

Chapter VI: Utilisation of Resources

Audit objectives

Whether the factories efficiently and effectively utilised the manpower, machinery and inventory resources for achieving optimum productivity.

Source of audit criteria

- *Policy/direction in regard to work on overtime;*
- *Policy and benchmarks for machine utilisation; and*
- *Manual provisions for inventory holding.*

6.1 General

Optimum utilisation of manpower, machinery and inventory is essential to ensure the productivity in factories to meet the production targets and minimise the cost of production.

6.2 Utilisation of manpower

OEEFG have four categories of manpower, viz. Gazetted Officers (GO), Non-Gazetted Officers (NGO), Non-Industrial Employees (NIE) and Industrial Employees (IE). In OEEFG, the strength of the GOs increased from 220 in 2008-09 to 472 in 2011-12, while the same for NGOs/NIEs dipped substantially from 2416 in 2008-09 to 2052 in 2011-12. The number of IEs also declined to 9388 in 2011-12, as compared to 9667 in 2008-09.

6.2.1 OEEFG determine manpower capacity in terms of available standard man-hours (SMH) on the basis of number of direct industrial employees (IEs) engaged in production activities and quantifies the total man-hours consumed in production in terms of output SMH. IEs are required to work overtime, whenever the output SMH corresponding to the production targets is more than the available SMH.

As per DGOF's Procedure Manual (Paragraph 4162), the labour estimate of an item indicates time required to manufacture, with an allowance of 12.5 *per cent* of the net working time for rest and minor break-down. Further, 25 *per cent* is provided in the estimate for piece work profit to the IEs as an incentive.

We observed the deficiencies in utilisation of manpower as discussed in the succeeding paragraphs.

6.2.2 Excess payment of overtime

The factory managements allowed overtime (OT) payment to IEs in a routine manner and paid OT in excess of actual requirement as detailed in Table-22.

Table-22: Avoidable overtime payment

Year	SMH available (in lakh hours)	SMH utilised (in lakh hours)	Available SMH not utilised (in lakh hours)	Total SMH utilised including OT (in lakh hours)	OT required (in lakh hours)	OT actually allowed		Excess OT	
						Hours (in lakh)	Payment (₹ in crore)	Hours (in lakh)	Amount (₹ in crore)
1	2	3	4 (2-3)	5	6 (5-2)	7	8	9 (7-6)	10
OEFC									
2008-09	64.33	58.99	5.34	70.75	6.42	11.76	6.83	5.34	3.10
2009-10	60.25	52.84	7.41	64.00	3.75	11.16	7.39	7.41	4.91
2010-11	61.82	52.02	9.80	62.92	1.10	10.90	8.21	9.80	7.38
2011-12	58.44	50.68	7.76	61.25	2.81	10.57	11.79	7.76	8.66
OPF									
2008-09	23.10	22.97	0.13	28.11	5.01	5.14	3.27	0.13	0.08
2009-10	25.65	24.05	1.60	29.38	3.73	5.33	3.46	1.60	1.04
2010-11	26.24	27.27	-1.03	32.43	6.19	5.16	4.13	Nil	Nil
2011-12	24.88	25.66	-0.78	31.06	6.18	5.40	11.28	Nil	Nil
OCFA									
2008-09	26.37	23.77	2.60	29.20	2.83	5.43	3.52	2.60	1.68
2009-10	30.40	25.36	5.04	31.05	0.65	5.69	3.95	5.04	3.50
2010-11	31.26	32.10	-0.84	37.44	6.18	5.34	4.59	Nil	Nil
2011-12	26.90	34.96	-8.06	40.66	13.76	5.70	15.04	Nil	Nil
OCFS									
2008-09	54.04	48.48	5.56	54.16	0.12	5.68	2.11	5.56	2.06
2009-10	53.63	26.32	27.31	33.06	Nil	6.74	2.57	6.74	2.57
2010-11	54.49	44.48	10.01	53.42	Nil	8.94	4.82	8.94	4.82
2011-12	50.43	41.60	8.83	49.04	Nil	7.44	5.38	7.44	5.38
OEFH									
2008-09	10.24	12.11	-1.87	14.02	3.78	1.91	1.22	Nil	Nil
2009-10	7.79	11.80	-4.01	12.88	5.09	1.08	0.63	Nil	Nil
2010-11	10.81	5.07	5.74	7.1	Nil	2.03	1.39	2.03	1.39
2011-12	10.67	5.56	5.11	7.67	Nil	2.11	2.11	2.11	2.11
Total						123.51	103.69	72.50	48.68

The table shows that in 14 out of 20 instances, the factories did not fully utilise the available SMH, which resulted in excess payment of overtime. The overall extent of non-utilisation of SMH was up to 53 per cent by OEFH. The factories allowed 123.51 lakh OT hours of which 72.50 lakh hours (59 per cent) was allowed in excess of actual requirement. This resulted in payment of excess OT of ₹48.68 crore during 2008-12, of which ₹24.05 crore (49 per cent) was paid by OEFC alone.

Ministry's response and our comments thereon are indicated in Table-23.

Table- 23: Ministry's response and Audit comments

Ministry's response	Audit comments
<p>At OPF, input man-hours shown in the report of 2009-10 included OT hours and output SMH did not include fatigue allowance of 25 <i>per cent</i>. Hence, avoidable OT hours did not arise in 2009-10.</p> <p>OCFS decided to give OT to get maximum output.</p> <p>OEFC exercised adequate control on working on OT basis.</p> <p>At OCFA, percentage of OT hours to output SMH was in reducing trend.</p>	<p>The reply of OPF is not relevant because 'fatigue allowance' was not considered while working out excess overtime.</p> <p>The claim of the Ministry in regard to the control instituted against payment of OT in OCFS and OEFC is not correct because these factories continued to pay overtime during 2008-12 as a routine matter without correlating it with the actual workload and available SMH.</p>

6.2.3 Irregular payment towards piece-work profit to IEs

As mentioned in Paragraph 6.2.1, labour estimate indicates time required to manufacture an item inclusive of an allowance of 12.5 *per cent*. However, till June 2008, the factories also included a provision of additional 25 *per cent* time in the labour estimate as built-in incentive for piece-work (PW) profit to the IEs. This was commented in the earlier Performance Audit Report No. PA 4 of 2008 on 'Performance of Chemical Factories of Ordnance Factory Organisation'.

As a follow up to the Action Taken Note against the Performance Audit Report, Ministry had stated in September 2010, that Audit's view was noted and assured that since observation raised pertains to the OFB as a whole, the same would be examined separately.

Notwithstanding the assurance, it was observed that no remedial measures were taken by the Ministry and all the five factories continued to make payments towards PW profit by adding 25 *per cent* over and above the output SMH booked in PW card. The amount of such additional payment during the year 2011-12 alone worked out to ₹10.91 crore which was irregular.

Factory-wise details of the payments are given in Table-24.

Table-24: Excess payment towards piece work profit

Factory	Piece work profit percentage ¹³ allowed	Actual payment (₹ in crore)	Piece-work profit percentage admissible	Payment admissible (₹ in crore)	Excess payment (₹ in crore)
OEFC	52.23	5.94	21.78	2.48	3.46
OPF	56.64	3.16	25.31	1.41	1.75
OCFS	39.36	4.27	11.49	1.25	3.02
OCFA	58.00	3.65	26.40	1.66	1.99
OEFH	66.99	1.39	33.59	0.70	0.69
Total					10.91

Response of OFB and our comments thereon are given in Table-25.

Table-25: Response of OFB and Audit comments

Response of OFB	Audit comments
Estimates were without 25 <i>per cent</i> built-in incentive. While making payment of piece work profit, output SMH was multiplied by 1.25 factors. Hence, industrial workers got same payment what they had been getting earlier and there was no overpayment.	Despite acceptance of audit contention and assurance for examining the matter for OFB as a whole, the Ministry did not take any remedial measures. As a result, irregular payment towards PW profit for additional 25 <i>per cent</i> output SMH continued.

6.3 Underutilisation of machinery

6.3.1 Overall underutilisation of machine-hours

OFB decided in March 2008 that for the purpose of calculating the capacity utilisation, normal capacity of a plant in production shop was to be reckoned on the basis of its working in two shifts (eight hours in each shift) daily for 25 days per month. Accordingly, machine-hours *per annum* are worked out to 3840 hours after deducting 20 *per cent*¹⁴ towards breakdown, tool setting time, absenteeism, *etc.* Hence, annual availability of total machine hours in a factory is assessed on the basis of average number of plant and machinery held in production section multiplied by 3840 working hours available. Percentages of utilisation of the available machine-hours during 2008-12 were as under:

¹³ Piece work profit percentage = $\{(1.25 \times \text{Output SMH} / \text{Input SMH}) - 1\} \times 100$

This formula was effective from July 2008. As per formula applied prior to July 2008 profit percentage = $\{(\text{Output SMH} / \text{Input SMH}) - 1\} \times 100$ where output SMH included built-in incentive of 25 *per cent*.

¹⁴ As adopted by factory managements for assessing cost benefit before procurement of any new machine.

Table-26: Machine-hour utilisation

Factory	Percentage of utilisation of machine-hours			
	2008-09	2009-10	2010-11	2011-12
OEFC	*	36.78	47.49	39.55
OPF	52.27	46.66	52.21	54.56
OCFS	51.45	31.12	55.39	84.28
OCFA	54.60	58.13	76.42	60.48
OEFH	75.55	57.28	68.65	67.49

* Data not available in the required format as asked for by us

It would be seen from the table that none of the factories had been able to utilise 80 per cent of the available machine-hours during 2008-12 except OCFS for 2011-12. The percentage of underutilisation of available machine-hours was more in OEFC (53 to 63), OPF (45 to 53) and OCFS (16 to 69). Further, the machine-hour utilisation (55 to 76 per cent), reported by OCFA and OEFH and 84 per cent utilisation reported by OCFS for 2011-12, were overstated as working on single shift basis in those factories could not have exceeded 50 per cent utilisation of available machine-hours which was reckoned on two shift basis. As analysed by us, the underutilisation of machine-hours was attributable to working of machines on single shift basis, delayed procurement of input materials as well as offloading of jobs to trade.

Justifying the working on single shift basis, the Ministry stated that working on two shifts would involve additional manpower. It added that more than 50 per cent machine-hour utilisation, as reported by OCFA and OEFH, was correct as the factories worked on overtime.

The contention of the Ministry is not acceptable due to the following facts:

- We calculated availability of machine-hours on two shift basis in accordance with OFB's instruction of March 2008. Despite persistent underutilization of available machine-hours, the OEF HQ did not formulate any effective plan to utilise the machines on two shift basis with available manpower. OFB did not also monitor the underutilisation of available machine-hours in different factories. The reply was also silent on action taken to streamline the procurement planning as well as to direct the factories from not offloading the jobs despite availability of in-house capacity;

- On the basis of working up to 54 hours (including OT) *i.e.* 9 hours per day, maximum machine-hour utilisation is worked out to 56 *per cent*¹⁵ considering availability of machine-hours on two shift basis as per OFB's guidelines. Hence, claim of machine-utilisation up to 76 *per cent* in respect of OCFA and OEFH is not valid.

In the Exit Conference, Member (OEEG and Finance) assured that steps would be taken for improving the productivity.

6.3.2 Specific cases of significant underutilisation

We observed significant under/non-utilisation of 91 costly machines at OPF and OCFS, which are briefly discussed below:

- OPF had purchased 40 socks knitting machines costing ₹4.88 crore based on an order of April 2001. The capacity of the machines was 10 lakh socks woollen heavy khaki and 4 lakh socks olive green *per annum* on two shift basis. OPF had also concluded an Annual Maintenance Contract (AMC) with the firm in March 2003 at a cost of ₹28.16 lakh *per annum*. Thereafter, the AMC was extended up to December 2011 and ₹1.97 crore had been paid to the firm during the last seven years. However, the machines were underutilised by 62 to 77 *per cent* during 2008-11 due to less workload. The factory management did not chalk out any effective plan to utilise these machines optimally.
- Similarly, at OCFS, the utilisation of 50 socks knitting machines worth ₹6.10 crore fell below the capacity of 12.90 lakh per annum by 29 to 63 *per cent* during 2008-11. OCFS continued to spend on AMC of those machines which aggregated to ₹2.07 crore during last five years.
 - OPF placed an order on M/s IIGM Pvt. Ltd., New Delhi in February 2009 for one set of Computer Aided Design/Manufacture (CAD/CAM) system costing ₹2.26 crore. Though the system was received in the factory in August 2009, OPF took six months for commissioning the system. Against the annual envisaged savings of ₹45 lakh to ₹50 lakh towards labour and material only ₹6 lakh had been saved by introducing the system. Further, the material estimates were not revised by 31 March 2012. The breakdown register also indicates that the system was prone to frequent minor breakdowns between April 2012 and March 2013. Thus the system was yet to be fully functional.

¹⁵ Maximum of percentage of utilisation for machine working in 9 hours against two shifts work of 16 hours = $9/16 \times 100 = 56.25$ *per cent*

The Ministry/OFB's response and our remarks are indicated in Table- 27.

Table-27: Ministry/OFB's response and Audit remarks

Ministry/OFB's response	Audit remarks
40 machines of OPF were product and size specific and not utilised uniformly throughout the year. Hence, average percentage of utilisation was reduced.	The reply is not specific on the gross under-utilisation of machines at OPF/OCFS despite the fact that the machines were product/size specific and utilised to meet the target. Reply did not mention about the efforts made by the factories to evaluate the workload of machines for optimum utilisation.
At OCFS, the machines were utilised to execute the target of indenter.	

6.4 Inventory control

Efficient inventory management is essential in any organisation to identify the inventory requirement, set targets, report actual and projected inventory status, monitor the material movement so as to minimise stock holding and inventory carrying cost. In OEFG, inventory comprises stores-in-hand (SIH) which mainly includes working stock (active, non-moving and slow moving stores), maintenance stores, surplus/scrap/waste/obsolete stores. The level of SIH inventory in the factories depends on the criticality of the items in maintaining the continuity of production, procurement lead time, availability of sources, and availability of storage space in the factories.

Paragraph 3.4 of OFB's MMPM prescribes the maximum level of holding SIH inventory to three months *i.e.* 90 days in respect of OEFG. Scrutiny of the accounts revealed that the inventory holding of OEFG as a whole exceeded the authorised holding of 90 days every year during 2008-12, as shown in Table-28.

Table- 28: Analysis of closing stock

Sl.No.	Particulars	(₹ in crore)			
		2008-09	2009-10	2010-11	2011-12
1.	Working Stock	Value			
a.	Active	65	70	82	107
b.	Slow-moving	8	10	12	9
c.	Non-moving	4	4	5	4
	Total working stock	77	84	99	120
2.	Waste and obsolete	1	0	1	0
3.	Surplus stores /Scrap	0	1	0	1
4.	Maintenance stores	5	5	3	3
	Total	83	90	103	124
5.	Stores consumed during the year (Average consumption per day)	310 (0.849)	289 (0.792)	341 (0.934)	406 (1.112)
6.	Average holding in terms of days' consumption	98 days	114 days	110 days	112 days
7.	Percentage of slow moving and non-moving stores to total working stock	16	17	17	11

[Source: Annual Store Accounts of OF Organisation and Review of Annual Accounts prepared by PCA(Factories)]

The Table indicates that the average holding of SIH inventory ranged between 98 and 114 days' consumption resulting in unnecessary blocking of public money besides avoidable inventory carrying cost. Further, slow/non moving stores were accumulated in the range of 11 to 17 *per cent* of the working stock, thereby indicating lack of efforts of the factories to identify such stores for expeditious disposal, particularly during 2008-11. Factory-wise comparison of inventory holding is shown in Table-29.

Table- 29: Details of factory-wise value of excess inventory holding

(₹ in crore)

Year	Closing stock	Store consumed during the year	Average consumption per day	Holding of stock in terms of days	Excess holding (days)	Value of excess holding
OEFC						
2008-09	33.76	149.45	0.409	83	Nil	Nil
2009-10	31.59	137.02	0.375	84	Nil	Nil
2010-11	40.21	151.34	0.415	97	7	2.90
2011-12	47.02	130.61	0.358	131	41	14.72
OPF						
2008-09	14.05	46.02	0.126	112	22	2.76
2009-10	10.97	51.28	0.140	78	Nil	Nil
2010-11	12.51	39.13	0.107	117	27	2.89
2011-12	18.81	59.47	0.163	115	25	4.09
OCFS						
2008-09	24.01	60.47	0.166	145	55	9.11
2009-10	28.02	48.75	0.134	209	119	15.95
2010-11	36.94	86.24	0.236	157	67	15.76
2011-12	38.77	126.23	0.346	112	22	7.62
OCFA						
2008-09	5.94	38.43	0.105	57	Nil	Nil
2009-10	8.66	33.92	0.093	93	3	0.28
2010-11	6.43	35.16	0.096	67	Nil	Nil
2011-12	8.66	57.70	0.158	55	Nil	Nil
OEFH						
2008-09	5.77	15.24	0.042	137	47	1.98
2009-10	10.96	17.92	0.049	224	134	6.56
2010-11	7.40	28.66	0.079	94	4	0.31
2011-12	11.45	31.98	0.088	130	40	3.52

In 14 out of 20 instances, inventory holding exceeded the authorised limit of 90 days. In OCFS, the excess holding itself ranged between 22 and 119 days during 2008-12, while the same stood at 47, 134 and 40 days in OEFH during 2008-09, 2009-10 and 2011-12 respectively. In OEFC, the excess holding worked out to 41 days in 2011-12.

OFB stated in April 2012 that the average stock holdings of OCFS for the years 2008-09 and 2010-11 were less than the prescribed limit. However, the facts stated above do not support the contention of the OFB. The reply is silent on the excess stock holding at OPF (2008-09 and 2010-11) and OEFH (2008-09 and 2009-10) and action taken to minimise the stock level.

6.5 Audit conclusion

The systemic deficiency in production planning, deployment of direct IEs not commensurate with the workload and working of machines on single shift led to payment of overtime in a routine manner as well as gross under-utilisation of machine-hours in all the factories. Besides, excess inventory holding mainly at OCFS, OEFH and OPF arising from over-provisioning and shortfall in production indicates poor material management.

Recommendation 10

OFB may ensure that the factories plan their production activities efficiently, deploy their manpower judiciously in tune with the workload requirements and fully utilise the available SMH before resorting to work on overtime payment.

Recommendation 11

Ministry may ensure that OFB follow the correct methodology for making payment towards piece-work profit by excluding additional 25 per cent over and above the output SMH booked.

Recommendation 12

OFB should operationalise two-shift working in the factories to increase the productivity and to optimise capacity utilisation.

Recommendation 13

OFB should put in place a system of periodical review of inventory holding at different factories as well as take prompt action to dispose of all surplus/obsolete/non-moving/waste after proper identification.