the last five years.

(Capacity utilization in terms of Machine Hours)

(Unit in lakh hours)

Year	Machine hours available	Machine hours utilized	Percentage of Capacity utilization
2007-08	1351	1147	85
2008-09	1696	1294	76
2009-10	1839	1261	69
2010-11	1830	1311	72
2011-12	1577	1232	78

The percentage of utilization of machines by the Ordnance Factories had improved to 78 *per cent* in 2011-12 as compared to 72 *per cent* in 2010-11. However, they were yet to achieve the capacity utilization at the level of 85 *per cent* in 2007-08. Necessary action may be initiated by OFB to ensure optimum utilization of machine hours available at the Ordnance Factories.

6.1.9 Issue to users (Indentors)

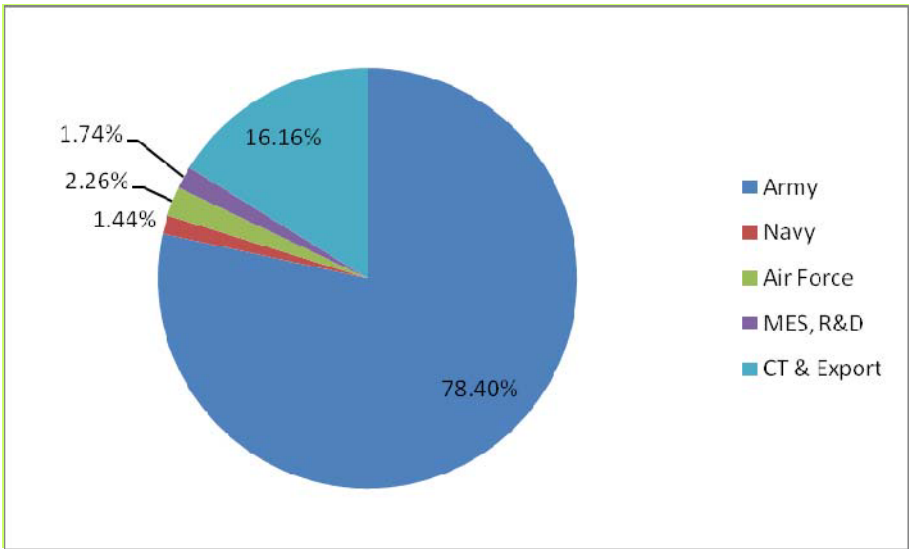
The indentor-wise value of issues as extracted from the Appropriation Account of OFB during the last five years, was as under:

(₹ in crore)

Name of Indentors	2007-08	2008-09	2009-10	2010-11	2011-12	Issues in 2011-12 excl. Spill over
Army	5252.15	5557.66	7054.12	9225.15	10078.82	8530.58
Navy	119.39	179.41	124.40	243.98	157.67	156.43
Air Force	239.53	221.02	208.20	219.58	275.67	245.88
MES, Research and Development (Other Defence Department - ODD)	145.63	124.67	116.40	169.04	190.63	189.77
Total Defence	**5756.70**	**6082.76**	**7503.13**	**9857.20**	**10702.79**	**9122.66**
Civil Trade and Export	1181.11	1146.55	1212.13	1357.76	1759.20	1758.21
Total issues	**6937.81**	**7229.31**	**8715.25**	**11214.96**	**12461.99**	**10880.87**

Though the total value of issues (₹12461.99 crore) during 2011-12 increased by 11.12 *per cent* as compared to the previous year whereas the actual physical issues during 2011-12 (₹10880.87 crore) decreased by 2.98 *per cent*. Nevertheless, the Army continued to remain the major recipient of the products of the Ordnance Factories, accounting for nearly 78.40 *per cent* of the total issues during the year 2011-12 with Civil Trade and Export being a distant second at 16.16 *per cent*, as can be seen from the chart below.

Supplies made to Services and other indentors during 2011-12



6.1.10 Civil trade

With the objective of optimal utilisation of spare capacities and to reduce dependence on budgetary support, the Ordnance Factories commenced civil trade since July 1986. The turn-over from civil trade (excluding supplies to the Ministry of Home Affairs and State Police Departments) during 2007-2012 was as under:

(₹in crore)

Year	Number of factories involved	Target	Achievement	Percentage of achievement to the target
2007-08	32	335.01	359.56	107.33
2008-09	39	351.12	329.30	93.79
2009-10	27	374.23	425.18	113.61
2010-11	27	464.50	466.86	100.50
2011-12	27	470.00	499.89	106.36

As can be seen from the Table above, the value of issues to the civil trade increased from ₹466.86 crore in 2010-11 to ₹499.89 crore in 2011-12 and the achievement had exceeded the target by 6.36 per cent.

6.1.11 Export

The following Table shows the achievement with reference to target in export from 2007-08 to 2011-12:

(₹in crore)

Year	Factories involved	Target	Achievement	Shortfall (-) / Excess (+)	Percentage of shortfall (-) / Excess (+) w.r.t. target
2007-08	10	30.00	27.44	(-) 2.56	(-) 8.53
2008-09	11	35.00	41.07	(+) 6.07	(+) 17.34
2009-10	13	41.30	12.30	(-) 29.00	(-) 70.22
2010-11	8	44.00	35.70	(-) 8.30	(-) 18.86
2011-12	6	40.00	46.08	(+) 6.08	(+) 15.20

As can be seen from the Table above, the value of export increased by ₹6.08 crore in 2011-12 over the previous year and that exceeded the target by 15.20 *per cent*.

6.1.12 Inventory Management

The position of total inventory holdings at the Ordnance Factories as a whole during 2007-08 to 2011-12 was as under:

(₹in crore)

Sl. No	Particulars	2007-08	2008-09	2009-10	2010-11	2011-12	*Per cent* of increase/ decrease during 2011-12 in comparison to previous year
1.	Working stock						
a.	Active	2160.00	2354.00	2732.00	4093.00	4185.00	2.25
b.	Non-moving	333.00	322.00	297.00	346.00	507.00	46.53
c.	Slow moving	211.00	287.00	507.00	574.00	476.00	(-) 17.07
	Total Working Stock	**2704.00**	**2963.00**	**3536.00**	**5013.00**	**5168.00**	**3.10**
2	Waste & Obsolete	14.00	26.00	39.00	20.00	15.00	(-) 25
3.	Surplus/ Scrap	81.00	68.00	64.00	68.00	64.00	(-) 5.89
4.	Maintenance stores	79.00	73.00	73.00	76.00	89.00	17.10
	Total	**2878.00**	**3130.00**	**3712.00**	**5177.00**	**5336.00**	**3.07**
5.	Average holdings in terms of number of days' consumption	160	149	177	199	178.00	(-) 10.55
6.	Percentage of total slow-moving and non-moving stock to total working stock	20.12	20.55	22.74	18.35	19.02	3.65

The stock in hand had increased by 3.07 *per cent* from ₹5177 crore in 2010-11 to ₹5336 crore in 2011-12 with 12 Ordnance Factories holding working stock

above the authorised limit. This was attributed to OFB's decision to initiate procurement action for input material against indents for three years' requirement (two years plus 50 per cent option clause) with price variation clause and staggered delivery schedule conforming to budget allotment and shelf life of the stores. However, the staggered delivery mechanism was not properly implemented by at least five factories (Ordnance Factory Kanpur, Ordnance Factory Ambajhari, Ordnance Factory Trichy, Ordnance Factory Khamaria and Opto Electronic Factory Dehra Dun,) leading to excess stock holding in these factories as of 31 March 2012 as detailed in **Annexure IV.** These factories need to review the excess stock holding and strengthen inventory management to avoid blocking up of funds.

While accepting the facts, OFB stated (October 2013) that due to non-availability of matching items either from trade or Inter Factory Demand, the final achievement was less than the target, resulting in higher inventory. OFB also added that they had advised the factories to strictly adhere to the directives regarding coverage, keeping in view the total budget allotment, shelf life of the stores and incorporating staggered delivery schedule in the supply orders.

6.1.12.1 Finished Stock holding

Position of Finished stockholding (completed articles and components) during the last five years as extracted from the Review of Annual Accounts of the Ordnance Factory Organisation for the year 2011-12 as prepared by the Principal Controller of Accounts (Fys) Kolkata was as under:

(₹ in crore)

Particulars	2007-08	2008-09	2009-10	2010-11	2011-12
Holding of Finished articles	79.00	506.00	166.59	112.62	92.43
Total cost of production	9312.61	10610.40	11817.89	14012.12	15933.44
Holding of finished stock in terms of number of days' issue	3	17	5	3	2
Holding of finished stock in terms of percentage of total cost of production	0.85	4.77	1.41	0.80	0.58
Holding of finished component	617.00	458.00	1015.04	1101.73	1119.16
Holding of finished components in terms of number of days' consumption	44	38	85	65	62
Holding of finished components in terms of percentage of total cost of production	6.63	4.32	8.59	7.86	7.02

Though as on 31.3.2012, there was decrease in the value of finished (completed) articles by 17.93 *per cent*, the value of finished components in hand increased by 1.58 *per cent* in 2011-12 when compared with 2010-11. Immediate action needs to be taken for early utilisation of huge finished components to ensure that holding of finished components in terms of number of days' consumption be brought down to the 2008-09 level of 38 days.

We observed that actual cost of finished components consumed by the Ordnance Factories during the year 2011-12 had not been reflected in the accounts. Only, a footnote under the Annual Production Account for the year 2011-12 indicated that the cost of finished components consumed in production was ₹6644.69 crore.

In reply, PCA assured (October 2012) that information relating to Opening balance and closing balance, components produced during the year, utilized during the year would be furnished factory-wise as an annexure to the Annual Accounts from 2012-13 onwards. However, it might not be feasible to reflect the cost of finished components consumed in production in the Consolidated Annual Accounts.

6.1.13 Work-in-progress

The General Manager of an Ordnance Factory authorizes a production shop to manufacture an item of requisite quantity by issue of a warrant whose normal life is six months. Unfinished items pertaining to different warrants lying at the shop floor constituted the work-in-progress. The value of the work-in-progress during the last five years was as under:

(₹in crore)

As on 31 March	Value of work-in-progress
2008	1265.00
2009	1961.82
2010	2121.75
2011	2297.06
2012	2551.84

The total value of work-in-progress as on 31 March 2012 increased by 11.09 *per cent* in comparison to 2010-11. As on 31 March 2012, a total of 28,893 warrants were outstanding, of which 4657 warrants pertained to 2010-11 and prior to 2010-11, the oldest being of 1993-94.

The position of outstanding warrants was predominant in Heavy Vehicles Factory Avadi (4342 warrants valuing ₹462.14 crore), Ordnance Factory Chanda (326 warrants valuing ₹210.23 crore), Ordnance Factory Medak (2874 warrants valuing ₹328.44 crore), Ordnance Factory Ambajhari (1113 warrants valuing ₹183.24 crore) and Ordnance Factory Khamaria (130 warrants valuing ₹251.99 crore).

PCA stated (October 2013) that necessary instructions had been issued to all Branch Accounts Offices to take up the matter with factory management for immediate closure of all old outstanding warrants.

6.1.14 Losses

The Table below depicts losses written off during the last five years ending 31 March 2012 :

(₹ in lakh)

Sl. No	Particulars	2007-08	2008-09	2009-10	2010-11	2011-12
1	Overpayment of pay & allowances and claims abandoned	Nil	0.22	Nil	Nil	2.88
2	Losses due to theft, fraud or neglect	29.11	0.28	0.17	4.97	Nil
3	Losses due to deficiencies in actual balance not caused by theft, fraud or neglect	Nil	Nil	Nil	Nil	Nil
4	Losses in transit	0.16	6.46	16.85	21.38	Nil
5	Other causes (*e.g.* conditioning of stores not caused by defective storage, stores scrapped due to obsolescence, *etc.)*	19.58	180.41	1.07	122.64	149.95
6	Defective storage loss	Nil	Nil	Nil	Nil	Nil
7	Losses not pertaining to stock	333.90	73.75	233.19	518.20	92.51
	Total	**382.75**	**261.12**	**251.28**	**667.19**	**245.34**

During 2011-12, the losses written off had decreased by ₹421.85 lakh when compared to the previous year. However, the losses written off owing to other causes had indicated an increase of 22 *per cent* in 2011-12, when compared with the previous year. However, as of June 2012, 253 cases of losses amounting to ₹123.17 crore were awaiting regularisation by the Ministry of Defence and the oldest items pertain to the year 1964-65. Losses awaiting regularisation were pronounced in Ordnance Factory Khamaria (₹43.06 crore), Ordnance Factory Varangaon (₹20.22 crore), Ammunition Factory Kirkee (₹17.08 crore) and Metal & Steel Factory Ishapore (₹11.10 crore). Effective steps need to be taken by OFB to pursue with the Ministry to regularise these losses.

OFB stated (October 2013) that (i) the status was being reviewed quarterly by the Board in the Board meetings, and (ii) the matter was being pursued with the Ministry for early sanction of the case. There is a need to strengthen the monitoring mechanism for expeditious regularisation of loss.

The matter was referred to the Ministry in July 2013; their reply was awaited (November 2013).

NOTE : The figures incorporated in this paragraph are mainly based on the figures of the Consolidated Annual Accounts of Ordnance and Ordnance Tank Factories in India finalised by Principal Controller of Accounts (Fys.), Kolkata for the year 2011-12, documents maintained and information supplied by Principal Controller of Accounts (Fys.), Kolkata as well as Ordnance Factory Board, Kolkata.

Procurement of Stores/ Machinery

6.2 Avoidable extra expenditure on procurement of a component

Procurement of Tail Unit 8A by Ammunition Factory Kirkee/Ordnance Factory Dehu Road from Ordnance Factory Kanpur (OFC) despite the OFC's material cost being higher than the total trade cost of Tail Unit 8A led to avoidable extra expenditure of ₹24.79 crore.

Mention was made in Audit Paragraph 8.4 of the Comptroller and Auditor General of India's Report No 6 of 2005 that in deviation of Ordnance Factory Board (OFB)'s Circular (October 1997), Ordnance Factory Dehu Road (OFDR) procured component (Tail Adapters)[33] from Ordnance Factory Kanpur (OFC), though material cost alone of Tail Adapters supplied by OFC was higher than the trade cost of finished goods, leading to an additional expenditure of ₹3.04 crore.

Ministry in their Action Taken Note (ATN) stated (November 2009) that OFB had reviewed (November 2006) the policy guideline on trade procurement *vis-a-vis* Inter Factory Demand (IFD) expenditure and issued a Circular (December 2006) directing Senior General Managers/General Managers of all Ordnance Factories, to procure 100 *per cent* of the total requirement of any item from trade if the material cost of that item at the component making factory is more than the total trade cost.

During 2008-09 to 2011-12, OFDR and Ammunition Factory Kirkee (AFK) procured Tail Unit 8A[34], a component required for manufacture of 51mm ammunition, from trade firms as well as from Ordnance Factory Kanpur (OFC). We examined (April 2012 and October 2012) the cost pattern at OFC and noticed that the material cost of Tail Unit 8A during 2008-09 to 2011-12 ranged between ₹337 and ₹504 each, which had exceeded the total unit cost of finished goods ex-trade (ranging between ₹63 and ₹81) by nearly six times. Ignoring this abnormal material cost trend in OFC, as compared to trade prices, AFK/OFDR, in violation of OFB's Circular (December 2006) procured 6.51 lakh Tail Unit 8A from OFC against eight IFDs placed during 2008-09 to 2011-12 at rates ranging between ₹371 and ₹494 per unit. During the same time, AFK/OFDR also purchased 6.42 lakh Tail Units 8A from trade at much cheaper rates ranging between ₹58.50 and ₹81 per unit against 20 supply orders (May 2009 -September 2011).

Despite repeated placement of IFDs at higher rates in violation of existing Circular, neither did the Ministry nor OFB address this issue in any of its Board meetings held after issue of its Circular of December 2006.

Justifying the procurement at higher cost from OFC, OFB stated (October 2013) that 50 *per cent* of the requirement of Tail Unit 8A was procured from

[33] A component used to fit Tail Unit with Shell body of ammunition by adjustment.
[34] A component used in the 51mm Mortar Bomb to stabilize the direction of the ammunition during its flight.

OFC and the balance 50 *per cent* from trade which was in line with their Circulars of December 2006 and February 2009[35].

The reply is factually incorrect as OFB's contention contradicts its own Circular of December 2006 which clearly mentioned that 100 *per cent* requirement should be procured from trade if the material cost of the item at component making factory was more than the trade cost. Further, OFB's Circular of February 2009 is not relevant because it relates to instances where marginal costs of a product of ordnance factories origin are higher than the trade price.

Thus, procurement of 6.51 lakh Tail Units 8A from OFC, at a significantly higher cost than the trade cost in violation of OFB's Circular of December 2006 , resulted in extra expenditure of ₹24.79 crore.

The matter was referred to the Ministry of Defence in July 2013; their reply was awaited (November 2013).

6.3 Undue benefit to a foreign supplier by allowing Exchange Rate Variation

Ordnance Factory Board, in violation of Defence Procurement Manual and without obtaining approval of the Ministry of Defence, granted undue benefit to a foreign supplier by making extra payment of ₹1.22 crore on account of Exchange Rate Variation.

Paragraph 13.14 of the Defence Procurement Manual (DPM), 2005 stipulates that in case of delivery period exceeding one year from the date of contract involving import (foreign exchange), Exchange Rate Variation (ERV) was to be provided. In case delivery period (DP) was refixed/extended, ERV would not be admissible if it was due to default of the supplier. The base date for ERV would be the date of entering into the contract.

Ministry of Defence (MoD) accorded sanction (October 2008) for procurement of Nitrocellulose (NC) plant for Ordnance Factory Nalanda. Accordingly, OFB concluded (January 2009) a contract with M/s Bowas Induplan Chemie, Austria (firm) for procurement of NC plant with foreign exchange element of EURO 15386085[36] (₹100.53 crore), which was duly approved by the MoD. As per the contract, delivery of NC plant was to be completed by July 2011.

We noticed (July 2013) that the firm failed to adhere to the delivery period and OFB, on the firm's request, extended the time schedule for supply of plant periodically till May 2013. The NC plant, after satisfactory performance trial (December 2012), was taken on charge (April 2013).

[35] Operating Divisions of both the supplying and receiving factories, in consultation with Finance, will review the cases wherever marginal cost of the product of ordnance factories origin is found to be higher than the trade price and procurement of such item from sister factories will be resorted only after approval of Ordnance Factory Board.
[36] At the exchange rate of 1 EURO = ₹65.34 as on the date of entering into the contract.

We also noticed that despite delayed delivery of NC plant by M/s Bowas Austria, OFB allowed ERV for the delayed period in violation of DPM, and released (3 June 2013) EURO 1610485.90 at the exchange rate of 1 EURO = ₹72.91 instead of exchange rate of 1 EURO = ₹65.34 prevailing on the date of contract. Even though the contract was approved by MoD, OFB did not send the request to MoD for releasing ERV beyond scheduled delivery period. OFB was not empowered to release any additional ERV as per the DPM.

Ministry stated (October 2013) that DPM 2005, which was not applicable to OFB, was superseded by DPM 2009 wherein it was clearly mentioned that ERV clause was to be included only in the contracts concluded with the Defence Public Sector Undertakings (DPSUs) which involved import content.

The reply is factually incorrect as the provision of DPM 2005 was applicable to all wings of MoD and supersession of this Manual by DPM 2009 is irrelevant because these contracts had been concluded (January 2009) before the applicability of DPM 2009. Ministry's reply is also contradictory since on the one hand they stated that DPM 2005 was inapplicable to the OFB and on the other hand, reference was made to DPM 2009 citing inclusion of ERV clause only for contracts concluded with the DPSUs.

Thus, violation of the provisions of DPM by OFB led to undue benefit to the contractor besides incurring an extra expenditure of ₹1.22 crore on account of ERV.

6.4 Undue benefit to a foreign firm by diluting the conditions in Tender Enquiry and contract

Ordnance Factory Badmal, in violation of Defence Procurement Manual, accorded undue benefit to a foreign firm by accepting the PC Sheets valuing ₹2.58 crore without ascertaining its manufacturing month. This coupled with delayed issue of PC Sheets to Ordnance Factory Chanda had resulted in accumulation of shelf life expired PC Sheets valuing ₹0.67 crore.

Paragraph 7.1.2 of the Defence Procurement Manual (DPM), 2009 stipulates that the contract must include conditions specific to a particular case as mentioned in the Request for Proposal (RFP)/Tender Enquiry (TE).

The indigenous manufacture of 125mm High Explosive and 125mm High Explosive Anti Tank Ammunition (ammunition) at Ordnance Factory Badmal (OFBL) and Ordnance Factory Chanda (OFCh) was undertaken based on Transfer of Technology received from M/s Rosoboronexport, Russia (OEM).

To manufacture 125mm High Explosive and High Explosive Anti Tank ammunition, OFCh and OFBL required Pyroxylene Cellulose Sheets of 0.52mm-0.56mm (PC-1) and 0.29mm-0.34mm (PC-2) thickness. Accordingly, Ordnance Factory Board nominated OFBL as the nodal agency for procurement of PC Sheets for OFCh.

OEM's Technical specification of PC Sheets stipulated that storage period of PC Sheets was six months from the date of manufacture. In case of storage for more than six months but less than two years, PC Sheets should be subjected to complete repeated analysis. Thus, PC Sheets which were more than two years from the date of manufacture, were not fit for utilization.

For procurement of 29120 Kgs of PC-1 and 9920 Kgs of PC-2, a Tender Enquiry was issued by OFBL on 19 September 2009 to five foreign suppliers. The Tender Enquiry provided that the material to be offered should be from the lots of recent manufacture and year as well as month of manufacture should be confirmed while forwarding the requisite documents. We observed (January 2012) that though the storage period of PC Sheets would be reckoned from the date of manufacture, TE mentioned only the "month of manufacture" but not the "date of manufacture".

In response to the TE, two offers were received from M/s Rosonboronexport Russia and M/s Tasko Export Ukraine (TEU) and the offer of M/s TEU was found to be the lowest. Accordingly, a contract was concluded between OFBL and M/s TEU in October 2009 for procurement of 29120 Kgs (PC-1) and 9920 Kgs (PC-2) at a total cost of USD 554368 (₹2.70 crore at 1 USD= ₹14.20). However, it was observed (January 2012) that OFBL, in violation of DPM and OEM's technical specifications, had not incorporated a clause relating to "actual date of manufacture" in the contract.

Subsequently, OFBL received (April 2010) 29120 Kgs (PC-1) and 9920 Kgs (PC-2) Sheets from M/s TEU (₹2.58 crore). These were received and accepted by OFBL based on the Inspection Certificate and Acceptance Test Report (Test Certificate) issued by M/s TEU without the incorporation of the "actual date of manufacture" in the Test Certificate. Of the PC Sheets received, OFBL issued 11951 Kgs (PC-1) and 2550 Kgs (PC-2) to the OFCh between August 2010 and February 2012, *i.e.* after more than nearly two years, owing to delay in finalization of transport contract. However, scrutiny of records by us in June 2013 revealed that OFCh had 8880 Kgs PC-1 and 1266 Kgs PC-2 Sheets valuing ₹67.03 lakh lying in their stock (June 2013). Since the shelf life of PC Sheets had expired, the possibility of its utilisation appeared remote.

OFBL stated (January 2012) that it was clearly mentioned in the contract that the stores to be supplied were new *i.e.* manufactured in the current year and would incorporate all the latest improvements and modifications thereto. OFBL also added (November 2013) that the actual date of manufacture of PC Sheets received by them was not mentioned by M/s TEU but the year of manufacture was mentioned by M/s TEU as "Current Year *i.e.* 2009-10" in the Test Certificate.

The reply is, however, not acceptable because only the "month of manufacture" was incorporated in the TE, while "year of manufacture" was incorporated in the contract. This diluted the requirement of OEM's technical specification as well as the Paragraph 7.1.2 of the DPM. Further, for sensitive items, with limited shelf life such as PC Sheets where the storage period is limited, specific incorporation of the actual date of manufacture should have been insisted upon during the procurement and receipt of PC Sheets based on the Test Certificate.

While accepting the delay in finalization of transport contract by OFBL, OFB stated (September 2013) that in order to gainfully utilize the available PC Sheets at OFCh, the matter was being taken up with CQA (Ammunition) Kirkee/CQA (ME) for retesting the same and the imported chemicals required for retesting, would arrive in November 2013.

The reply is, however, not acceptable because the shelf life of the Sheets lying in the stock of OFCh had already expired even if reckoned from the date of receipt and hence cannot be subjected to repeated analysis. Thus, import of chemicals to retest PC Sheets at OFCh would not serve any purpose.

Thus, failure of OFBL to incorporate a clause relating to actual date of manufacture of PC Sheets in the contract and its acceptance on the basis of firm's Test Certificate had foreclosed the possibility of ascertaining the actual expiry date of PC Sheets worth ₹2.58 crore. This coupled with the delayed issue of PC Sheets to OFCh owing to slippages in finalization of transport contract by OFBL resulted in accumulation of life expired 10146 Kgs PC Sheets valuing ₹0.67 crore at OFCh.

The matter was referred to the Ministry of Defence in June 2013; their reply was awaited (November 2013).

Manufacture

6.5 Loss due to rejection of empty shells and consequent blocking of inventory

The production and inspection agencies failed to resolve the proof methodology which arose due to rejection of one lot (manufactured by Ordnance Factory Kanpur) of empty shell valuing ₹2.78 crore. As a result, inventory worth ₹10.28 crore remained unutilized.

Based on a Transfer of Technology (ToT) agreement (June 1998) with a South African firm[37] (OEM), Ordnance Factories undertook indigenous manufacture of Shell 155mm Illuminating Ammunition (ammunition) from October 2000. Ordnance Factory Kanpur (OFC) and Ordnance Factory Dehu Road (OFDR) have been engaged with manufacture of empty shells and assembling/filling of the ammunition respectively, under the inspection coverage of Controllerate of Quality Assurance Establishment (Ammunition) Kirkee (CQA/A). CQA/A is responsible for the quality assurance including proof methodology for ammunition.

A Task Force, headed by the Senior General Manager of Ordnance Factory Ambajhari (OFAj) and with the representatives from Ordnance Factories[38] and Directorate General of Quality Assurance[39] (DGQA), was constituted (July

[37] Naschem, a division of M/s Denel,South Africa.
[38] Ordnance Factory Ambajhari,Chanda, Dehu Road, Bolangir and Itarsi.
[39] Controller of Quality Assurance (Ammunition) Kirkee and Senior Quality Assurance Establishment, Ambajhari.

1998) by Ordnance Factory Board (OFB) to finalise the proof methodology. The proof methodology *inter alia* specified that the empty shells (empties) of ammunition should be at a Charge-9 increment to realise the Maximum Obtainable Pressure of 397 ± 8 MPa[40].

Subsequently, pilot batch of 100 empties manufactured (October 2000) by OFC and filled by OFDR, was tested and passed (June 2001). OFC, thereafter, received Inter Factory Demands (17018 empties) from OFDR against which OFC supplied 9410 empties under 18 lots, which were duly cleared in recovery proof by CQA/A. Subsequently, OFDR filled these empties and issued 9069 filled ammunition to the Army between April 2002 and June 2009.

We observed in Audit (February 2012) that OFC manufactured 19th lot comprising of 966 empties in November 2007 which was rejected due to detachment of driving band, partial smoothness of driving band and heavy double engraving on driving band, by CQA/A during proof conducted in January 2008. The rejection was attributed by CQA/A to defective manufacture of empties by OFC.

OFC/OFB attributed rejection of 19th lot to conduct of proof at higher charge (Charge - 9 increment) than what was prescribed by ToT, which generated more energy on the empties than was required. However, DGQA stated that the empties were rejected on the basis of adoption of proof methodology finalized (to subject the empties at Charge- 9 increment to realise pressure of 397 ± 8 MPa) by a Task Force.

Even though a series of meetings were held (December 2008 - June 2011) at various levels of the Ministry, DGQA and Ordnance Factories, the issue remained unresolved. DGQA, thereafter, referred the matter to the OEM who clarified (August 2010) that the empties could withstand pressure up to 440 MPa and instructed to carry out recovery proof of empties up to a maximum pressure of 440 MPa.

However, no testing could be carried out since the 19th lot of empties lying at OFDR were rusted due to improper storage resulting in returning of these empties (₹2.78 crore) to OFC (July 2012). DGQA, thereafter, directed (June 2012) OFB/OFC to produce fresh lot of 100 shell bodies for evaluation of Strength of Design (SoD) which was, however, awaited (October 2013).

As a result, no further filled ammunition was issued to the Army by OFDR since June 2009 on account of non-availability of proof passed empties from OFC. Consequently, inventory valuing ₹10.28 crore remained blocked at three Ordnance Factories[41].

In response to our Audit observation (July 2013) on defective empties, CQA/A stated (October 2013) that as pilot lot and 18 other lots did not show any

[40] Megapascal- unit of Pressure.
[41] Ordnance Factory Kanpur, Ordnance Factory Dehu Road and Machine Tool Prototype Factory Ambarnath.

defect, these were processed as per the stipulations of the proof schedule which was adopted by the Task Force and the reported defect in the 19th lot of empties arose due to defective manufacture by OFC. CQA/A further added that improper storage at OFDR led to rusting of 19th lot comprising 966 empties.

OFB stated (September 2013) that the empties manufactured by OFC under first 14 lots had been proof fired with the Charge-9 to realize pressure varying from 270 MPa to 314 MPa whereas, consequent to an amendment in pressure by CQA/A in April 2007, proof firing from 15th lot had been conducted at 397 ± 8 MPa (which was 15 per cent higher than service pressure of 345 MPa). OFB further added that even at higher pressure, 16th lot to 18th lot of empties had passed in proof. OFB also added that fresh lot of 100 shells manufactured by OFC was yet to be tested for SoD for want of probable date of dispatch schedule from Senior Quality Assurance Establishment (Armament) Kanpur.

OFB's reply is, however, not acceptable since the proof methodology finalized by a Task Force constituted with the representatives from Ordnance Factories as well from DGQA had decided (May 1999) to subject empties at Charge-9 increment to realise the pressure of 397 ± 8 MPa and empties manufactured by OFC under 16th lot to 18th lots had also been cleared in proof even at Charge-9 increment to realize the pressure of 397 ± 8 MPa.

The fact, however, remains that the failure of production and quality assurance agencies to resolve the issue relating to rejection of just one lot of empties (₹2.78 crore) since January 2008, led to blocking of inventory valuing ₹10.28 crore. Further, improper storage at OFDR also led to the rusting of empty shells valuing ₹2.78 crore which delayed the Strength of Design testing of empties.

The matter was referred to the Ministry of Defence in July 2013; their reply was awaited (November 2013).

6.6 Inadequate quality control resulting in loss of ₹7.42 crore due to rejection of 7.62mm brass cups and ammunition

Ordnance Factory Katni issued 7.62mm brass cups with manufacturing defects, because of deficient quality control, to Ordnance Factory Varangaon which used these brass cups to produce ammunition. This resulted in rejection of brass cups and ammunition valuing ₹7.42 crore.

The Quality Control (QC) section of Ordnance Factories (OFs) is responsible for carrying out stage/inter-stage inspection during the manufacturing process. As per Quality Plan for 7.62mm brass cups prepared by Ordnance Factory, Ambarnath (OFA) 100 *per cent* checking is required to be conducted during different production operation. In the meeting held amongst Ministry of Defence (MoD), Director General of Quality Assurance (DGQA) and Ordnance Factory Board (OFB) in July 2011, it was envisaged that it is the responsibility of the QC section of Ordnance Factory to carry out 100 *per cent* inspection and weeding out of all non-conformities. Quality assurance of the

products before issue to the indentors is the responsibility of the Director General of Quality Assurance (DGQA). Thus, OFs and DGQA are jointly and severally responsible for ensuring the quality of the items produced in the OFs.

OFA and Ordnance Factory, Katni (OKAT) are both engaged in the production of NATO[42] brass cups used by Ordnance Factory Varangaon (OFV) for manufacturing 7.62mm ammunition. During the manufacture of brass cups, strict quality control *i.e.* 100 *per cent* inspection is required because rupture of even a single round, rejects the entire lot of the ammunition as per acceptable quality level (AQL). However, both the factories carry out QC inspection based on sampling method.

During 2009-10 to 2012-13, OKAT supplied 191.72 MT brass cups, duly inspected and passed by QAE (M)[43] Katni, to OFV. We observed during audit scrutiny (November 2011) that cups supplied by OKAT to OFV since November 2009, were found to have manufacturing defects[44]. Trial by Senior Quality Assurance Establishment (Ammunition) Varangaon (SQAE/A)[45], of one ammunition lot of 2010 manufactured by OFV using these cups, demonstrated five splits with one rupture during the first double re-proof. OKAT team, while attending to the complaint of OFV, admitted in a joint meeting with OFV (September 2010) that the defects in cups were due to poor workmanship as also metallurgical defects. The team, however, assured OFV that defective cups would not be supplied in future.

OFB constituted (October 2010) a team to carry out Process Audit at OKAT, under the Chairmanship of General Manager OFA, for the manufacture of 7.62mm brass cups. The team observed major deviations in quality control of OKAT along with the manufacturing defects. The team recommended (October 2010) four major remedial measures[46] for implementation by OKAT.

We observed (November 2011) during our scrutiny of production records that OKAT had not installed direct reading spectrometer and not introduced use of hardness tester, as recommended by the Process Audit Team to control the quality problems. Instead, it manufactured and issued (February 2011) 9.69 MT cups with the same deficiencies to OFV, of which 6 MT cups valuing ₹23.93 lakh were rejected by OFV owing to low dome thickness. The Metallurgical Investigation Report (April 2011) by OFA attributed the defects to hardness above the specified limits, presence of heavy oxide and sticking of material on the press tools. Subsequently, 15 MT cups valuing ₹97.35 lakh produced by OKAT were again rejected (September 2011) by QAE (M) Katni as it could not again meet the AQL. However, OKAT, without the concurrence of QAE (M), dispatched (September/ October 2011) these 15 MT cups to OFV

[42] North Atlantic Treaty Organisation
[43] Quality Assurance Establishment (Metal) under DGQA responsible for quality assurance of brass cups before issue to OFV
[44] Deep scratches at dome of the cups, cut on mouth of cups, irregular shape of dome, lamination/cut on cup dome, scaly dome, low weight/height, *etc*.
[45] SQAE(A) under DGQA is responsible for quality assurance of ammunition before issue to indentors
[46] (a) Not to use the milling swarf arising from the continuous cast coil making process; (b) to control the melting temperature and holding furnace temperature as per requirement; (c) to install direct reading spectrometer; (d) to use hardness tester at every stage of cup processing

at its own risk. OFV again rejected the whole consignment and returned 13.50 MT cups to OKAT in June 2013 after consuming 1.50 MT cups in trials.

Further, we also observed (November 2011) that 22.50 lakh 7.62mm ammunition[47] valuing ₹6.20 crore produced by OFV in 2011 with the defective cups (supplied by OKAT between December 2010 and May 2011), failed to pass the proof test and were rejected between February and July 2011 due to complete rupture. The Board of Enquiry (BoE) constituted (May 2012) by OFV to examine the reasons for the same, attributed (June 2012) the failure to defective/damaged brass cups which on processing could have developed hair line cracks and rupture during firing. The loss statements pertaining to rejected ammunition worth ₹6.20 crore were under preparation/finalization as of October 2013.

While accepting the facts, OFB stated (October 2013) in response to audit observation issued (June 2013) that defective cups would always be available in the lots which might result in failure of ammunition finally due to inherent drawback of quality control. OFB further added that removal of defects by 100 *per cent* check would involve huge cost on account of manpower and machine.

The reply of OFB itself indicates deficient quality control leading to manufacturing of defective brass cups. The reply is also silent as to why the production of brass cups continued despite non-implementation of all the recommendations of the Process Audit Team. Further, as per the requirement, it is mandatory to carry out 100 *per cent* inspection and weeding out of all non-conformities before issue to the indentors.

Thus, non-adherence to quality control checks led to manufacturing of defective brass cups, thereby incurring a loss of ₹7.42 crore on account of rejected cups and ammunition. No accountability mechanism has been also put in place to ensure that such defective brass cups are not dispatched for future indents.

The matter was referred to the Ministry in June 2013; their reply was awaited (November 2013).

6.7 Blocking of inventory due to bulk manufacture before clearance of pilot samples

Bulk manufacture of empty bodies of an ammunition by Ordnance Factory Kanpur even before successful performance of its pilot lots in proof resulted in blocked inventory of ₹2.13 crore.

Ordnance Factory Board's Procedure Manual (OPM) stipulates that bulk production of a new item should not normally commence until a pilot batch of a suitable size has passed through inspection so as to avoid losses due to rejection in inspection of large quantities on account of faulty material or faulty technique.

[47] OFV lot No. 4/11, 24/11 and 31/11

Ordnance Factory Board (OFB) entrusted (August 2008) Ordnance Factory Kanpur (OFC) to manufacture and issue empty body (empties) of 84mm Target Practice Tracer ammunition (ammunition) to Ordnance Factory Khamaria (OFK) in order to meet the huge load for the ammunition as well as to supplement the production capacity at Gun and Shell Factory Cossipore and Ordnance Factory Ambajhari.

Accordingly, OFC received an Inter Factory Demand from OFK (February/March 2010) for supply of 17500 empties subject to successful establishment of prototypes, production of pilot batch after process validation and successful proving of the proof samples and clearance in type testing by the Controller of Quality Assurance (Ammunition) Kirkee (CQA/A) and Controller of Quality Assurance (Metal) Ishapore for the metallurgical aspect respectively. Bulk Production Clearance (BPC) was to be subsequently obtained from CQA/A after successful proving of pilot batch.

We observed (November 2011/April 2012) that despite rejection of the pilot batch of 125 empties during consistency proofs conducted on five occasions between December 2010 and April 2012, due to recording of high Horizontal Standard Deviation, Vertical Standard Deviation and Mean Point of Impact than the specified norm, OFC went ahead and manufactured 10,366 empties at a total cost of ₹0.83 crore against two warrants issued in September 2010 and December 2010. We also observed, during audit scrutiny, that BPC was not obtained from CQA/A before bulk manufacture of empties.

Justifying the bulk production, OFB stated (December 2012) that OFC's shop floor technical team had after a thorough study of the already established process of empties at GSF, assessed that complete infrastructure existed to undertake the in-house manufacture of the components completely with support from the technical expertise of the tool room. Further, based on the confidence instilled in the shop floor, OFC decided to embark on bulk manufacture and assembly of the store after successful development of prototypes which was duly cleared in critical examination followed by manufacture of pilot lot duly accepted by the Quality Assurance, although formal BPC was awaited from CQA/A.

OFB stated in October 2013, to a further audit query (May 2013) on acceptance of pilot lot by the Quality Assurance, that the pilot lot had passed through in all three parameters (Mean Point of Impact, Horizontal Standard Deviation and Vertical Standard Deviation) individually but had not passed on these three parameters simultaneously. It further stated that OFC had received permission from CQA/A for manufacture of fresh pilot lot of 160 empties and after obtaining BPC, available inventory would be utilized in bulk production.

The reply of OFB is not acceptable because even before receipt of performance of their pilot batches, the bulk manufacture of empties was contrary to the extant direction of OFB. Further, in none of the proofs conducted during December 2010 and April 2012, had the pilot lot achieved the specified limit of three parameters individually as claimed by OFB. The salvaging activities of the assembled store for liquidating the inventory holding cannot not in any way absolve OFC of its responsibility of bulk

manufacture of empties (₹0.83 crore) which could not be gainfully utilized in the filling process till date (October 2013).

Thus, production of 10366 empties in bulk without successful clearance of pilot batch in proof by OFC, in gross violation of OPM, had resulted in accumulation of empties valuing ₹0.83 crore and inventories valuing ₹1.30 crore.

The matter was referred to the Ministry of Defence in May 2013; their reply was awaited (November 2013).

Miscellaneous

6.8 Recoveries at the instance of Audit

At the instance of Audit, 18 Ordnance Factories and three Inspectorates of Directorate General of Quality Assurance New Delhi recovered ₹2.09 crore.

During the course of audit (May 2011 - February 2012), we observed instances of irregular payments, under/ non-recovery of charges etc. Acting on the audit observations, 18 Ordnance Factories and three Inspectorates of Directorate General of Quality Assurance New Delhi took corrective action and cumulatively recovered ₹2.09 crore on account of non- recovery of licence fees/electricity charges/fuel adjustment charges/cost of damaged cartridge cases, motor cycle/moped advance, children education allowance/pay and allowance.

The matter was referred to the Ministry of Defence in July 2013; their reply was awaited (November 2013).

(VENKATESH MOHAN)
Director General of Audit
Defence Services

New Delhi
Dated: 2013

Countersigned

New Delhi
Dated: 2013

(SHASHI KANT SHARMA)
Comptroller and Auditor General of India