

CHAPTER - III
INVENTORY MANAGEMENT OF CENTRAL GOVERNMENT COMPANIES
IN OIL AND STEEL SECTOR

3.1 Introduction

Inventory is tangible property held for sale in the ordinary course of business, or in the process of production for such sale, or for consumption in the production of goods or services for sale, including maintenance supplies and consumable stores and spare parts meant for replacement in the normal course. Inventory normally comprises of raw materials, work-in-process, finished goods including by-products, stores and spare parts and loose tools.

Inventory constitutes a major element of working capital which needs efficient management. Inventory management covers fixation of minimum and maximum levels, determining the size of inventory to be carried, deciding about the issues, receipts and inspection procedures, determining the economic order quantity, proper storage facilities, keeping check over obsolescence and ensuring control over movement of inventories. Thus, it is important that inventory is properly controlled.

As the inventory constitutes a significant part of the total assets of companies in Oil and Steel Sectors, the eight Central Government companies in Oil Sector (two upstream¹ and six downstream²) and six Central Government companies in Steel Sector were selected for reviewing the inventory management based on applicable parameters.

3.2 Scope of the review

The limited review covers system of maintaining inventory during the year 2008-09 in eight³ Central Government companies in Oil Sector and six⁴ Central Government companies in Steel Sector.

3.3 Objectives of the limited review

The objectives of review of Inventory Management were to examine whether:

- ❖ there was any norm for maintaining stock of raw materials;
- ❖ the companies have prescribed the maximum/minimum/reordering/danger/economic order quantity levels in respect of stores and spares holding and their adherence to;
- ❖ the companies maintain optimum inventory of finished stock; and

¹The companies involved in the business of exploration of oil and natural gas

²The companies involved in the business of refining and marketing of petroleum products

³(i) Oil and Natural Gas Corporation Limited (ONGC), (ii) Oil India Limited (OIL), (iii) Indian Oil Corporation Limited (IOCL), (iv) Bharat Petroleum Corporation Limited (BPCL), (v) Hindustan Petroleum Corporation Limited (HPCL), (vi) Chennai Petroleum Corporation Limited (CPCL), (vii) Mangalore Refinery and Petrochemicals Limited (MRPL), (viii) Numaligarh Refinery Limited (NRL)

⁴(i) Steel Authority of India Limited (SAIL), (ii) Rashtriya Ispat Nigam Limited (RINL), (iii) NMDC Limited (NMDC), (iv) KIOCL Limited (KIOCL), (v) Neelanchal Ispat Nigam Limited (NINL), (vi) Sponge Iron India Limited (SIIL).

- ❖ the companies have a system of physical verification of the inventory.

3.4 Criteria of the review

The following criteria were used to review the inventory management system:

- ❖ Inventory to working capital ratio;
- ❖ Norm vis a vis actual raw material holding and inventory carrying cost;
- ❖ Levels of stores and spares and holding of non-moving /surplus stores and spares;
- ❖ Inventory turnover ratio and age of inventory in respect of finished goods;
- ❖ System of physical verification of inventory; and
- ❖ Payment of demurrage, punitive charges and dead freight.

3.5 Methodology of the review

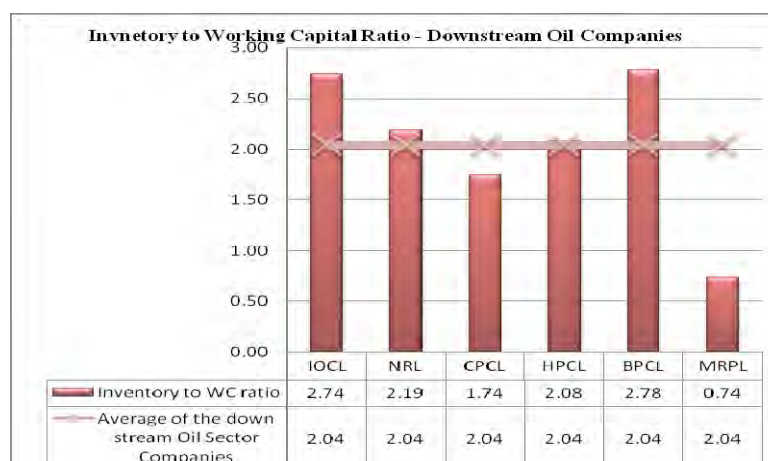
The review was conducted based on the information received from the companies and the data collected from the accounts of these companies for the year 2008-09.

3.6 Inventory to Working Capital Ratio

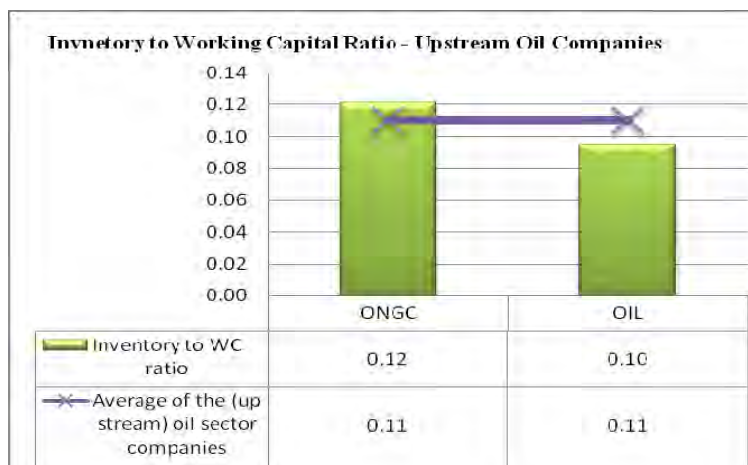
Inventory to working capital ratio is one of the important indicators of a company's operational efficiency. A low value of inventory to working capital ratio means that a company has high liquidity of current assets, whereas a high value of this ratio means that a company is carrying excess inventory in stock.

3.6.1 Oil Sector

The analysis of the downstream oil companies revealed that the average inventory to working capital ratio in these Companies for the year 2008-09 was 2.04 times as shown below:



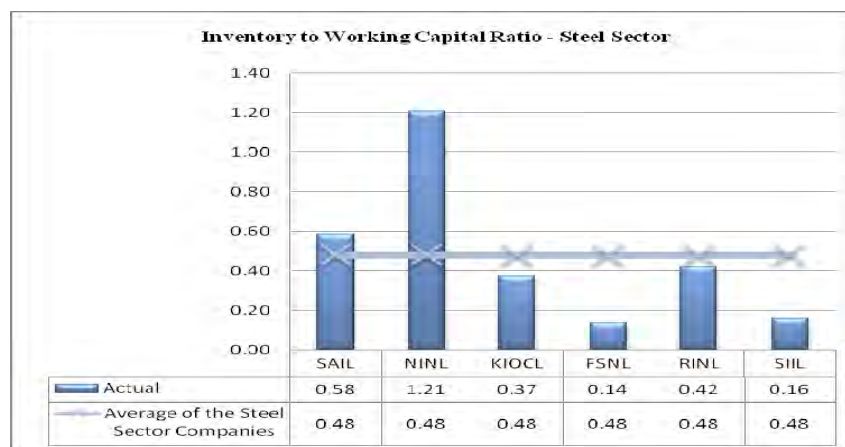
From the above chart it is evident that the inventory to working capital ratio for the year 2008-09 of IOCL and BPCL was 2.74 times and 2.78 times respectively which was much higher than the average ratio i.e. 2.04 times of all oil sector PSUs taken together.



In respect of upstream oil companies ONGC and OIL, it was observed that the inventory to working capital ratio was 0.12 time and 0.10 time respectively as depicted in the chart above.

3.6.2 Steel Sector

Analysis of the companies in Steel Sector revealed that the average inventory to working capital ratio of for the year 2008-09 was 0.48 time as shown below:



From the above it is evident that SAIL was carrying inventory equal to 0.58 time and NINL was carrying inventory 1.21 times of their working capital which was on the higher side in comparison with the average ratio of 0.48 time.

3.7 Analysis of components of Inventory

3.7.1 Raw materials

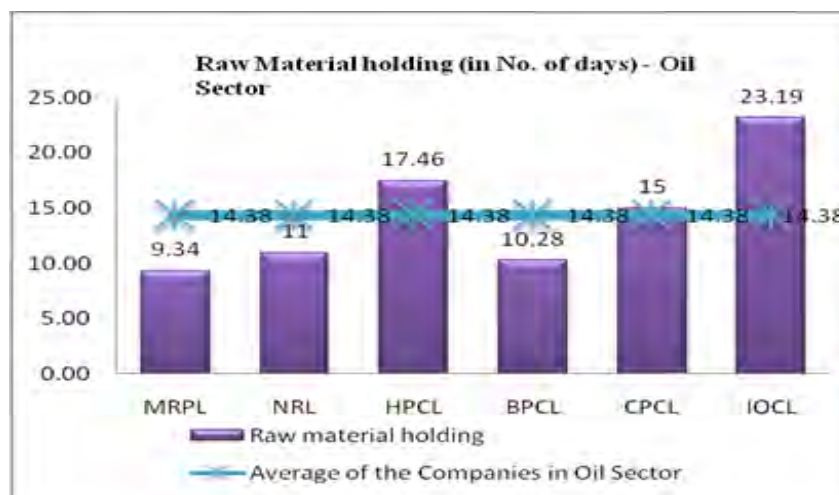
Raw materials consist of inputs which are used to manufacture goods that require further processing to become finished goods. The very fact that the items are required to be kept in stock means additional stock holding cost or carrying cost to the organisation. It represents the costs that are associated with storing an item in inventory. The different

elements of costs involved in holding inventory are (a) Interest on capital / cost of capital, (b) Obsolescence and depreciation, (c) The cost of storage, handling and stock verification, (d) Insurance costs. It is usually expressed as a rate per unit or as a percentage of the inventory value. The inventory carrying cost generally ranges between 25 and 30 *per cent* of inventory value.

3.7.1.1 Oil Sector

In the downstream oil companies the crude oil is the major input. The crude is also a high value item and major funds of the company are invested in crude procurement and its holding.

It was observed that there was no industry practice /norm fixed by these companies for keeping the crude inventory. The average raw material holding in these oil companies was equal to 14.38 days of consumption as depicted below:



IOCL, HPCL and CPCL were holding raw material stock equal to 23.19 days, 17.46 days and 15 days stock consumption against the oil companies average of 14.38 days. MRPL was carrying raw material stock of 9.34 days only as on 31 March 2009. Reduction in the raw material holdings by IOCL, HPCL and CPCL would result in savings towards inventory carrying cost of Rs.826.31 crore, Rs.90.34 crore and Rs.12.02 crore *per annum* respectively (**Appendix – XV**).

3.7.1.2 Steel Sector

The raw materials of an iron and steel plant are, iron ore lumps and fines, dolomite, lime stone, manganese ore, etc., and coal including imported coal. It was noticed that the SAIL has fixed the plant-wise norms for holding various raw materials.

The norms for holding inventory of major raw materials i.e., coal and iron ore was varying from 5 days to 20 days for different steel plants whereas the Company was holding raw materials equal to 47 days of consumption as on 31 March 2009.

RINL was carrying raw material equal to 72 days of consumption against the norm of 30 days and 15 days of consumption for coal and iron ore.

KIOCL has not fixed any norm for inventory holding and it was carrying inventory of raw materials of 148 days.



Adherence to the norm of maximum holding of 20 days as fixed by SAIL could result in savings to the tune of Rs.76.10 crore, Rs.373.75 crore, Rs.28.80 crore and Rs.209.55 crore *per annum* to KIOCL, SAIL, NINL and RINL respectively (**Appendix – XV**).

3.7.2 Stores and Spares

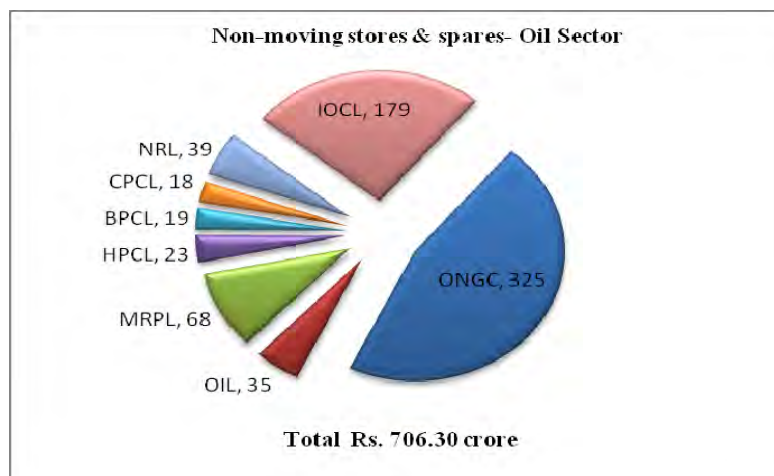
In order to ensure optimum level of stores and spares and to effect economies, following stock levels are required to be fixed by every Company and should adhered to:

- ❖ Maximum Level
- ❖ Minimum Level
- ❖ Re-order Level
- ❖ Danger Level
- ❖ Economic Order Quantity

3.7.2.1 Oil Sector

All companies in Oil Sector had fixed the above levels except ONGC which has prescribed norms of 9 months consumption for stores and 18 months consumption for spares. Against the norms ONGC was holding stores inventory of 13.03 months and spares inventory equal to 26.59 months consumption.

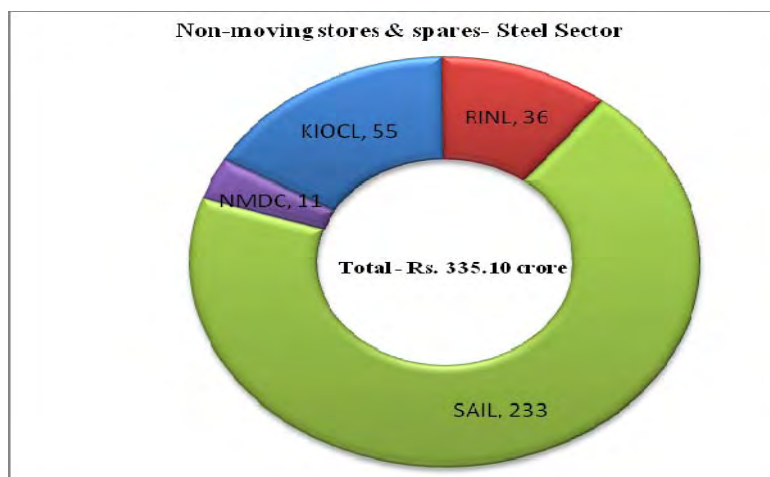
It was noticed that all companies were carrying non-moving /surplus stores and spares valuing Rs.706.30 crore as on 31 March 2009 as shown in the chart below. This included Rs.325.27 crore and Rs.178.72 crore held by the ONGC and IOCL respectively.



3.7.2.2 Steel Sector

None of the steel company has fixed the above levels for all the items of stores and spares.

Further, these companies were carrying non-moving /surplus stores and spares valuing Rs.335.10 crore as on 31 March 2009 as depicted in the chart below. Of these SAIL was holding major share of Rs.232.65 crore of non-moving/ surplus stores and spares.

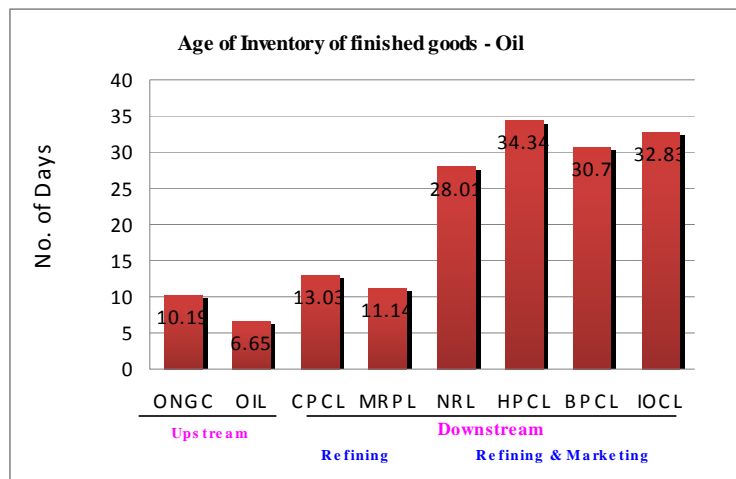


3.7.3 Finished Goods

Inventory Turnover Ratio establishes relationship between the cost of goods sold and average stock. This ratio measures the velocity of conversion of stock into sales. Age of inventory indicates duration of inventory in organisation. It shows moving position of inventory during the year. If age of inventory is minimum it means that the Company's activity position is satisfactory; it is able to sell its product within shorter period of time which indicates sound liquidity position of the company. On the contrary, if the age of inventory is high, it indicates either slow movement of stocks due to low demand for product or excessive production by company.

3.7.3.1 Oil Sector

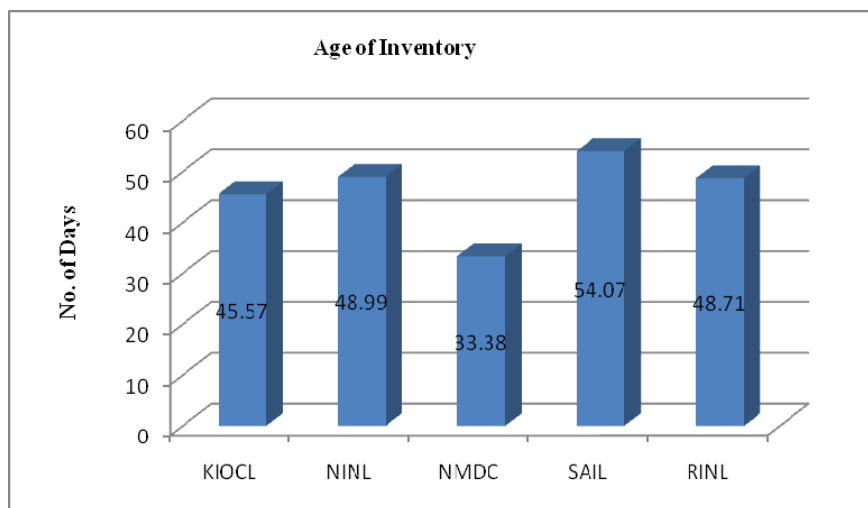
The average age of inventory of finished goods of ONGC and OIL was 10.19 days and 6.65 days respectively.



The average age of inventory of oil refining and marketing companies i.e. IOCL, HPCL, BPCL and NRL was ranging between 28.01 to 34.34 days whereas it was 13.03 and 11.14 days in case of refining companies i.e. CPCL and MRPL respectively.

3.7.3.2 Steel Sector

The average age of finished goods was 54.07 days in SAIL whereas in other steel sector companies it ranged from 33.38 days to 48.99 days as depicted below:



3.8 Physical Verification of Inventory

To ensure the continued usefulness of inventory recording as a control device, the inventory must be verified periodically by a physical check of inventory. Depending on the type of inventory, the physical verification may be done by counting, weighing,

measuring or estimating. The physical verification can be done either by one or combination of two methods i.e. Perpetual Inventory System and Periodic Inventory System.

While the Physical verification of raw materials, stores & spares and finished goods in SAIL revealed shortage amounting to Rs.439 crore during the year 2008-09, RINL reported shortage of raw material, stores and spares and finished goods worth Rs.71.06 crore in the same period. However, no major shortcomings/ discrepancies were noticed in respect of other companies both in Oil and Steel sector.

3.9 Demurrage

Compensation paid for detention of a ship, railway wagon, or other cargo conveyance beyond the free time allowed is termed as demurrage. It was observed that during the year 2008-09 Oil Sector companies and Steel Sector companies have paid demurrage charges of Rs.773.37 crore and Rs.110.65 crore as detailed below:

Oil Sector			Steel Sector		
Sl. No.	Company	Amount (Rs. in crore)	Sl. No.	Company	Amount (Rs. in crore)
1.	MRPL	73.61	1.	RINL	3.32
2.	HPCL	173.58	2.	SAIL	105.97
3.	BPCL	112.98	3.	NINL	1.36
4.	IOCL	413.20			
Total		773.37	Total		110.65

3.10 Punitive charges and Dead freight

- (i) The railways recover punitive charges for the quantity loaded in excess of the permissible limit. It was observed that the Steel sector companies paid Rs.36.93 crore to Railways as punitive charges during the year 2008-09 as detailed below:

Sl. No.	Company	Charges (Rs. in crore)
1.	VISP	0.88
2.	RINL	10.23
3.	NMDC	8.56
4.	SAIL	17.26
Total		36.93

- (ii) The freight charges paid for the unutilised capacity of the vessel or railway wagon is known as Dead freight. It was observed that during the year 2008-09 SAIL and IOCL paid dead freight amounting to Rs.44.50 crore and Rs.4.86 crore respectively.

3.11 Recommendations

In order to have efficient inventory management it is recommended that:

- ❖ *The companies may like to fix stock levels for different categories of stores and spares taking in to account consumption pattern, lead time, storage space, market trends, carrying cost, ordering cost etc.*

- ❖ *The companies may consider taking steps expeditiously to dispose the non-moving/ surplus stores and spares;*
- ❖ *The upstream oil companies and the steel sector companies should adhere to the norms fixed for holding the inventory;*
- ❖ *The steel sector companies may like to device appropriate marketing strategy to reduce the finished goods inventory holding; and*
- ❖ *The steel sector companies should take appropriate action expeditiously to investigate the reasons for shortages and prevent such shortages.*