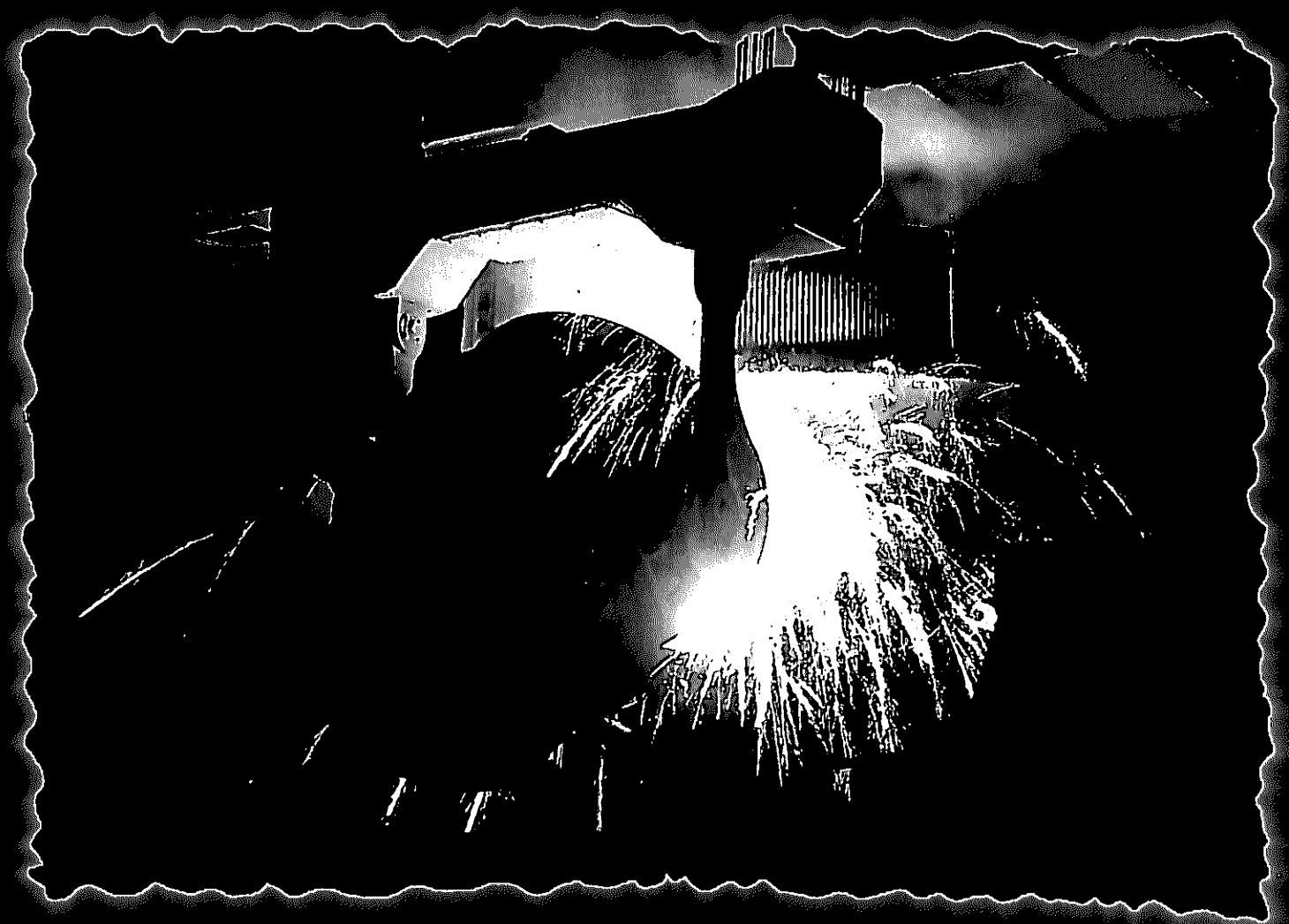
# ANNUAL REPORT
# 1998-99



सत्यमेव जयते

## DEPARTMENT OF STEEL

# Department of Steel

## Annual Report 1998-99

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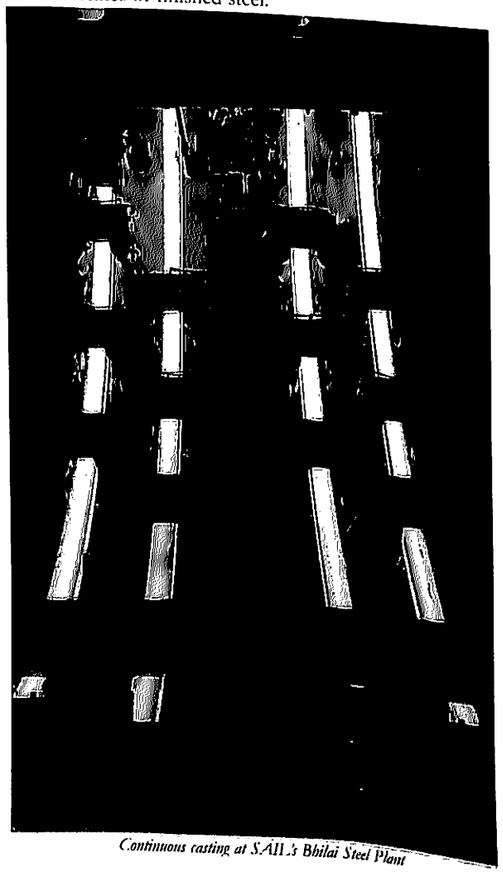
# YEAR'S HIGHLIGHTS

- The Indian Steel Industry, recorded a production of 23.37 million tonnes, of finished steel which was 2.8% more than the previous year.
- India continued to be the 10th largest Steel Producer in the world during 1997-98.
- India exported a record 3.04 million tonnes of iron and steel valued at Rs. 2,937 crores.
- India continues to be the second largest producer of sponge iron in the world. During 1997-98, India produced 5.325 Million Tonnes of Sponge Iron.
- SAIL recorded a turnover of Rs. 14,624 crores during 1997-98. The turnover (Prov.) for the first half of 1998-99 was Rs. 6794 crores.
- SAIL in its four Integrated Steel Plants achieved the best ever production of Hot Metal (11.6 MT), Crude Steel (10.3 MT) and Saleable Steel (8.7 MT) during 1997-98. During April-Sept., 1998 the production was 5.38 MT, 4.70 MT and 3.84 MT of Hot Metal, Crude Steel and Saleable Steel respectively.
- An expenditure of Rs. 1955 crores was incurred by SAIL on fixed assets and other capital schemes in 1997-98 and Rs. 996 crores (Provisional) was the capital expenditure during fist half of 1998-99. All these funded without any budgetary support.
- SAIL undertook improvement of major techno economic parameters with energy consumption being the lowest since inception in 1997-98, improvement was also maintained during April-Sept., 1998, thereby reducing the cost of production.
- Steel and Pig Iron worth of Rs. 1087 crores was exported by SAIL to USA, Nepal, Sri Lanka, European countries and other during 1997-98.
- VSP was awarded the ISO-9002 for Steel Melting Shop and downstream units and is the first integrated steel plant to achieve this distinction.
- During first half year 1998-99 (April-Sept. 98) VSP increased its production of Liquid & Saleable steel by 4% over previous year.
- India exported 29.8 million tonnes of iron ore during 1997-98 as against 27.0 million tonnes in 1996-97.
- NMDC produced 14.59 million tonnes of Iron Ore During 1997-98.
- NMDC exported 7.2 million tonnes of iron ore valued at Rs. 516 crores.
- NMDC paid the highest ever dividend of 25% on paid-up capital (amounting to Rs. 36.34 crores) for 1997-98. This is the eighth year in succession for payment of dividend.
- Kudremukh Iron Ore Company Limited (KIOCL) paid dividend for 1997-98 at the rate of 3.50%. This was the 6th year in succession for payment of dividend.
- Export of 2.8 million tonnes of pellets by KIOCL in 1997-98 is the highest annual export so far exceeding the previous highest of 2.58 million tonnes in 1995-96.
- KIOCL achieved highest annual turnover of Rs. 593.91 crores in 1997-98 - the previous highest being 492.59 crores in 1996-97.

# THE YEAR AT A GLANCE

## Demand and Availability of Steel

Total demand for finished steel including domestic requirement and for exports in 1997-98 was 24.51 million tonnes. Against this, the domestic production during the year was 23.37 million tonnes leaving a gap of 1.14 million tonnes which was met through imports. During 1998-99 the demand for finished steel (Carbon & alloy steel) is 26.73 million tonnes. Against this, the availability is projected at 27.73 million tonnes of finished steel.



*Continuous casting at SAIL's Bhilai Steel Plant*

## Production of Steel

Total production of finished steel in 1997-98 was 23.37 million tonnes. India is the 10th largest steel producing country of the world. Main producers contribute 10.44 million tonnes (45%) and secondary producers 12.93 million tonnes (55%). During 1997-98, the share of main and secondary producers in the total production of finished steel has remained more or less the same as in 1996-97.

Production of finished steel (carbon & alloy steel) in the four integrated steel plants of SAIL and its subsidiaries during 1997-98 was about 7.21 million tonnes registering a decline of 1.66% over last year.

Production of finished steel in Visakhapatnam Steel Plant (VSP) was 1.62 million tonnes in 1997-98 as against 1.45 million tonnes in 1996-97 registering an increase of 14.5%. TISCO produced 1.90 million tonnes of finished steel in 1997-98 as against 2.00 million tonnes in 1996-97 registering a decrease of about 5% over last year.

## Steel Consumers Council

The Steel Consumers Council was constituted on 31.1.1986 under the Chairmanship of Minister for Steel and Mines to provide a forum for interaction between Government and various sections of steel consumers. The main function of the council is to advise and assist the Government in matters relating to availability of steel materials, quality and the market trend in the iron and steel industry in the country. The last meeting of the council was held at New Delhi on 30.6.1998.

## Steel Industry

### Steel Authority of India Limited (SAIL)

#### Performance of SAIL

The production of Saleable steel in the four integrated and special steel plants of SAIL for 1997-98 was 9.043 million tonnes as against 9.24 million tonnes in 1996-97. During the year 1998-99 (Upto September, 1998) production of saleable steel was 3.95 million tonnes against the target of 4.35





#### IISCO

Production of saleable steel in IISCO, a subsidiary of SAIL in 1997-98 was 0.315 million tonnes as against 0.338 million tonnes in 1996-97. During 1998-99 (upto September,1998) IISCO has produced 0.145 million tonnes of saleable steel as against the target of 0.159 million tonnes.

#### Working Results of SAIL

During the year, SAIL has achieved a turnover of Rs.14624.07 crores (Previous year Rs.14114.01 crores). The profit before tax at Rs.148.59 crores (Previous year Rs.588.03 crores) is after providing for interest of Rs.1553.76 crores (Previous year Rs.1179.48 crores ) and depreciation of Rs.794.86 crores (Previous year Rs.690.70 crores). After providing for Minimum Alternate Tax (MAT) of Rs.15.60 crores (Previous year Rs.75.86 crores), the Net Profit after tax is Rs. 132.99 crores (Previous year Rs.515.17 crores).

## Major Projects of SAIL

### Capital Schemes

There are three steel plants where modernisation works were in progress during the year viz. Durgapur Steel Plant, Rourkela Steel Plant and Bokaro Steel Plant. SAIL has incurred a capital expenditure of Rs.1955 crores during the year on fixed assets and capital work-in-progress, which has been primarily financed through borrowings from external sources. The latest position of the modernisation work in these plants and progress of major capital schemes in Bhilai Steel Plant are given below :

#### Durgapur Steel Plant

The modernisation of Durgapur Steel Plant (DSP) has been completed during the year. Major thrust was given on stabilisation of production and achievement of rated capacity. Benefits have started flowing in and are expected to increase further in future years. Production has picked up and has shown a growth of 5 per cent in Hot Metal, 9 per cent in Crude Steel and 14 per cent in Saleable Steel as compared to previous year.

#### Rourkela Steel Plant

At Rourkela Steel Plant (RSP), the various global and indigenous packages under Phase II Modernisation are in

*Stacking of concast slabs, RSP, SAIL*

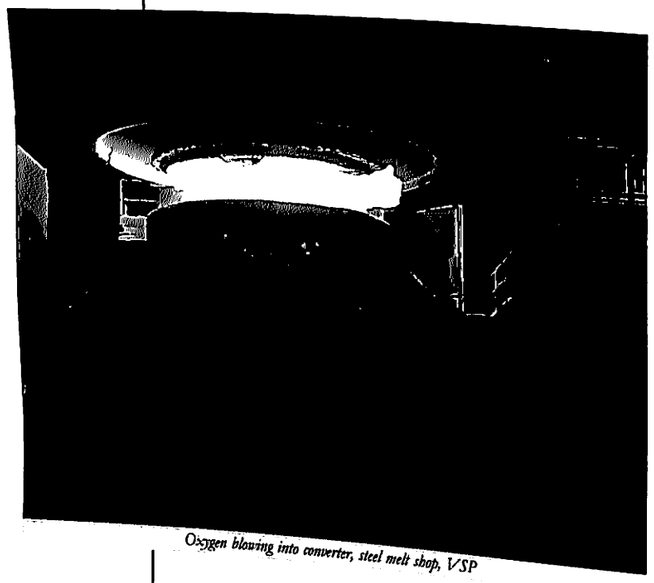
the final stages of completion. The balance works in modification of Hot Strip Mill and Reheating Furnace of Hot Strip Mill is progressing. Trial production has started at SMS-2- Continuous Caster at RSP.

#### Bokaro Steel Plant

At Bokaro Steel Plant (BSL), major production facilities of Modernisation like both Continuous Casting Machines, Steel Refining Unit and Coiler-4 have been installed. Trials of Coiler-3 are under progress. Balance works for Mill proper are nearing completion, Modificiation of Reheating Furnace-3 to Walking Beam Furnace, and Coal Dust Injection system of BF-4 are under progress.

#### Bhilai Steel Plant

At Bhilai Steel Plant (BSP), Modernisation of Rail & Structural Mill (Stage I Phase I) has been commissioned. Oxygen Plant-II expansion and Twin hearth Furnace No.4 are in the final stages of completion. Work in Sinter Plant-3 and Cold Dust Injection system for BF No.6 are in progress.



*Oxygen blowing into converter, steel melt shop, VSP*

With completion of modernisation schemes, substantial improvements are likely to take place in terms of techno-economic parameters, particularly, specific energy consumption, coke rate etc. besides better quality and increase in production capacity of saleable steel.

As a part of Government's initiative for development of North-East, a Hot Dip Galvanishing Line of annual capacity of 40,000 tonnes is being set-up at Dagaon, Assam for which site activities have started.

### Rashtriya Ispat Nigam Limited (Visakhapatnam Steel Plant)

VSP had fixed a target of 3.4 million tones of Hot Metal, 2.92 million tonnes of Liquid Steel, 2.58 million tonnes of Saleable Steel for the year 1998-99. During the first half of the year inspite of sluggish international market and unfavourable domestic market conditions VSP has achieved production of 1.52 million tonnes of Hot Metal, 1.26 million tonnes of Liquid Steel and 1.10 million tonnes of Saleable Steel which represents target fulfillment of 91%, 91% and 87% respectively. This corresponds to 4% growth in Liquid Steel and Saleable Steel over Apr-Sep'97. The production of Billets, Bars and MMSM products have registered a growth of 2%, 13% and 28% respectively over the corresponding period of last year. There has been improvement in the production of the value added steel from 114605 tonnes during Apr-Sep'97 to 118534 tonnes during Apr-Sep'98.

## Electric Arc Furnace Industry

It may be noted that during the licensing days, whereas steel production through the integrated route was reserved for the public sector, EAF units were being sanctioned. However, only very small capacities were being considered. And it was only in Sept., 1990 that capacities upto 1 million tonne were made eligible for sanction.

Presently, there are 187 electric arc furnace based steel plants in the country with an aggregate capacity of 10.67 million tonnes per annum. Of these, as many as 143 units with an aggregate estimated capacity of 5.34 million tonnes are reportedly closed. Various reasons such as rising cost of inputs, increasing electricity tariffs, shortage of power, shortage of finance etc. are believed to be responsbile for this, underscoring the forces of change sweeping the steel sector.

Production of Ingots/concast billets by EAF units, which are reporting their production to the office of the Development Commissioner for Iron & Steel, during 1997-98 was 4.33 Million tonnes. The above figures do not include production of steel by the casting units registered with erstwhile DGTD.

## Induction Furnace Industry

During 1997-98 there were about 922 Induction Furnace Units with a capacity of 9.2 million tonnes. However during the year it is estimated only 733 units were in operation. The capacity utilisation of the IF Units was only about 55%. The total production of the IF Units was estimated to be around 4.42 million tonnes.

## Alloy And Stainless Steel Industry

The Alloy/Stainless Steel industry contributes about 7-10% of the country's production of finished steel. During 1997-98 the production of Alloy/Stainless Steel was about 1.65 million tonnes which was about the same as last year.

## Iron Ore Mining Industry

Production of Iron Ore (including Concentrates) during the year 1997-98 was 73.45 against 68.17 million tonnes showing an increase of 7.7% than the previous year. Statewise production figures indicate that Madhya Pradesh was the chief iron ore producing State accounting for 25% of the total production during 1997-98, followed by Karnataka with 21%, Bihar19%, Goa 18% and Orissa 16%. The remaining production would be from Andhra Pradesh and Maharashtra.

The performance of the two Public Sector Iron Ore Mining Companies viz : National Mineral Development Corporation Limited (NMDC) and Kudremukh Iron Ore Company Limited (KIOCL) was as under :

### National Mineral Development Corporation Limited (NMDC)

During the year 1997-98 NMDC produced 14.59 Million Tonnes of Iron Ore and 30596 carats of diamond. For the year 1997-98, the Company paid a dividend of 25% on the equity capital amounting to Rs.36.34 crores, which was the eighth year in succession for payment of dividend.

In view of the increasing demand for Bailadila Iron Ore, two new Iron Ore Mining Projects are being undertaken in this region at Deposit No.10/11A and 11B, the later in the Joint Sector. Each of these Projects is designed to produce 5 million tonnes run-of-mine (ROM) Ore.

### Kudremukh Iron Ore Company Limited (KIOCL)

During the year 1997-98, the Company recorded a Gross Margin of Rs.142.50 crores and a net profit after tax of Rs.81.81 crores against a target of Rs.125 crores (gross margin) and Rs.74.10 crores of net profit respectively. The Company paid a dividend of 3.50% of the paid up capital amounting to Rs.22.81 crores in 1997-98. The performance of KIOCL has been hampered by severe power cuts imposed by the Karnataka Electricity Board (KEB).

## Sponge Iron Industry

Sponge iron is a metallic product produced by direct reduction of high grade iron ore or iron ore pellets in the solid state. Also known as Direct Reduced Iron (DRI) or Hot Briquetted Iron (HBI), it contains a large percentage of metallic iron. India is the second largest Sponge Iron producers in the world. This is a substitute for steel melting scrap used mainly in the electric steel making and in BOF processes. The indigenous availability of metal scrap is low and large quantities have to be imported in order to meet indigenous demand.

The growth of sponge iron specifically during the last five years in terms of capacity and production has been substantial. The installed capacity of sponge iron increased from 1.52 million tonnes per annum in 1990-91 to 6.06 million tonnes per annum in 1998-99. The production has increased from 0.9 million tonnes in 1990-91 to 5.31 million tonnes in 1997-98. The production of sponge iron has been reported to 2.64 million tonnes during April-September, 1998.

## Pig Iron Industry

The pig iron industry profile is constantly undergoing changes with more mini blast furnace units in the private/secondary sector coming up in the post liberalization era. The contribution of private/secondary sector units, from only 8% during 1991-92 has increased to 48% in 1996-97, and further to 50% during the period 1997-98. The secondary sector units are also producing foundry grade pig iron including low sulphur and low phosphorous grades. During 1997-98, 3.39 million tonnes of pig iron was produced against the projected demand of 2.9 million tonnes.

## Ferro Alloy Industry

Ferro alloys are essential additives in steel making used for imparting desired properties to steel. The product mix of ferro alloy industry mainly consists of Ferro Manganese (Fe Mn), Ferro Silicon (Fe Si.) and Ferro Chrome (Fe Cr.) - called the Bulk ferro alloys.There are 35 large and medium size units (including four 100% EOU's) with an installed capacity of 1.3 million tonnes. The production of Ferro Alloys during 1997-98 was about 7.91 lakh tonnes which was 14% more than the previous year.

## Refractory Industry

Refractories are the primary materials used in the internal lining of industrial furnaces and are classified on the basis of chemical composition into Acid Refractories, Basic Refractories and Neutral Refractories. With the technological changes in the steel industry, the major thrust has been on economising on the use of the materials and improving technology in each area of operation/process where refractories are being used. In general, it can be said that all these improvements have resulted in lowering specific consumption of refractories per tonne of steel. The production of Refractories during 1997-98 was 7.09 lakh tonnes which was 7.4% lower than the previous year.

## Management Information System

The Computerised Management Information System (MIS) developed for Department of Steel with the assistance of National Informatics Centre (NIC) is functional in the area of Accounting and Budgeting Section Activity Monitoring System, Industrial Entrepreneurs memoranda System, VIP References Monitoring, Public Grievances Monitoring and Monitoring of Steel Production and Supply, Imports/Exports, Duties, Prices, apparent consumption and category-wise production. A Local Area Network of about 50 nodes has been established by NIC in the Department for resource and information sharing among the various user communities in the Department. An attempt is being made to setup Internet by computerising Work-Flow & providing Web enabled applications in the Department on Local Area Network (LAN). Pentium based computers have been provided to senior officials in the Department. Software Standardization has been done by providing Office Automation Suit in Windows environment to ensure compitability among the Computer Systems provided with End-users. A Five-year IT Plan has been prepared for the Department in which 2 to 3% budget has been earmarked for providing computers, software development and training to the users in the Department. All the computers on LAN have been provided browsing and E-mail facility on Internet. Various in-house training programmes on LAN operations, E-mail & browsing operations on Internet and Windows-based Office Automation Suits have been organised by NIC Computer Centre in the Department from time to time.

## Research and Development

Both Public and Private Sector Iron and Steel plants continued their Research and Development activities to solve their plant specific problems and also to develop new processes and products. Emphasis was on improving the quality of the steel products, utilization of wastes and reduction of energy consumption as well as cost of production.

In pursuance of the decision of the Cabinet to spend upto Rs.150 crores per annum for Research & Development efforts in the iron and steel sector, Government has set up an Empowered Committee to approve Scientific Research Programs and to provide overall direction to the research efforts on the iron and steel in the country. The Committee is working under the Chairmanship of Secretary, Department of Steel and includes representatives of major steel producers and other experts in the field. To service the committee's its secretariat, Research & Technology Mission is being set up.

## Energy Conservation

Iron & Steel Plants , both in public and private sectors continued to give thrust on the reduction in the consumption of energy. Introduction of coal dust injection in the blast furnaces; mixed gas firing in stoves of blast furnaces; on line ceiling of steam, blast and gas leakage; introduction of fuel efficient burners; optimisation of combustion and modification of thermal regime in different shops of SAIL's plants have resulted in substantial reduction in energy consumption.

TISCO have also taken various measures for reduction of energy consumption like higher carbon mono-oxide (CO) yield, higher usage of by-product gases, lowest specific petro fuel consumption, introduction of rich CO gas firing system in Sinter Plant resulting reduction in energy consumption.

At Essar Steel Ltd., a good amount of developmental work has been going on for energy conservation like hot discharge of DRI, change of reformer fuel, retrieving power from turbo expander, decreasing tap to tap time at EAF etc.

Ferro Alloy Corporation (FACOR) is using hot charge mix directly during the reaction in the production of low carbon ferro chrome which helps in reduction in specific power consumption and also helps in increasing production of the alloy.

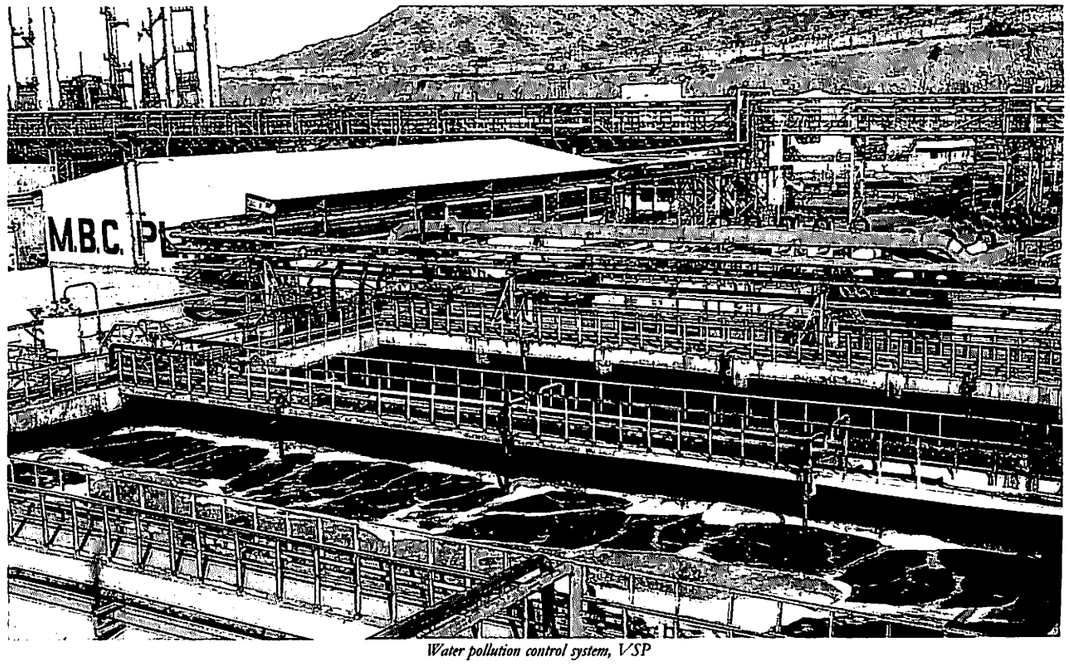
## Environmental Management and Pollution Control

The Iron & Steel Plants have drawn up short term and long term action plans for expeditious achievement of Pollution Control norms, wherever these have not so far been achieved. The Environment Laboratory Group of RDCIS, SAIL provide services to steel plants in the field of specialised statutory assessment of air, water and noise in steel plants and mines and also development and transfer of methodologies,Air and water pollution control, and Water and solid waste management.

VSP has been according high priority for maintaining a very clean and healthy environmental monitoring








*Water pollution control system, VSP*

activities in respect of ambient air, stack emmissions and effluents are being carried out regularly to ensure good work environment. Several schemes have been introduced for recycling all toxic spilages in Coal chemicals plant, so as to improve the quality of effluent and tar sludge is being recycled in coke oven batteries to prevent accumulation of waste and to also generate extra revenue.

The private sector companies like Mukand Ltd., Sunflag Iron & Steel Co. Ltd. and Mahindra Ugine Co. Ltd are among some of the Companies making efforts to keep the pollution levels within the prescribed acceptable limits.

## Welfare of Schedule Castes/ Scheduled Tribes and Minorities

The Public Sector Undertakings under the administrative control of the Department of Steel continued their efforts for filling up the backlog vacancies in respect of Scheduled Castes/Scheduled Tribes/Other Backward Classes.

The Public Sector Undertakings have also continued the process of identifying and implementing programmes aimed at the upliftment of these communities in the peripheral areas around their area of operation.

## Implementation of Official Language Policy

The progressive use of Hindi in the Department, its attached office and public sector undertakings has been widely encouraged. PSUs are given incentives by awarding Chal Vaijayanti (Running Shield); Shields and Trophies. Under an incentive scheme cash prizes of Rs.15,000/-, Rs.10,000/- and Rs.7,500/- are awarded to the writers of original books in Hindi on steel and its allied subject.

A Hindi fortnight was organised in the Department from 1st Sept., 1998 to 15th Sept.,1998. Various competitions were held during this period and winner were awarded cash prizes. The Honourable Steel Minister made an appeal to all the officers and staff of the Deptt., attached office and PSUs to further increase the use of Hindi in their official work.

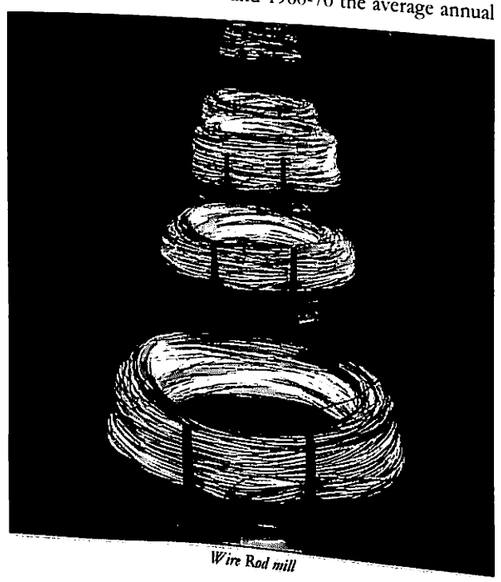
# OVERVIEW OF IRON AND STEEL INDUSTRY

## Introduction

Steel is crucial to the development of any modern economy and is considered to be the backbone of the human civilisation. The level of per capita consumption of steel is treated as one of the important indicators of socio-economic development and living standard of the people in any country. It is a product of a large and technologically complex industry having strong forward and backward linkages in terms of material flow and income generation. All major industrial economies are characterised by the existence of a strong steel industry and the growth of many of these economies has been largely shaped by the strength of their steel industries in their initial stages of development.

## Historical Perspective

The finished steel production in India has grown from a mere 1.1 million tonnes in 1951 to 23.372 million tonnes in 1997-98. During the first two decades of planned economic development, i.e. 1950-60 and 1960-70 the average annual growth rate of steel production exceeded 8%. However, this growth rate could not be maintained in the decades to follow. During 1970-80, the growth rate in steel production came down to 5.7% per annum and picked up marginally to 6.4% per annum during 1980-90.Though India started steel production in 1911, steel exports from India began only in 1964. Exports in the first five years were mainly due to recession in the domestic iron and steel market. Once domestic demand revived, exports declined. India once again started exporting steel only in 1975 touching a figure of 1 million tonne of pig iron export and 1.4 million tonnes of steel export in 1976-77. Thereafter, exports again fell rapidly to meet rising domestic demand. Only after liberalisation of the steel sector the exports of iron and steel have once again started increasing. Though the country's production of iron and steel is sufficient to meet the domestic demand, however, some quantity of steel is always needed to be imported especially those grades and qualities which are required in small quantities, and therefore do not justify setting up of production capacities.



*Wire Rod mill*

The progress of the steel industry has a critical influence on the pace of India's development and as such great importance is attached to capacity expansion in line with expected demand at cost and prices, which make Indian steel internationally competitive. The new economic policies being pursued by the Government have opened up new opportunities for the expansion of the steel industry. With a view to accelerating the growth of the steel sector, the Government has initiated a number of policy measures since 1991.

## Liberalisation of the Indian Steel Sector

The important policy measures which have been taken for growth and development of the Indian Iron & Steel Sector are as under :

In the new industrial policy announced in July, 1991 Iron and Steel Industry, among others, was removed from the list of industries reserved for the public sector and also exempted from the provisions of compulsory licensing under the Industries (Development and Regulation) Act,1951.





With effect from 24.5.92 iron and steel industry was included in the list of 'high priority' industries for automatic approval for foreign equity investment upto 51% (now 74%).

Price and distribution of steel were deregulated from January, 1992. At the same time, it was ensured that priority continued to be accorded for meeting the requirements of small scale industries, exporters of engineering goods and North Eastern Region, besides strategic sectors such as Defence and Railways.

The import regime for iron and steel has undergone major liberalisation moving gradually from a controlled import by way of import licensing, foreign exchange release, canalisation and high import tariffs to total freeing of iron and steel imports from licencing, canalisation and lowering of import duty levels. Export of iron and steel items was also freely allowed.

Import duty on capital goods was reduced from 55% to 25%. Duties on raw materials for steel production were reduced. These measures reduced the capital costs and production costs of steel plants.

Freight equalisation scheme was withdrawn in January'92, removing freight disadvantage to states located near steel plants. At the same time, it was ensured that far-flung areas and distant states were protected by stipulating that beyond the freight ceiling distance, the main producers would continue to bear the freight charges.

Levy on account of Steel Development Fund was discontinued from April'94 providing greater flexibility to main producers to respond to market forces.

## Current Global Scenario

After recording a growth rate of 3.2 in 1996 over the previous year crude steel production world wide went up by over 6% in the first half of 1997 over the corresponding period of the previous year. However, during the second half of 1997 and in the first half of 1998, production of steel worldwide has shown signs of slowing down. In fact, the markets in EU, USA and Japan continued to remain depressed through out 1997 in 1998 as a result of financial crisis gripping several world economies, especially in CIS and South East Asian nations.

The developing countries, in particular those in South East Asia continue to remain the focus of attention in so far as the dynamics of the steel industry for India is concerned. Till these markets improve, India will continue to face problems in exporting iron and steel. On the pricing front, with the emergence of Latin America, South Korea, Taiwan, India and lately the CIS as significant exporters, the role of European and Japanese producers as major exporters and consequently as price makers has been reduced making the market much more competitive.

It is in this global context that the steel industry in countries like India will have to cast their future role.

## Growth of the Indian Steel Sector After Liberalisation

### Finished Carbon Steel

Today, India is the 10th largest steel producing country in the world. This sector represents around Rs. 90,000 crores of capital and directly provides employment to over 5 lakh of people. The Indian steel sector was the first core sector to be completely freed from the licencing regime and the pricing and distribution controls. This was done primarily because of the inherent strengths and capabilities demonstrated by the Indian iron and steel industry. During 1996-97, finished steel production shot up to a record 22.72 million tonnes with a growth rate of 6.2% while in 1997-98 the finished steel production increased to 23.37 million tonnes, which was 2.8% more than the previous year. The growth rate has drastically decreased in the last 2 years, being only 6.2% in 1996-97 and 2.8% in 1997-98, as compared to 17.24% in 1994-95 and 20% in 1995-96.

This sharp fall in the growth rate of steel production has been brought about by several factors which inter alia, include, general slow down in the industrial production and construction activities in the country coupled with lack of growth in major steel consuming sectors. The total production of finished steel and the share of main and secondary producers during 90's and upto the present has been as follows:

(In million tonnes)

| Year | Main Producers | Secondary Producers | Total |
|---|---|---|---|
| 1991-92 | 7.96 (55%) | 6.37 (45%) | 14.33 |
| 1992-93 | 8.41 (55%) | 6.79 (45%) | 15.20 |
| 1993-94 | 8.77 (57.6%) | 6.43 (42.4%) | 15.20 |
| 1994-95 | 9.57 (53.8%) | 8.25 (46.2%) | 17.82 |
| 1995-96 | 10.59 (49.5%) | 10.81 (50.5%) | 21.40 |
| 1996-97 | 10.54 (46.4%) | 12.18 (53.6%) | 22.72 |
| 1997-98 | 10.44 (44.6%) | 12.93 (55.4%) | 23.37 |

After delicensing of iron and steel industry and as a result of the steps taken for creation of additional capacity in the private sector, as on 1.6.98, All India Financial Institutions have cleared 19 projects involving an annual capacity of about 13 million tonnes of saleable steel at an investment of Rs.25,000 crores. Out of these, 6 projects involving about Rs.6070 crores have already been commissioned with an annual capacity of 3.54 million tonnes. Other projects are at various stages of implementation. Thus it will be seen that in the years to come, the percentage production of the private sector will be much larger than production of the public sector in the steel industry.

### Pig Iron

Along with the production of steel, the production of pig iron in the country during the period 1991-92 to the present has also increased. The details are as under :

(Quantity in million tonnes)

| Year | Main Producers | Secondary Producers | Total |
|---|---|---|---|
| 1991-92 | 1.485 | 0.102 | 1.587 |
| 1992-93 | 1.679 | 0.165 | 1.844 |
| 1993-94 | 1.977 | 0.237 | 2.250 |
| 1994-95 | 2.005 | 0.780 | 2.785 |
| 1995-96 | 1.735 | 1.060 | 2.795 |
| 1996-97 | 1.733 | 1.557 | 3.290 |
| 1997-98 | 1.76 | 1.687 | 3.393 |
| (April-Dec.) | 1.072 | 1.086 | 2.158 |

### Sponge Iron

During the early 90s, sponge iron industry had been specially promoted so as to provide an alternative to steel melting scrap which was increasingly becoming scarce. The production of sponge iron (Direct Reduced Iron - DRI) during the period 1991-92 to the present was as under :

(Quantity in million tonnes)

| Year | Production | % Increase |
|---|---|---|
| 1991-92 | 1.31 | - |
| 1992-93 | 1.44 | 9.9 |
| 1993-94 | 2.40 | 66.7 |
| 1994-95 | 3.39 | 41.3 |
| 1995-96 | 4.40 | 29.8 |
| 1996-97 | 5.01 | 13.8 |
| 1997-98 | 5.35 | 6.78 |
| (April-Dec.) | 3.85 | - |

During the last 2 years alone, sponge iron production went up by over 1.1 million tonne. Today, India is the second largest producer of sponge iron in the world. The production of sponge iron in the country has also resulted in providing an alternative feed material to steel melting scrap which was hitherto imported in large quantities by the Electric Arc Furnace Unit and the Induction Furnace Unit. This has resulted in considerable saving in foreign exchange.

## Apparent Consumption of Steel

The long term projections of steel demand, which formed the basis of capacity planning during Second and Third Five Year Plans were based on an optimistic rise in per capita consumption of steel and high absorption of steel in the economy. This optimism was based on the growth rates of different sectors, structural changes in the economy and import substitution. The finished steel consumption which was only 18.66 Million Tonnes in 1994-95 has increased to 22.63 million tonnes in 1997-98.

India's per capita crude steel consumption as per the figures available for 1997, was only 22 Kg, which is far below the level of other developed and developing countries — 395 kg., 289 kg. and 84 kg. in USA, the EU (15) and China. The World average was around 126 Kg. in 1997. With the ongoing economic liberalisation resulting in faster economic growth, the steel consumption is expected to increase rapidly.

Apparent consumption of steel is arrived at by subtracting export of steel from the total of domestic production and import of steel in the country. Change in stock is also adjusted in arriving at the consumption figures. It is also treated as the actual domestic demand of steel in the country. The year-wise apparent consumption of finished steel since 1990-91 is given in the table below :

**Table-II : 1**

(In Million Tonnes)

| Year | Apparent Consumption |
|---|---|
| 1990-91 | 14.37 |
| 1991-92 | 14.83 (3.2%) |
| 1992-93 | 15.00 (1.2%) |
| 1993-94 | 15.32 (2.0%) |
| 1994-95 | 18.66 (21.8%) |
| 1995-96 | 21.65 (16.0%) |
| 1996-97 | 22.13 (2.27%) |
| 1997-98 | 22.63 (2.28%) |

*(The figures in brackets indicate the percentage increase over the previous year periods.*





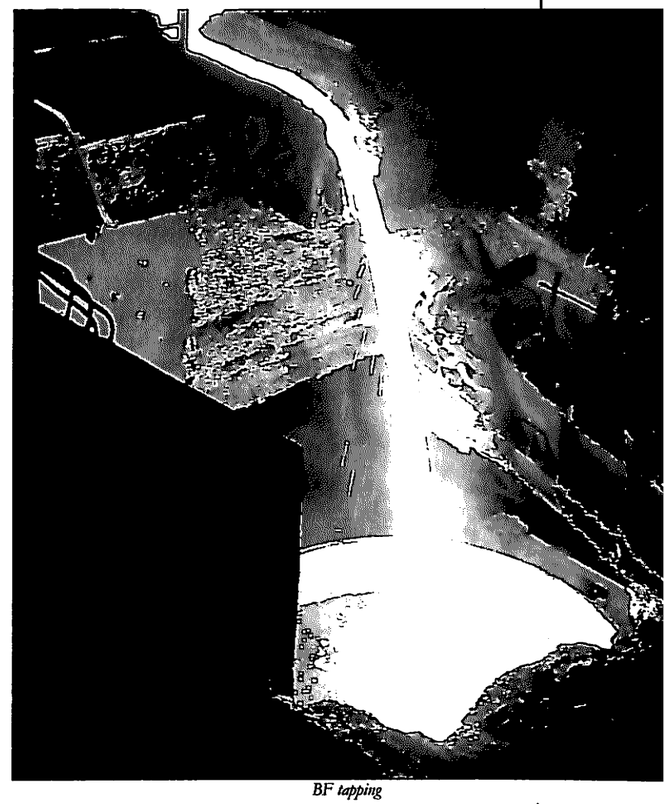
The apparent consumption of steel did not show much increase in 1997-98 mainly due to slowdown being faced by some of the steel using industries like automobile and engineering industries and construction. With the revival of the demand for automobile and engineering goods and general improvement in the economy, it is expected that consumption of steel will increase further.

## Long Term Demand Availability Projections of Finished Steel

In order to have a long term perspective and planning, a Working Group for IXth Five Year Plan was constituted for iron and steel sector under the aegis of Planning Commission. The Working Group deliberated upon all aspects including supply-demand projections for finished steel during the terminal years of VIIIth and IXth Five Year Plans i.e. 1996-97 and 2001-02, taking a GDP growth rate of 5% during the VIIIth Plan and 6% thereafter and a GDP elasticity of demand for steel of 1.33. The Working Group also suggested various strategies for an integrated and harmonious growth of the steel sector during IXth Plan period and thereafter.

The Ministry of Steel (9th Plan Working Group) has estimated that the demand for finished steel (including demand for exports) in 2001-02 would touch 38.68 million tonnes. The domestic availability of finished steel from all sources for 1997-98 was about 23.37 million tonnes. It is expected that by 2001-02, it would be 38.01 million tonnes. The projected availability is almost adequate to meet the domestic demand and also export potential of 6 million tonnes as identified by the Working Group during 9th Five Year Plan period. The installed capacity is expected to reach 43.606 million tonnes by the end of the Ninth Five Year Plan. Similarly, by 2006-07 the demand for finished steel is estimated to be of the order of 48.80 million tonnes, whereas production in the country would be 57.80 million tonnes, providing adequate surplus for meeting the projected export potential of 9 million tonnes.

The major public sector integrated steel plants of SAIL including IISCO and RINL, would be able to contribute about 11.449 million tonnes and 2.41 million tonnes respectively. With TISCO's contribution of 3.1 million tonnes of finished steel, the integrated steel plants are expected to produce 16.959 million tonnes. The balance 21.053 million tonnes would be from secondary steel sector during 2001-02. In other words, the Secondary Sector is expected to contribute about 55.4 percent of the availability of finished steel in the country.



*BF tapping*

The Working Group has identified the following pattern of the investment during the Ninth Five Year Plan :

**Table-II : 2**

(Rs. in crore)

| Area | Public Sector | Private Sector | Total |
|---|---|---|---|
| Steel | 16,202.00 | 31,658.00 | 47,860.00 |
| Sponge Iron | 000.00 | 635.00 | 635.00 |
| Pig Iron | 0.00 | 200.00 | 200.00 |
| Raw Material and Others | 3,479.00 | 0.00 | 3,479.00 |

It will be seen that out of total estimation of investment of Rs.52,174.00 crore in iron and steel sector during IXth Plan period made by the Working Group, public sector's contribution was expected to account for about 38% and the balance 62% of the investment supposed to be coming from the private sector. But subsequently, the Planning Commission undertook a detailed and in-depth exercise to determine the exact investment, which the Public Sector Undertakings in the Steel Sector would be expected to make during the Plan period. The Planning Commission has finally approved a Plan Outlay Rs.19,197.88 crore for PSUs for IXth Five Year Plan. The total approved outlay of Rs.19,197.88 crore for IXth Five Year Plan for public sector undertakings includes a Budgetary Support of only Rs.90.00 crore, which constitutes only 0.47%. The remaining investment proposed to be made by PSUs will be met from their internal accruals and extra budgetary resources.

In so far as private sector is concerned, as mentioned in para 5.4 earlier, the All India Financial Institutions have cleared 19 medium/large projects involving an annual capacity of approximately 13 million tonnes of saleable steel and investment of over Rs.25,000 crore.

Ministry of Steel has formulated a well-knit scheme in consultation with Planning Commission for self-reliant and healthy growth of the steel sector keeping in view all gamuts of growth perspective for this sector. This includes maintaining continuous growth coupled with projected investments both in public and private sectors as well as investment for raising technological and managerial skills, quick decision making for product planning, man-power deployment, etc.

## Distribution of Iron and Steel

As a part of the economic liberalisation process, the Government of India, on 16th January, 1992, abolished the price regulation of the Joint Plant Committee (JPC) on iron and steel, which had been in existence since 1964. However, the requirements of Defence, Railways, Small Scale Industries Sector, exporters of engineering goods and the North Eastern Region continue to be met on priority at prices that are announced by the producers from time to time.

The Development Commissioner for Iron & Steel continues to make allocations of pig iron to the designated consumers and the main producers supply the material on the basis of such allocation. To meet the requirements of steel of Small Scale Industries, allocations are made by the Development Commissioner for Iron & Steel. This is in addition to the purchases made by Small Scale Units, which draw their materials directly from the main producers. The Development Commissioner also continues to issue Release Orders for supplies to exporters of engineering goods and make annual supply plans for the North Eastern Region. The requirements of Defence and Railways are met by the main producers directly on priority in accordance with the past procedures.

Considering the special problems in meeting the requirements of consumers in the North-Eastern Region, special efforts are made to ensure adequate and timely supplies to that region.

## Pricing of Iron & Steel

The pricing mechanism of the Joint Plant Committee (JPC) operating from 1964 was abolished with effect from 16th January, 1992. Producers are now free to determine and announce their prices, which are now governed by market forces of demand and supply.

After deregulation, the main producers, i.e., Steel Authority of India Limited, Rashtriya Ispat Nigam Ltd. and TISCO are charging either the actual freight upto stockyard or freight element as it existed prior to deregulation (now Rs.1710/- per tonne in case of steel and Rs.1165/- per tonne in case of pig iron), whichever is lower. This has ensured that far flung areas and distant States are protected by stipulating that the main producers shall charge either actual freight or freight element existing prior to withdrawal of the scheme, whichever is less.

## Import and Export of Iron and Steel

### Policy frame work

The general policy and procedures for export and import of iron and steel, ferro alloys and ferro scrap are at present decided by the Ministry of Commerce in consultation with Ministry of Steel.

With the liberalisation of India's trade policy and commencement of the export-import policy for 5 years (from 1.4.1997 to 31.3.2002), the policy for import and export of iron and steel materials has undergone sweeping changes. Import of all items of iron and steel is freely allowed.

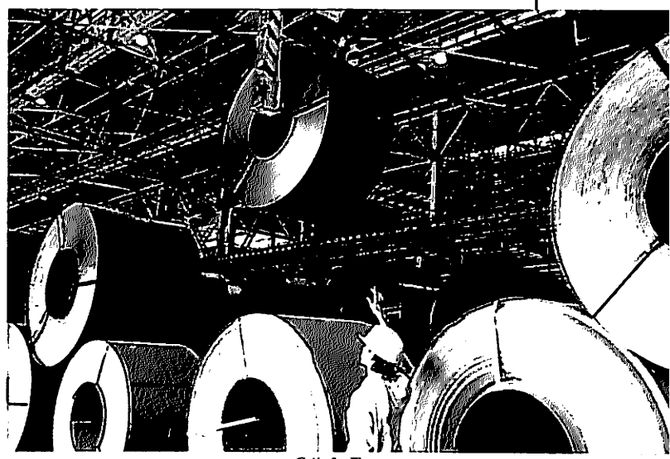
The value-based advanced licence and the old pass-book scheme has been replaced by a new scheme-Duty Entitlement Pass-Book (DEPB) scheme -which combines the positive features of both the schemes besides being easy to administer and more transparent. Under this scheme, exporters on the basis of notified entitlement rates, will be granted due credits, which would entitle them to import goods duty free.

Exports of all items of iron and steel are also freely allowed. Exports of high grade iron ore, chrome ore and manganese ore are made through designated canalising agencies subject to the ceilings imposed by the Government, in order to conserve high grade ores for domestic consumption and production of value added materials.

Consistent efforts are being made by the Ministry of Steel/Development Commissioner for Iron and Steel to ensure adequate supplies of domestic raw materials to meet requirements of engineering exporters.







*Coils for Export*

### Import of Steel

India had been annually importing about 10 to 15 lakh tonnes of steel. However, due to picking up of domestic demand, the import of saleable steel in 1994-95 increased to 1.93 million tonnes. The increase in import was mainly in hot rolled coils, cold rolled coils and semis. Import of saleable steel during 1997-98 was about 1.81 million tonnes which was about 1.5% higher than import in 1996-97.

The total import of steel, pig iron and scrap during the last four years and value thereof are as under :

**Table II : 8**

(Qty. in '000 tonnes) (Value in Rs. crore)

| Category | 1994-95 | | 1995-96 | | 1996-97 | | 1997-98 | |
|---|---|---|---|---|---|---|---|---|
| | Qty. | Value | Qty. | Value | Qty. | Value | Qty. | Value |
| Saleable Steel | 1936 | 2536 | 1834 | 3175 | 1797 | 3041 | 1815 | 2900 |
| Pig Iron | 1 | 1 | 8 | 6 | 15 | 12 | 2 | 3 |
| Steel Scrap | 1417 | 758 | 974 | 618 | 1165 | 709 | 819 | 497 |

### Export by Iron and Steel Sector

It may be mentioned at the outset that India has already registered its presence in the global market in the recent years. While India started steel production in the year 1911, steel exports from India started only in 1964. However, steel exports have been sporadic in the initial years. From 1964 to 1968 India exported a large quantity of steel mainly due to recession in the domestic iron and steel market. Subsequently, exports declined with revival of domestic demand. India once again started exporting steel from 1975, touching a record export of steel in 1976-77. In the year 1976-77, India exported 1 million tonne of pig iron and 1.4 million tonnes of steel. Thereafter, exports again declined only to pick up in 1991-92, when main producers exported 3.87 lakh tonnes valued at Rs. 283 crore.

As a result of various policy measures taken up by the Government like liberalisation of import-export policy, introduction of flexibility in the advance licensing scheme and convertibility of rupee on the capital account. The export of Iron and Steel (including Sponge Iron) showed a quantum jump to 2.92 million tonnes valued at Rs. 1978 crore in 1993-94. In 1995-96, the export was of the order of 2.79million tonnes valued at Rs. 2,275 crore. The export of Iron & Steel during 1996-97 was 2.71 million tonnes valued at Rs.2,396 crore. During 1997-98, the export of iron and steel was a record 3.04 million tonnes valued at Rs. 2,937 crores.

The quantity and value of steel, pig iron and sponge iron exported from the year 1992-93 is as given in the following Table - II

**Table - II Export of Steel and Pig Iron and Steel**

**(Quantity in lakh tonnes)**

**(Value in Rs. crore)**

| Year | Saleable Steel | | Pig Iron | | Sponge Iron | | Total Iron & Steel | |
|---|---|---|---|---|---|---|---|---|
| | Qty. | Value | Qty. | Value | Qty. | Value | Qty. | Value |
| 1992-93 | 8.94 | 7.02 | 0.16 | 6 | 2.00 | 80 | 11.10 | 788 |
| 1993-94 | 16.01 | 1417 | 6.20 | 261 | 7.00 | 300 | 29.21 | 1978 |
| 1994-95 | 13.19 | 1238 | 4.67 | 200 | 6.66 | 280 | 24.52 | 1718 |
| 1995-96 | 15.02 | 1696 | 5.04 | 243 | 7.90 | 335 | 27.96 | 2275 |
| 1996-97 | 19.92 | 2039 | 4.06 | 192 | 3.80 | 165 | 27.08 | 2396 |
| 1997-98 | 18.78 | 2343 | 7.84 | 404 | 3.74 | 190 | 30.36 | 2937 |

Earlier, exports consisted mainly of plates, structurals, bars and rods, whereas now apart from semis, hot rolled coils, cold rolled coils, colour coated sheets, GP/GC sheets, pig iron and sponge iron are also being exported. In future, it is expected that the exports of more value added items will increase.

## Steel Exporters Forum

The Department of Steel has set up a Steel Exporters Forum in February 1998 with a view to fulfil the long felt need of the producers and exporters from the iron and steel sector and also to resolve issues, problems and bottlenecks faced by them in exports. The Chairman of the Forum is the Development Commissioner for Iron and Steel and all major steel producers/associations are its members. Representatives of the Ministries of Finance, Railways and Surface Transport are also its members in addition to the Department of Steel.

Indian steel is exported to China, Japan, USA, Korea, Taiwan, Indonesia, Thailand, Malaysia, Italy, U.K., Germany, Canada, Spain, Australia, etc.

The IXth Plan Working Group for Iron and Steel has estimated that India will have an export potential of 6 million tonnes of steel by 2001-02 and 9 million tonnes by 2006-07. The above projection for export has been made keeping in view the need for projecting export as a distinct market, which need to be developed, of course, after meeting the domestic requirements.

## Functions of the Office of Development Commissioner for Iron & Steel

The Office of Development Commissioner for Iron and Steel (DCI&S) through its Regional Offices continued to perform its advisory, developmental and regulatory functions during the year.

With the deregulation of distribution and pricing of iron and steel, the major functions of the Development Commissioner for Iron and Steel are as follows :

a) Collection, processing and dissemination of basic information relating to the Iron and Steel industry and to act as the data bank of the Department of Steel

b) Monitoring of regional price and supply trends and suggesting to the Department remedial measures for correcting the imbalances, if any.

c) Monitoring of import and export of iron and steel materials.

d) Advice on matters relating to import and export policies of iron and steel.

e) Management of distribution of iron and steel materials to the designated priority sectors such as, Defence, Railways, State Small Industries Corporations, Engineering Goods Exporters and the North Eastern States.

f) Allocation of materials to the State Small Scale Industry Corporations.

g) Allocation of materials to remote areas like North Eastern States

h) Assistance to Engineering Goods Export Units through priority allocations and monitoring thereof.

i) Survey of various segments of Steel Industry.

j) Rendering assistance to the EAF Units and the secondary sector, by way of capacity assessment, assistance in procurement of indigenous/imported raw materials and import substitution measures aimed at overall development of the sector.





k) Interface between the Government and different consumer groups to facilitate consumer – producer interaction.

l) Co-ordination for movement of raw materials to Steel Plants

m) Vigilance functions to prevent misuse of steel obtained from regulated sources.

## Reasons for Current Slow Down of the Iron and Steel Sector

The iron and steel sector has been experiencing a slow down in the recent past.. The growth of the steel sector is dependent upon the growth of the economy in general and the growth of industrial production and infrastructure sectors in particular. The major reasons for the slow growth in the last few years include :-

**a) Sluggish demand in the steel consuming sectors**

Steel being the basic raw material for the construction industry, the capital goods and engineering goods industry, as also the auto sector and white goods sector, its growth is dependent upon the demand for steel by these segments of the industry. Since no major infrastructure or construction projects have been implemented in the last few years, demand for steel has remained low. No major projects in the oil sector, power sector, fertiliser sector where intensity of steel consumption is high, have come up in the recent past.

**b) Overall economic slow down in the country**

All major core sectors of the economy have been facing an economic slow down. These include, power, coal, cement, industry, mining and steel. The slow down phenomenon is not restricted to the steel sector alone. Only when the overall economy of the country picks up, would the steel sector also show signs of revival.

**c) Lack of investment by Government/private sector in major infrastructure projects**

Due to budgetary constraints, no major construction activity in mega projects including fertiliser, power, coal, railways etc. have been planned by the Government. Despite liberalisation of the economy and relaxation in the investment norms, private sector investment is yet to materialise in the core sectors of the economy. This has also contributed in slowing down demand for steel.

**d) Cost escalation in the input materials for iron and steel**

Power tariff, freight rates, coal prices etc. have been under the administered price regime. These rates have been frequently enhanced, thereby contributing to the rise in input costs for steel making.

**e) Continuous reduction in import duty on iron and steel**

After liberalisation import duty rates on iron and steel items have been gradually reduced over the years. This has opened up the domestic iron and steel sector to international competition. The table I below indicates the extent of changes brought about in the customs duty of some of the items of steel since 1992-93 :

**Table-I Import Duties % Ad valorem**

| Item | 1992-93 | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 |
|---|---|---|---|---|---|---|---|
| HR COILS | 45%+Rs.1100 | 50% | 40% | 30% | 25% | 25% | 25% |
| CR COILS | 45%+Rs.6000 | 75% | 50% | 40% | 25% | 30% | 30% |
| Plates | 45%+Rs.3000 | 75% | 50% | 40% | 30% | 30% | 30% |
| Bars/ Rods/ Structurals | 105% | 85% | 50% | 40% | 30% | 30% | 30% |

**f) Continuous increase in excise duty on iron and steel**

During the period 1991-92 onwards upto 1994-95, the iron and steel materials have been constantly subjected to an increase in the excise duty rates, as is evident from the table below. Even in the year 1995-96, though there was no increase in rate of excise duty, the methodology of computation of excise duty was widened by adding to the ex-factory prices, the stockyard and distribution charges in the basic price. This resulted in increase in the prices of steel all over the country. Whereas in other sectors of the economy, drastic reduction in excise duties were announced during 1994-95 & 1995-96. In fact, the steel sector is the highest revenue earner for the country and contributes about Rs.5,000 crores by way of excise duty alone. It is high time that the burden on the consumers of steel of such a high excise duty of 15% is reduced.

### Excise Duty Rates

| | 1992-93 | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 & 98-99 |
|---|---|---|---|---|---|---|
| HR Coils | 11.5% | 12.5% | 15% | 15% | 15% | 15% |
| CR Coils | 11.5% | 12.5% | 15% | 15% | 15% | 15% |
| Plates | 11.5% | 12.5% | 15% | 15% | 15% | 15% |

**g) Greater competition from imports**

Due to the drastic reduction in import duties on iron and steel materials along with sharp fall in international prices, the imports of finished steel even in those sectors where adequate capacity exists have shown an increasing trend.

**h) Dumping of finished steel in the country**

Taking advantage of lower tariff regime and the unrestricted import of all iron and steel materials with the liberalisation of the EXIM policy, some countries are reportedly dumping their finished steel products in India.

**i) Adverse conditions in export markets for iron and steel**

Due to economic crisis, the South East Asian countries, the traditional market for Indian iron and steel exports has dried up. Countries, which were hitherto importing steel from India, have cut down on imports to conserve scarce resources and Indian exporters have been forced to look for newer markets elsewhere in the globe. These countries particularly Indonesia, Malaysia & Korea in fact, have now become competitors to Indian exports in other global markets.

## Action Being Taken by Department of Steel

The Department of Steel has been making all out efforts to help the domestic steel sector to overcome the problems faced by the steel industry at present. These include :

**a) Sluggish demand in the steel consuming sectors**

To boost the demand and consumption of steel, an Institute for Steel Development and Growth (INSDAG) has been set up in Calcutta with leading steel producers in the country as its members. The Development Commissioner for Iron & Steel (DCI&S) has launched a National Campaign for increasing the demand for steel, in non-traditional sectors, particularly in the construction, rural and agro based industrial sector.

**b) Duty on project imports**

To enhance the consumption of steel in the country, the Finance Ministry has been urged to provide a level playing field to domestic steel producers for steel supply against International Competitive Bidding (ICB) under 'project imports' in the fertilizer, power, oil sectors by exempting them for excise and sales tax.

**c) Reduction in Power & Rail Tariffs**

The Department of Steel has been interacting with State Governments to provide power at reduced/concessional tariffs especially to mini steel plants all over the country. Similarly, the freight rates adopted by the Railways have been rationalised after inter action with the Railway Board and freight cost on raw material transportation for steel producers is reduced.

**d) Reduction in input costs**

The Department of Steel has also been able to rationalise the classification of coking coal in consultation with the Coal Ministry so as to reduce the impact of royalty payable on this basic raw material. Import duties on several raw materials, such as, scrap, ships for breaking, coke, non-coking coal etc. used by the steel industry has been reduced steadily over the past 4-5 years.

**e) Import Duty**

In the last two Budgets, import duties on finished steel items have remained at the same levels as suggested by Department of Steel.

**f) Excise Duty**

The Finance Ministry was requested not to resort to further increase in Excise Duties on iron and steel materials, in the last few budgets. On the other hand, a case has been made to reduce the excise duty levels on all finished steel items, especially long products (which are consumed by the construction sector) by at least 10%, as the construction sector cannot avail of MODVAT benefit.

**g) Strengthening of Anti Dumping mechanism**

To check the increasing trend of cheap imports in certain categories of flat products especially from CIS and South East Asian countries, the Department of Steel has urged the Commerce Ministry and the Finance Ministry to strengthen anti dumping mechanism so that fast decision on dumping can be taken.

**h) Working Group**

Recently, in response to the strong plea made by the Minister for Steel, the Finance Minister had set up a Working Group headed by Secretary (Banking) to study the problems faced by the steel industry and give suitable recommendations. The Working Group has suggested various measures for implementation by Finance and Commerce Ministries, All India Financial Institutions and the steel producers. These measures are in various stages of examination/implementation.

## Future Prospects

With the onset of liberalisation, the steel industry has now to gear-up, not only to domestic competition, but also to global competition in terms of product range, quality and price. The growth of the steel sector is intricately linked with the growth of the Indian economy and especially the growth of the steel consuming sectors. India has become self-sufficient in iron and steel materials in the last 3–4 years. Exports are rising and imports are falling. Production and production capacities are increasing. This position needs to be further consolidated and issues affecting production and consumption need to be resolved on a continuous basis. At the same time, productivity of our steel plants must be maintained at levels close to international standards. The Ministry of Steel continues to play an active and major role in helping the steel industry to overcome bottlenecks in the growth of this sector. With these efforts, the IXth Plan projection for finished steel of 32 million tonnes for domestic consumption and 6 million tonnes of export can be achieved, as also the projections for availability of 3.75 million tonnes of pig iron and 6.18 million tonnes of sponge iron.

India is already recognized as a global player in the steel industry and this sector is poised to play a key role in the international steel scenario by the turn of the century.



CHAPTER - II

# RAW MATERIALS

*Loading of iron ore at SAIL's Bolani Min2es*

## Iron Ore

As per the Survey conducted by the Indian Bureau of Mines (IBM) in April, 1995. India had 10,053 Million tonnes of Recoverable reserves of Heamatites and 3,408 Million Tonnes of Magnetite. While Zone 'A' comprising of Bihar & Orissa is the largest Heamatite Ore bearing Zone in the Country with reserves of 5,951 Million Tonnes consisting mainly of Medium Grade & Low Grade Ore (Iron content 65% and below), Madhya pradesh has the largest quantity of High Grade Ore reserves (Iron content greater than 65%) in the country at 570 Million Tonnes. Karnataka has the highest reserves of Magnetite at 2,784 Million tonnes followed by Andhra Pradesh and Goa.

The details of Recoverable reserves of Heamatites and Magnetite is as under :

### Recoverable Reserve of Heamatite as on 01.04.95

Unit : Million tonnes

| S. No. | Zone/State | High grade Ore (FE+65%) | Medium grade ore (FE62-65%) | Low grade ore (Fe62%) | Unclassified | Other/ Not known | Blue dust Black Iron | Total |
|---|---|---|---|---|---|---|---|---|
| 1. | Zone 'A' | | | | | | | |
| | Bihar | 24 | 1594 | 844 | 144 | — | 51 | 2657 |
| | Orissa | 280 | 1916 | 737 | 350 | — | 11 | 3294 |
| | Total | 304 | 3510 | 1581 | 494 | — | 62 | 5951 |
| 2. | Zone 'B' | | | | | | | |
| | Madhya Pradesh | 596.9 | 480.7 | 517 | 397.4 | 14.1 | 18.9 | 1998 |
| | Maharashtra | 7.3 | 128.7 | 46.8 | 32.2 | 12.0 | — | 227 |
| | Total | 577.2 | 609.4 | 563.8 | 429.6 | 26.1 | 18.9 | 2225 |
| 3. | Zone 'C' | | | | | | | |
| | Karnataka | 299.9 | 600.8 | 73.1 | 94.2 | 3.5 | 0.5 | 1072 |
| | Total | 299.9 | 600.8 | 73.1 | 94.2 | 3.5 | 0.5 | 1072 |
| 4. | Zone 'D' | | | | | | | |
| | Goa Region | 2.7 | 219.5 | 469.2 | 34.1 | 8.1 | 11.4 | 245 |
| | Total | 2.7 | 219.5 | 469.2 | 34.1 | 8.1 | 11.4 | 245 |
| 5. | Zone 'E' | | | | | | | |
| | Andhra Pradesh | 14.3 | 1.90 | 31.70 | 2.7 | 0.4 | — | 51 |
| | Rajashthan | — | 0.28 | 7.68 | 1.0 | 0.04 | — | 9 |
| | Total | 14.3 | 2.18 | 39.38 | 3.7 | 0.44 | — | 60 |
| | **Grand Total** | **1198.10** | **4941.88** | **2726.48** | **1055.60** | **38.14** | **92.80** | **10053** |





### Recoverable Reserves of Magnetite (As on 01.04.95)

| S.N. | State | Metallurgical grade | Coal washery grade | Foundry | Unclassified | Other/Not known | Total |
|---|---|---|---|---|---|---|---|
| 1. | Andhra Pradesh | 37.9 | — | — | 380.0 | — | 417.9 |
| 2. | Bihar | — | 4.9 | — | 0.2 | 0.07 | 5.17 |
| 3. | Goa | 98.3 | — | — | 64.5 | 0.4 | 163.2 |
| 4. | Karnataka | 1162.7 | — | — | 1615.8 | 5.4 | 2783.9 |
| 5. | Kerala | 36.00 | — | — | — | — | 36.00 |
| 6. | Maharashtra | 0.2 | — | — | — | — | 0.2 |
| 7. | Rajasthan | — | — | 0.3 | — | — | 0.3 |
| 8. | Tamil Nadu | 1.1 | — | — | — | — | 1.1 |
| | **Total India** | **1336.2** | **4.9** | **0.3** | **2060.5** | **5.87** | **3407.77** |

### Production

Production of iron ore (including concentrates) during the year 1997-98 was 73.45 million tonnes as against 68.17 million tonnes in the previous year. State-Wise production figures indicate that Madhya Pradesh would continue to be the leading iron ore producing State accounting for 26% of the total production during the year, followed by Karnataka with 22%, Goa 19%, Orissa 17% and Bihar 16%. The remaining production was from Andhra Pradesh and Maharashtra.

### Despatches

Despatches of iron ore (including concentrates) for 1997-98 were 71.41 million tonnes. The despatches of iron ore for internal consumption and exports would be 40.27 million tonnes and 31.14 million tonnes respectively.

Production and despatches of iron ore during the last 5 years was as under :

| Year/Period | Production | | Despatches | | |
|---|---|---|---|---|---|
| | Qty (MT) | Value (Rs. Crores) | Total (MT) | For Internal consumption | For Export (MT) |
| 1993-94 | 59.65 | 1039.39 | 58.49 | 28.57 | 29.92 |
| 1994-95 | 64.51 | 1186.24 | 61.68 | 33.37 | 28.31 |
| 1995-96 | 67.42 | 1355.32 | 65.32 | 37.19 | 28.13 |
| 1996-97 | 68.17 | 1479.58 | 67.67 | 38.16 | 29.51 |
| 1997-98 | 73.45 | 1642.84 | 71.41 | 40.27 | 31.14 |

M.T. : Million Tonnes

## Iron Ore Exports

The exports during the year 1997-98 were at 35.26 (Prov.) million tonnes as against 29.65(Prov.) million tonnes in 1996-97.

# Manganese Ore

## Reserves

As per the latest inventory the recoverable reserves of manganese ore are estimated at 176 million tonnes. The main reserves found in India are of blast furnace grade. The reserves of ferro manganese grade are very limited i.e. 12% of the total reserves only.

## Production

Production of manganese ore during 1997-98 was1.60 million tonnes as against 1.81 million tonnes in 1996-97. Orissa, Madhya Pradesh, Maharastra and Karnataka were be the principal producing state accounting for 34%, 22%, 20% and 17% respectively in the total production of manganese ore in 1997-98.

## Despatches

Despatches of manganese ore during 1997-98 were 1.64 million tonnes of which 1.41 million tonnes were be for internal consumption and 0.22 million tonnes for exports.

Production and despatches of manganese ore from 1994-95 to 1997-98 are indicated below :

| Year/ Period | Production | | Despatches | | |
|---|---|---|---|---|---|
| | Qty ('000T) | Value (Rs. Crores) | Total ('000T) | For Domestic consum-ption ('000T) | For Export ('000T) |
| 1994-95 | 1681 | 145.06 | 1737 | 1502 | 235 |
| 1995-96 | 1837 | 159.88 | 1796 | 1597 | 199 |
| 1996-97 | 1811 | 176.07 | 1800 | 1551 | 249 |
| 1997-98 | 1606 | 165.09 | 1643 | 1416 | 227 |

## Export

Export policy of manganese ore is decided keeping in view the need for conserving high grade ores. Alongwith this, effort is also made to replace the export of ores with export of value added items.

For the year 1997-98 the maximum ceilings of manganese ore allowed for export were as follows:

| Item | Ceiling for 1997-98 (In lakh tonnes) |
|---|---|
| i) Medium Grade Manganese Ore/ blended ore containing 38% to 46% manganese and more than 0.15% Phos. | 1.00 |
| ii) Medium Grade Manganese ore/ blended ore containing 38% to 46% manganese and more than 0.10% Phos. | 0.50 |
| iii) Low grade manganese ore/ blended ore containing less than 38% manganese. | 4.00 |
| iv) Manganese ore fines below 12mm in size containing less than 44% manganese. | 1.50 |

Actual export during last two years have been as follows:

| Year | Quantity (In lakh tonnes) | Value (Rs. in crores) |
|---|---|---|
| 1996-97 | 4.17 | 58.57 |
| 1997-98 | 2.59 | 42.20 |

# Chromite Ore

## Reserve

As per the latest inventory, the total recoverable reserves of chromite are estimated at 88 million tonnes. Orissa is the largest Chromite ore producing state in the country accounting historically for 96% of its total production, followed by Karnataka which produced about 4% of the total production. Small quantities are also produced in Andhra Pradesh and Manipur.

## Production

Production of Chromite in 1997-98 was 15.64 lakh tonnes as against 14.56 lakh tonnes in 1996-97. Orissa continues to be the chief producing state accounting for 98% of the total production.





## Despatches

Production and despatches of Chromite during the year 1994-95 to 1997-98 are given below:

| Year/ Period | Production | | Despatches | | |
|---|---|---|---|---|---|
| | Qty ('000T) | Value (Rs. Crores) | Total ('000T) | For domestic consum-ption ('000T) | For Export ('000T) |
| 1994-95 | 1132 | 252.23 | 1068 | 621 | 447 |
| 1995-96 | 1700 | 356.82 | 1597 | 1121 | 476 |
| 1996-97 | 1456 | 290.61 | 1224 | 698 | 526 |
| 1997-98 | 1564 | 308.67 | 1366 | 872 | 494 |

## Export

Keeping in view the limited reserve of Chromite ore in the country, only certain grades of ore are allowed for export. Emphasis has been laid on export of beneficiated chromite concentrates. From the year 1997-98, a five year Export policy was decided upon by Government so us to enable the exporters to establish their presence in the international market.

The maximum ceilings for export of Chromite ore for 1997-98 were as follows:

| Item | Ceiling for 1997-98 (In lakh tonnes) |
|---|---|
| i) Low silica friable/fine chromite ore with chromium oxide not exceeding 52% & Silica exceeding 4%. | 3.00 |
| ii) Chromite lumps containing Chromium Oxide not exceeding 40%. | 1.00 |
| iii) Beneficiated chromite concentrates (feed grade to be less than 33%). | No ceiling |

Actual exports during last two years have been as follows:

| Year | Quantity (in lakh tonnes) | Value (Rs. in crores) |
|---|---|---|
| 1996-97 | 3.02 | 137.00 |
| 1997-98 | 2.70 | 106.00 |

# Ferro Alloys

## Introduction

Ferro alloys are essential additives in steel making used for imparting desired properties to steel. The product mix of ferro alloy industry mainly consists of Ferro Manganese (Fe Mn), Ferro Silicon (Fe Si.) and Ferro Chrome (Fe Cr.) - called the Bulk ferro alloys. There is another category of ferro alloys, called Noble ferro alloys, which consists of Ferro Vanadium, Ferro Titanium, Ferro Molybdenum, Ferro Niobium, Ferro Tungstun etc., whose production is negligible.

The production of ferro alloys in India started in early fifties with the industry growing manifold during these four decades. The industry is mainly concentrated in four states viz. Orissa, Maharashtra, Andhra Pradesh and Karnataka for their being rich in the basic raw materials for the production of the ferro alloys.

## Installed Capacity and Utilisation

There are 35 large and medium size units (including four 100% EOUs) with an installed capacity of 1.3 million tonnes (including 2 lakh tonnes of Charge Chrome capacity of four 100% EOUs). Besides this, there are small scale units having an installed capacity of about 1.80 lakh tonnes per annum.

Ferro alloy industry is a highly power intensive industry. High power tariffs, coupled with relatively poor quality of supply is one of the major reasons affecting the production and profitability of ferro alloy industry. Average consumption of power per tonne of different bulk ferro alloy ranges between 2700-4065 kwh in the case of ferro silicon. Due to this, the capacity utilisation in the industries has been in the vicinity of 50% to 55%. The production of ferro alloys indirectly related to the plan of production and growth of steel industry. The production of major bulk ferro alloys and Noble ferro alloys during last five years was as under :

| Year | Quantity (In lakh tonnes) |
|---|---|
| 1993-94 | 4.70 |
| 1994-95 | 4.78 |
| 1995-96 | 5.73 |
| 1996-97 | 6.94 |
| 1997-98 | 7.91* |

* Source : 'Indian Ferro Alloys Producers' Association, Mumbai.

## Export of Ferro Alloys

Export of ferro alloys from India have been showing an upward trend as may be seen from details given below :

| Year | Quantity (In lakh tonnes) | Value (Rs. in Crore) |
|---|---|---|
| 1993-94 | 1.68 | 251.56 |
| 1994-95 | 1.74 | 257.26 |
| 1995-96 | 1.90 | 451.55 |
| 1996-97 | 2.11 | 407.92 |
| 1997-98 | 2.59 | 504.55* |

* Source : 'Indian Ferro Alloys Producers' Association, Mumbai.

## Coal

Coal is a major raw material for the Iron & Steel Industry which consumes both Coking & Non-Coking coal.

## Consumption of Coking Coal

During 1997-98 the consumption of coking coal in SAIL Steel Plants (including IISCO), TISCO and VSP was as under :

(In million tonnes)

| | SAIL | TISCO | VSP |
|---|---|---|---|
| Indigenous Sources | 7.085 | 2.324 | 0.67 |
| Imports | 6.133 | 0.942 | 2.39 |
| **Total** | **13.218** | **3.266** | **3.06** |

## Consumption of Non-Coking Coal

During the year 1997-98 SAIL Steel Plants (including IISCO) consumed 4.562 million tonnes of non-coking coal from domestic sources which TISCO consumed 1.450 million tonnes of non-coking coal. During 1997-98, VSP consumed 1.39 million tonnes of non-coking coal.

## Refractories

Refractories are the primary materials used in the internal lining of industrial furnaces and are classified from the chemical composition angle into - Acid Refractories, Basic Refractories and Neutral Refractories. In steel industry refractories are used for lining of coke oven batteries, blast furnaces, steel production furnaces, reheating furnaces, electrical arc furnaces etc. With the technological changes in the steel industry, the major thrust has been on economising on the use of the materials and improving technology in each area of operation/process where refractories are being used. The gradual phasing out of open hearth furnaces, adoption of continuous casting route and modernisation of secondary steel making processes, have lessened the demand for conventional refractories and increased demand for high performance refractories. In general, it can be said that all these improvements have resulted in lowering specific consumption of refractories per tonne of steel.

Production of refractories during the year 1997-98 is given below:

| Refractory Item | Production (M.T.) |
|---|---|
| Firebricks and Shapes | 172193 |
| High Alumina bricks and shapes | 240138 |
| Silica bricks and shapes | 38471 |
| Basic bricks and shapes | 202106 |
| Special Products | 17427 |
| Others | 39075 |
| **Total** | **709410** |

The import of refractory items in 1997-98 stood at 27804 tonnes while exports were of the order of 9770 tonnes. In value terms, export during 1997-98 was Rs.20 crores.





# PUBLIC SECTOR

## Steel Authority of India Limited (SAIL) (Excluding Subsidiaries)

### General

Steel Authority of India Ltd. (SAIL) is a Company registered under the Indian Companies Act, 1956 and is an enterprise of the Government of India. It operates and manages five integrated steel plants at Bhilai (Madhya Pradesh), Bokaro (Bihar), Durgapur (West Bengal), Rourkela (Orissa) and Burnpur (West Bengal), a plant of the Indian Iron and Steel Co. Ltd., which is wholly owned subsidiary of SAIL.

SAIL has also four Special and Alloy Steels and Ferro-alloys units at Durgapur (West Bengal), Salem (Tamil Nadu), Chandrapur (Maharashtra) and Bhadravati (Karnataka). The plants at Chandrapur and Bhadravati belong to the Maharashtra Elektrosmelt Limited and Visvesvaraya Iron and Steel Limited respectively which are also subsidiaries of SAIL. The IISCO-Ujjain Pipe and Foundry Company Ltd., a subsidiary of IISCO, was manufacturing Cast Iron Spun Pipes at its works at Ujjain (Madhya Pradesh), is under liquidation. Besides, SAIL has seven central units viz. the Research and Development Centre for Iron and Steel (RDCIS), the Centre for Engineering and Technology (CET), the Management Training Institute (MTI) all located at Ranchi, Central Coal Supply Organisation located at Dhanbad, Raw Materials Division, Growth Division and Environment Management Division all located at Calcutta. SAIL Consultancy Division (SAILCON) functions from New Delhi. The marketing of products of SAIL plants is done through the Central Marketing Organisation (CMO), Calcutta which has a countrywide distribution network.

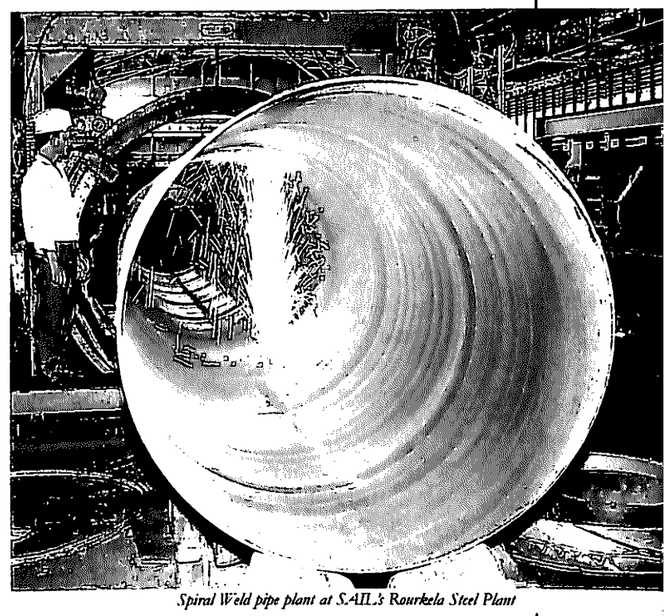
### Finance

The authorised capital of SAIL is Rs.5,000 crores. The paid-up capital of the Company was Rs.4,130.40 crores as on 30th September, 1998 which was held to the extent of 85.82% by the Government of India and the balance 14.18% by the financial institutions/GDR-holders/banks/employees/individual etc.

### Turnover and Profit

The Company recorded the sales turnover of Rs.14624.07 crores in 1997-98. The post-tax net profit for the year 1997-98 was Rs.132.99 crores. The Company had declared a dividend of one percent on the paid-up equity share capital for the year ended 31st March, 1998. Government of India has received Rs.35.45 crores as dividend on its equity contribution in SAIL for the year 1997-98.

The Gross margin (profit before depreciation and interest) and net loss for the half year ended 30th September, 1998 was Rs.797.77 crores and Rs.616.91 crores respectively. The company recorded a sales turnover of Rs.6794.01 crores during the period. The Company during 1997-98 has raised Rs.767 crores through issue of Bonds to various financial institutions, banks, trusts etc. through private placement for financing Company's modernisation and other capital schemes. The Company further issued Bonds valuing Rs.570 crores during the period April-September, 1998.



*Spiral Weld pipe plant at SAIL's Rourkela Steel Plant*

Under the Public Deposit Schemes of the Company, the net deposits (i.e. net of repayments and renewals) as on 31st March, 1998 stood at Rs.2520.25 crores. The net deposits as on 30th September 1998 stood at Rs.2467.70 crores approximately.

## Capital Expenditure

The Company incurred capital expenditure of Rs.1955 crores on Fixed Assets and Capital Work-in-progress in the year 1997-98 and approx. Rs.996 crores during the period April-September, 1998 which have been primarily financed through borrowings from external sources.

## Production Performance

The four integrated steel plants of SAIL at Bhilai, Bokaro, Durgapur and Rourkela ended the year 1997-98 with an output of 11.62 million tonnes of hot metal, 10.3 million tonnes of crude steel and 8.71 million tonnes of saleable steel. Alloy Steels Plant and Salem Steel Plant recorded best ever production of saleable steel at 331 thousand tonnes.

The details of production plan and achievement for 4 integrated steel plants and 2 Alloy steels plants during 1997-98 are as follows :

(In Million Tonnes)

| Item | Target | Actual | Fulfilment (%) |
|---|---|---|---|
| Hot Metal | 12.20 | 11.62 | 95 |
| Crude Steel | 11.45 | 10.30 | 90 |
| Saleable Steel | 9.60 | 9.04 | 94 |

## Production Performance : 1998-99 (April-Sept 98)

The details of production plan and achievement during 1998-99 (April-September 1998) was as follows :

(In Million Tonnes)

| Item | Target | Actual | Fulfilment (%) |
|---|---|---|---|
| Hot Metal | 5.63 | 5.38 | 96 |
| Crude Steel | 4.99 | 4.70 | 94 |
| Saleable Steel (including ASP&SSP) | 4.35 | 3.95 | 91 |

The planwise production performance of saleable steel during April-September, 98 is given hereunder :

| S. No. | Plant | Target | Actual | Fulfilment (%) |
|---|---|---|---|---|
| 1. | Bhilai Steel Plant | 1710 | 1712.8 | 100 |
| 2. | Bokaro Steel Plant | 1240 | 1002.8 | 81 |
| 3. | Durgapur Steel Plant | 587 | 611.7 | 104 |
| 4. | Rourkela Steel Plant | 649 | 509.7 | 78 |
| **A** | **Total Four Plants** | **4186** | **3836.4** | **92** |
| 1. | Alloy Steel Plant | 63 | 51.5 | 82 |
| 2. | Salem Steel Plant | 100 | 65.2 | 65 |
| **B** | **Total Two Plants** | **163** | **116.7** | **72** |
| | **Total SAIL (A+B)** | **4349** | **3953.1** | **91** |

There was continued thrust during 1997-98 on improvements in techno-economic parameters. Coke rate in Blast Furnaces was reduced to 594 kg. per tonne of hot metal in SAIL four plants. The productivity of Blast Furnaces in SAIL plants was 1.25 T/m$^3$/day during 1997-98.

## Energy Conservation

The continued emphasis on energy conservation measures helped further in reducing energy consumption per tonne of crude steel for the 11th successive year and reached a level of 8.28 G.Cal/tcs during 1997-98. During the period April-September, 1998 energy consumption was almost of the same level.

## Development of Small Scale/Ancillary Industries

The Company continued to give encouragement to the development of Small Scale and Ancillary Industries. During 1997-98, value of stores and spares items purchased from these units was of the order of Rs.145 crores. During the period April-September,1998, Rs. 64 crores worth of stores and spares were purchased from Small scale and Ancillary Industries.





## Captive Power Generation

Captive power generation in SAIL during 1997-98 was average of 451 MW, which met 56% of the Company's total power requirements. Captive power generation during the year April-September,1998 stood at an average of about 440 MW as compared to 438 MW during April-Sept.97.

## Environment Management

During the year 1997-98, two more Pollution Control Action Plan schemes were completed, bringing the total number of schemes completed to 109. Consequent upon the various pollution control measures implemented, ambient air quality and effluent discharge quality at various SAIL plants and townships are steadily meeting the norms. The stack emission compliance level has improved to 96 percent during the year.

Several training programmes, aimed to sensitize SAIL collective towards environmental awareness, have been conducted throughout the year, at various locations. Sustained efforts have been made to green the SAIL plants, mines and townships with plantation of over 5.5 lakh saplings during the year 1997-98.

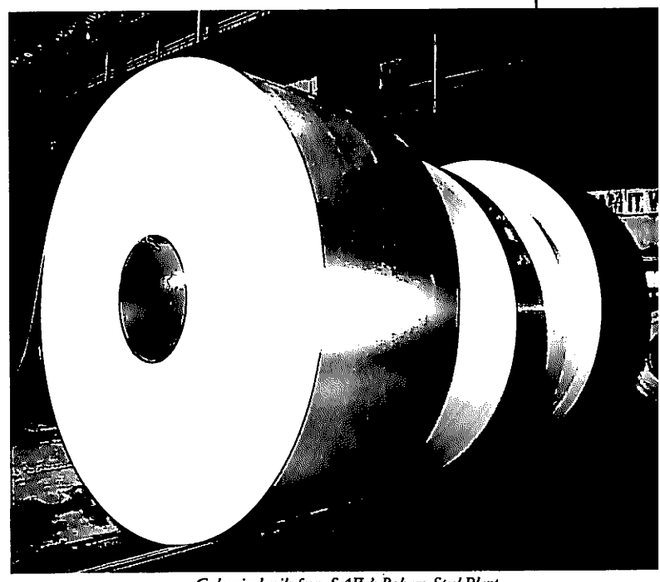
# Sales and Marketing Performance

## Marketing Strategies

Industrial production during 1997-98 was at a rate slower than the previous year. During the year, the product-mix was constantly reviewed and adjusted to make it market oriented. Various specific segments like construction, tube-makers, furniture, etc. were identified and supplies were made in the customized sizes to match their exact requirements. The long term relationship with the major customers in the form of Memorandum of Understanding (MOU) yielded benefits in terms of better customer satisfaction and also helped to retain the company's customer base.

## Sales

During 1997-98, the total sales of saleable steel by SAIL was at 8.1 Million Tonnes. In addition about 0.69 Million Tonnes of Pig Iron was also marketed. Steel products namely, plates, HR sheets, coils, semi, Cold Rolled Products and Wire Rods and Pig Iron worth Rs.1087 crores (about 1.0 million tonnes) were exported, amongst others to U.S.A, Nepal, Sri Lanka and European countries during 1997-98.



*Galvanised coils from SAIL's Bokaro Steel Plant*

During the period April-September,1998, the total sales of saleable steel was 3.96 Million Tonnes. In addition 0.25 Million Tonnes of pig iron was also marketed. The export during this period was 256.7 thousand tonnes.

## Capital Schemes

The Company incurred a capital expenditure of Rs.1955 crores during 1997-98 on fixed assets and capital work-in-progress, which has been financed through market borrowings.

The modernisation of Durgapur Steel Plant (DSP) has been completed during 97-98. Major thrust was given on stabilisation of production and achievement of rated capacity. Benefits have started flowing in and are expected to increase further in future years. Production has picked up and has shown a growth of 5 per cent in Hot Metal, 9 per cent in Crude Steel and 15 per cent in Saleable Steel as compared to 96-97.

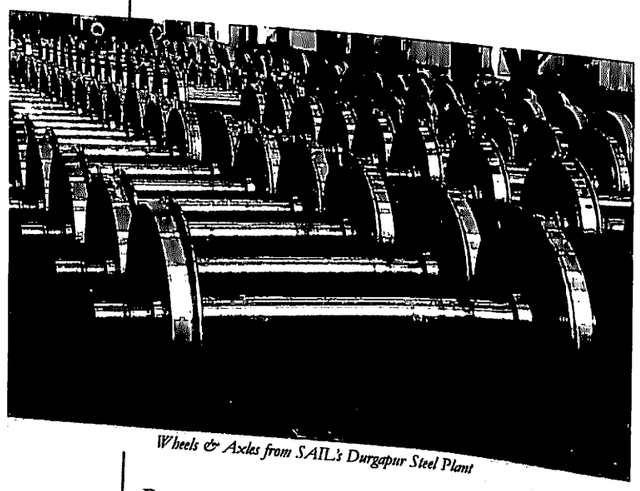
At Rourkela Steel Plant the various global and indigenous packages under Phase-II Modernisation were in the final stages of completion. The balance works in modification of Hot Strip Mill and Reheating Furnace of Hot Strip Mill was progressing. Trial production has started at SMS-2-Continuous Caster at RSP.

At Bokaro Steel Plant major production facilities of Modernisation like both Continuous Casting Machines, Steel Refining Unit and Coiler-4 were installed. Trials of Coiler-3 was under progress. Balance works for Mill proper was nearing completion, Modification of Reheating Furnace-3 to Walking Beam Furnace, and Coal Dust Injection system to BF-4 were under progress.

At Bhilai Steel Plant Modernisation of Rail & Structural Mill (Stage I - Phase I) was commissioned. Oxygen Plant-II expansion and Twin Hearth Furnace No.4 was in the final stages of completion. Work in Sinter Plant-3 and Cold Dust Injection system for BF No.6 were in progress.

With the completion of modernisation schemes, substantial improvements are likely to take place in terms of techno-economic parameters, particularly, specific energy consumption, coke rate, etc. besides better quality and increase in production capacity of saleable steel.

As a part of Government's initiative for development of North-East, a Hot Dip Galvanising Line of annual capacity of 40,000 tonnes is being set-up at Dagaon, Assam for which site activities have started.



*Wheels & Axles from SAIL's Durgapur Steel Plant*

## Research & Development

Research & Development Centre (R&D) of the Company pursued 208 R&D projects during 97-98. The projects provided technological input to SAIL plants/units with a thrust on cost reduction, value addition, quality improvement and development of new products. 102 projects were completed successfully. Out of these projects some of the noteworthy ones were :

- Quality improvement of Bhilai Rails,
- Continuous casting of CRNO grade steel at RSP,
- Yield improvement of Alloy Steels Plant concast slabs rolled at Salem Steel Plant,
- Development of energy efficient furnace burners,
- Evaluation of Coals for arriving at optimum blend.

Utilisation of completed R&D projects provided incremental improvement in the performance indices of plants. R&D Centre filed 3 foreign patents and 39 Indian patents in 1997-98. During 97-98, 4 patents which were filed earlier, have been sealed by the Patent Office. The Centre also filed 16 Copyright proposals.

## Raw Materials

The Company met entire requirement of its iron ore and half of fluxes requirements from captive sources. SAIL Captive Mines produced 20.75 Million Tonnes of Iron Ore Lumps and Fines during 1997-98 and 9.69 Tonnes during the period April - September 98. Fluxes production was 2.65 Million Tonnes in 1997-98 and 1.58 Million Tonnes during the period April-September 1998.

## In-House Engineering

Centre for Engineering & Technology is continuing to provide design & engineering services to SAIL Plants and its Subsidiaries, in the area of Modernisation, Technological Upgradation and Additions, Modification & Replacement Projects. It has also started providing these services to other Steel Industry, both within the Country and Abroad. Some of the major Projects implemented during 1997-98 includes Modernisation of Rail and Structural Mill (Stage-I, phase-I) at BSP, Revamping of BF No.3 including installation of BLT at RSP and Mechanised Quick Work Roll Changing for finishing group at HSM of BSL. Most of the Projects are aimed at cost reduction and quality improvements. A large number of pollution control and automation schemes have also been engineered by CET.

SAIL Consultancy Division(SAILCON) continued to give thrust to establish SAIL as a leading Engineering and Management Consultant globally. SAIL has made its presence felt for provision of quality services in the domestic as well as international markets. Despite a low key investment climate during 97-98, orders worth over Rs.221 lakhs could be





secured, out of which Rs.160 lakhs worth of orders were from foreign clients and about Rs.61 lakhs from Indian clients. This includes two prestigious order namely: Design, Engineering, Consultancy and Project Management Services for Englargement, Modernisation & Reconstruction of Blast Furnace-3 of Egyptian Iron & Steel Company(EISCO), Egypt and a World Bank Project for Standardisation of Environment Monitoring of Air, Water, Noise and Formulation of Mitigation Plan for Coal India Limited.

## Human Resources Management Review

SAIL continued its efforts to maximise the contribution of the human resources in attainment of organisational goals. The thrust was on effective utilisation through concerted team working.

## Manpower Utilisation

The manpower strength as on 31.3.98 to 30.9.98 was 1,76,147 (comprising 18,586 executives and 1,57,561 non-executives) and 1,70,289 (comprising of 17,890 executives and 1,52,399 non-executives) respectively. The manpower productivity was 96 tonne crude steel per man year during 1997-98.

## Training

Training for developing the competencies of employees based on organisational requirements continued. During 1997-98, 83,769 employees were trained under on-going company-wide schemes. During April-September,1998 37,590 employees were trained.

## Employees' Welfare

Various welfare measures for the benefits of the employees, like free medical services (including extending mediclaim schemes to retired employees), housing, education for children, facilities of cooperative societies as well as providing avenues for socio-cultural activities were undertaken. On this account, the Company spent an amount of Rs.459 crores during 1997-98 and Rs.231.07 crores during April-September,1998.

## Sports

The Company persisted with its commitments of investing in youth particularly at SAIL townships in line with its **Sports** Policy of "Catching them Young". Special thrust was given to carry Top Sports to SAIL Townships for inspiring budding sports youth to play National Level game. SAIL Trophy of Cricket where in eight top Institutional Teams participated consisting of First Class Indian Cricketers and Test Cricketers was won by SAIL. SAIL Handball Academy at Bhilai was the only Sports Team invited from India at 50 years of Commonwealth Celebration at Edinburgh. Sub-Junior and Junior Teams from SAIL Townships won Gold Medals in Boxing, Athletics, Basketball and Handball in respective Nationals. Bhilai Team of Disabled Cricketers won the National Trophy defeating Bombay Team at Bangalore. SAIL Sports Scholars of Swimming, Chess, Archery and Rifles Shooting created new National Records in respective disciplines.

## Industrial Relations

Harmonious and congenial industrial relations atmosphere was maintained, through healthy on-going dialogue with trade unions and Officer's Associations and utilisation of different joint fora.

## Safety

For motivating the employees to work safely, schemes of SAIL **Safety** award and Ispat Suraksha Puraskar were modified and a new scheme of Ispat Suraksha Puraskar for Mines was introduced during the year. Recent steps initiated to enhance safety performance of steel plants include cultivating a culture of safety, formation and functioning of safety circles, systematising safety audit, systematic **safety** inspection of Shop Floor on the basis of safety check lists, practising the concept of "Safety First", and motivating employees to fulfil their obligations towards safety.

## Official Language Policy

The Company continued its efforts in the implementation of **Official Language** Policy of the Govt. of India. Emphasis was given to create an environment in which employees voluntarily adopt Hindi in their office work. SAIL's quarterly journal on Official Language 'ISPAT BHASHA BHARTI received wide acclaim from all quarters. Raw Materials Division, Calcutta & Bokaro Steel Plant were awarded prizes by the Deptt. of Official language, Ministry of Home Affairs for noteworthy implementation of Hindi.

## Scheduled Castes and Scheduled Tribes

The Presidential Directives on Scheduled Castes/ Scheduled Tribes continued to be implemented during the year. As on 31.12.97 Scheduled Caste and Scheduled Tribe employees were 15.11 per cent and 11.20 per cent respectively of the total manpower.

## Peripheral Development

SAIL has been playing an active role in undertaking various measures like providing drinking water facilities, health care programmes, educational facilities, recreational activities, etc. for the people living in areas near the steel plants/mines. A sum of Rs. 360 lakhs was spent on peripheral development during 1997-98 and Rs.60 lakhs (Prov.) during April-September, 1998.

## Awards

A team of three employees from BSP was selected for the Prime Minister's Shram Ratna Award. It is a matter of pride that this highest award, which is being conferred for the first time since inception, has been bagged by a SAIL team. In addition one employee from RSP was selected for Shram Vir Award during 97-98.

## Total Quality Process

Steps have been taken to intensify the quality improvement drive in SAIL. During the year, the Merchant Mill and Wire Rod Mill of BSP, Cold Rolling Mill of BSL, Steel Melting Shop-I, Oxygen Plant-I & Oxygen Plant-II of RSP, Branch Transport and Shipping office (BTSO), Vizag of CMO and Light Castings and Steel Foundry, Growth Divison, Kulti Works also achieved ISO-9002 Certification. SAIL has also taken all appropriate steps for maintaining the ISO-9000 certified Quality Assurance systems in all its plants/units. As on 31st March, 1998, 31 facilities of the Company enjoy ISO-9001/ ISO-9002 certification.

Centre for Power Training Institute (CPTI), Rourkela, one of the unit of the company, has won the Golden Peacock National Quality Award in the Small Service Sector Category conducted by Institute of Directors, New Delhi for the year 1997.

# Subsidiaries

## The Indian Iron and Steel Company Limited

The Indian Iron and Steel Company Limited(IISCO) owns and operates an integrated steel plant at Burnpur, captive iron ore mines at Gua and Manoharpur, captive collieries at Chasnalla, Jitpur and Ramnagore, a coal washery at Chasnalla and a large foundry complex at Kulti. The management of IISCO was taken over by the Government of India on the 14th July, 1972. Shares held by the private parties were acquired by the Central Government on 17th July, 1976. The shares held by the public financial institutions etc. were also purchased by the Central Government and subsequently all these shares were transferred to SAIL. IISCO became a wholly owned subsidiary of SAIL on 30th March, 1979. As a part of the physical restructuring of IISCO, the management of Kulti works and also the collieries and ore mines of the Company were taken over by SAIL in January, 1990 in terms of the Power of Attorney executed by IISCO.

## Production Performance

### Burnpur Works

During 1997-98 the Steel Plant produced 782.4 thousand tonnes of Hot Metal, 405.8 thousand tonnes of Pig Iron, 291.4 thousand tonnes of Crude Steel and 315.2 thousand tonnes of Saleable Steel.

(In '000 Tonnes)

| | Plan | Actual | Fulfilment (%) |
|---|---|---|---|
| Hot Metal | 840 | 782 | 93 |
| Crude Steel | 360 | 291 | 81 |
| Pig Iron | 422 | 406 | 96 |
| Saleable Steel | 377 | 315 | 84 |

Production Performance (Burnpur)-April-September, 1998

(In '000 Tonnes)

| | Plan | Actual | Fulfilment (%) |
|---|---|---|---|
| Hot Metal | 362 | 382 | 105 |
| Crude Steel | 157 | 160 | 102 |
| Pig Iron | 175 | 186 | 106 |
| Saleable Steel | 159 | 145 | 91 |

### Kulti Works

Total Castings output during 1997-98 and April -September, 1998 was 47.9 thousand tonnes and 13.47 thousand tonnes respectively. Spun Pipes production was 21.3 thousand tonnes and 12.68 thousand tonnes during 1997-98 and April-September, 1998 respectively. Special emphasis was given for production of items required by Burnpur Works and other units of SAIL.

### Collieries

Total coal raisings from three Captive Collieries was 721.9 thousand tonnes during 1997-98





### Ores Mines

Iron Ore Lump production was 1046.7 thousand tonnes during 1997-98 from two Captive Ore Mines.

## Capital Schemes

During the year 1997-98 the Company incurred capital expenditure of Rs.25.75 crores on fixed assets and capital work in progress. Financial constrainst had affected the progress of on-going schemes and major new schemes were not taken up during the period.

At Burnpur Works Scheme for Augmentation and Betterment of Water supply system at Riverside Water Works had been completed. The pumping system along with all auxillaries were commissioned during the year.

A few small scheme like revamping of 16T E.O.T. Crane at Pig Gantry and modifications to Surge Bunker at C.H.P. were completed.

At Kulti works, orders for Gas cleaning plants for Cupolas at LCD & SPP-3 were finalised and facilities are expected to be commissioned during the 1998-99.

## Financial Performance

During 1997-98 the Company achieved a turnover at Rs.909.08 crores. The net loss for the year after charging depreciation (Rs.25.98 crores) and interest (Rs.142.89 crores) was Rs.395.15 crores. Abnormal escalation in input prices, interest charges and lower sales price were major factors for the higher loss.

Company achieved sales turnover of Rs. 413.53 crores during April-September, 1998. During this period Company incurred net loss of Rs. 160.04 crores.

Steel Authority of India Ltd. provided Rs.1.63 crores for Capital Schemes and Rs.225.04 crores for Working Capital. SAIL provided additional loan of Rs. 9.62 crores during April- September, 1998.

As on 31st March, 1998, the Authorised Share Capital and Paid-up Equity Capital of the Company remained at Rs.550 Crores and Rs.387.67 Crores respectively.

## Sales & Marketing Performance

### Domestic Sales

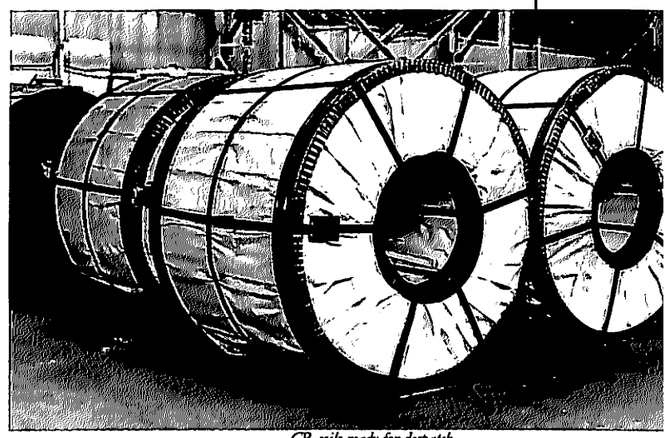
Despite adverse market situation, during 1997-98 sales of 293.1 thousand tonnes of Steel (previous year 314.7 thousand tonnes) was achieved. Sales of Pig Iron were 298.0 thousand tonnes (previous year 256.7 thousand tonnes).

The Pig Iron market also showed declining trend because of which despensation was offered to match competitors landed price.

During April-September,1998, 125.40 thousand tonnes of saleable steel and 131.45 thousand tonnes of pig iron were sold.

### Exports

Export of steel materials during 1997-98 was 4320 MT to Nepal and export of Pig Iron of 3220 MT tonnes was to Bangladesh.



*CR coils ready for despatch*

## Environment Management

Environment Mangement and Pollution Control have become priority areas in the activities of the Company. Environment Awareness Campaign through observance of World Environment Day and Environment Month was organised.

About 9,000 saplings of different plants were planted in Burnpur Townships and Works area. Workshops/Training on environment Management were organised for different sections of employees. Shop level core committee was formed at Coke Oven Department for Environment Management as per NJCS guideline.

Water consumption per tonne of Crude Steel was reduced from 13.78 $m^3$/t in 1996-97 to 13.06$m^3$/t in 1997-98. Stabilisation of Gas Cleaning Plant at Steel Melting Shop has been achieved. Vermiculture has been introduced for conversion of kitchen waste to compost manure.

Dust extraction system at Lime Calcining Department and Spun Pipe Plant No.3 at Kulti Works are under implementation.

Consent for air emission, effluent discharge and handling/disposal of hazardous waste has been received.

## Human Resources Development

The Company continued to give great importance to the development of its human resources to improve efficiency and productivity.

The manpower strength as on 31st March, 1998 and 30th September 1998, was 27,181 (comprising 1,334 executives and 25,847 non-executives) and 26,785 (comprising 1,310 executives and 25,475 non-executives) respectively.

During 1997-98 a sum of Rs.7.75 crores was received from National Renewal Fund for implementation of Voluntary Retirement Scheme and 483 employees were allowed voluntary retirement. Voluntary Retirement Scheme has been further extended for the year 1998-99.

Industrial relations remained normal and peaceful during the year.

The thrust towards Safety and Occupational Health continued. About 4,406 employees were trained on various safety and pollution control aspects during 1997-98.

The endeavour to make training more result and skill oriented continued during 1997-98 with 3,388 employees trained in various fields.

Scheduled Caste and Scheduled Tribe employees were 10.40 per cent and 1.18 per cent respectively of the total manpower as on 31.3.1998.

## Welfare Measures

Company undertook various welfare measure like maintenance of houses, education for children, medical facilities, socio-cultural activities and other facilities and spent Rs.40.59 crores during the year.

## Official Language Policy

The Company continues to pursue vigorously the implementation of the Official Language Policy of the Government. Employees are encouraged to carry out their official work in Hindi and liberal incentives for such work are given. Official Language Fortnight Celebrations and workshops & Seminars on technical writing in Hindi were organised during the year. Rajbhasha Shields were awarded in the various competitions to encourage the employees. IISCO was awarded the Regional Shield and second best Town Official Langualge Implementation Committee (TOLIC) of Eastern Region 'C' shield for the year 1996-97.

## Development of Small Scale/Anciliary Industries

Procurement of Store and Spares from SSI Units is being made to the extent possible and orders were placed for about Rs.3.54 crores during 1997-98.

# IISCO Ujjain Pipe & Foundary Co. Ltd.

The Calcutta High Court by their order dated 10-7-1997 directed that IISCO Ujjain Pipe & Foundry Co. Ltd (IISCO Ujjain) be wound up, and Official Liquidator was directed to take possession of its assets. Official Liquidator has already taken possessions of the assets and records of IISCO Ujjain.

# Maharashtra Elektrosmelt Ltd.

Maharashtra Elektrosmelt Limited is a subsidiary of SAIL situated in Chandrapur, Maharashtra and is a major producer of Ferro Manganese and Silico Manganese. It is also diversifying into other ferro alloys.

## Financial Performance

During 1997-98, the Company achieved the highest ever turnover of Rs.18,997.45 lakhs and net profit before tax was Rs. 163.70 lakhs. The turnover and Net loss of the Company during April-September, 1998 was Rs. 80.33 crores and Rs. 12.75 crores respectively.

The Authorised Share Capital of the Company is Rs. 20 crores and Subscribed and Paid-up Capital is Rs. 10 crores. SAIL holding is approx. 98 percent of the paid-up capital.

## Production Performance

The production of all grades of Ferro Alloys during 1997-98 was as under :

(In Tonnes)

| | 1997-98 |
|---|---|
| High Cabon Ferro Manganese | 60391 |
| Silico Managanese | 33078 |





**Production performance : 1998-99 (April-September)**

(In Tonnes)

| | Plan | 1998-99 | Fulfilments (%) |
|---|---|---|---|
| High Carbon Ferro Manganese | 27074 | 25813 | 95 |
| Silico Manganese | 17648 | 17727 | 100 |

## Research & Development

Studies were carried out for control of dust emissions in SP-I and optimisation of MnOre/Flux sizes for improved performance of Sub-merged Arc Furnace (SAF) for Slag in Silico Manganese (SiMn) production.

For conservation of expensive Lumpy MnOre, 70% of Ore requirement has been replaced by sinters in SiMn production.

## Environment

Environment Management and pollution control continued to get top priority in company's activities during the year. To keep environment clean for ecological protection, thrust was given in the areas of green belt development in and around the plant premises, solid waste management, monitoring of liquid and air effluent for various environmental parameters. In and around the Plant 3,000 teak and other saplings were planted in addition to the regular maintenance of existing 10,000 teak plants.

To comply with the environmental standards set up by Maharashtra Pollution Control Board, Gas cleaning plant for Sub-merged Arc Furnace-II (SAF-II) costing around Rs.1.6 crores has been commissioned. This would also enhance the availability of clean gas for gainful utilisation as a fuel to Sintering Plant and Lime Kiln. Gas based Captive Power Plant of 4.2 MW capacity for complete utlisation of clean gas has been approved and initial project activities has been started.

Continous steps were taken towards gainful utilisation of High Manganese Oxcide (MnO) Slag in Slag in Silico Manganese (SiMn) Production, Lumpy Slag in Silico Manganese (SiMn) Slag as rail ballast, Granulated Slag as stowing material in WCL mines and Sale of Slag in Silico Manganese (SiMn) Slag for road construction and repairs.

## Sales & Marketing Performance

In order to meet the challanges arising out of the new economic policies and further liberalisation in import, measures were taken by the Company to find markets outside SAIL under the policy framed "Strategy for Managing Change".

The sale of different grades of Ferro Alloys during 1997-98 was 91,423 tonnes.There was sharp reduction in the price of Ferro Alloy products in international market. Therefore, no export has been made.

## Human Resources Management Review

The manpower strength as on 31.3.98 to 30.9.98 were 1050 (157 executives and 893 non-executives) and 1,040 (154 executives and 886 non-executives), respectively. As on 31st December, 1997, Scheduled Caste and Scheduled Tribes employees were 13.28% and 4.74% respectively of the total manpower. The industrial relations throughout the year remained normal. A total of 515 employees were trained during 1997-98.

## Quality

After obtaining 9002 Certificate from Llyods Register of Quality Assurance (LRQA), Six Internal Quality Audits were conducted by the MEL Auditors, Two Inter Plant Audits were conducted by the SAIL Auditors and Two Surveillance Audits were conducted by LRQA. For Best System Control, 85 documents are in operation covering 18 departments. The entire Quality System was cleared for satisfactory maintenance without Non-confirmity Report (NCR).

## Safety

During 1997-98 in Industrial Safety the Company was bestowed with "International Award" from the British Safety Council, National Award for the year 1993 and 1994 from the Ministry of Labour, Govt. of India, State Safety Award from the council of Industrial Safety, Mumbai, for 1996 for longest accident free period, SAIL Chairman's Silver Plaque for no fatal Accident, Indira Gandhi Memorial National Award as Excellent Organisation by A.P. Central Sector Employees Federation, Hyderabad, and Regional Safety Award from Vidarbha Industrial Safety Committee for overall Safety Performance, use of Personal Protective

Equipments and Safety Educational Training. MEL has been honoured by the Central Excise Department for distinguished record of payment of Central Excise Duties.

## Visvesvaraya Iron and Steel Limited

Visvesvaraya Iron and Steel Limited became a subsidiary of SAIL from 1st August, 1989 and it is situated at Bhadravati, Karnataka. The Company is a major producer of special and alloy steels. On 23-5-1997, the company became a 100% subsidiary of Steel Authority of India Limited.

### Financial Performance

During 1997-98 and 1998-99 (upto September'98) the Company has recorded a turnover of Rs.210.28 crores and Rs. 121.38 crores respectively. The net loss during 1997-98 and 1998-99 (upto September'98) was at Rs. 83.87 crores and Rs.39.84 crores respectively. Slackening demand for alloy steels and pig iron in the market, higher imports of alloy and special steels, continuing liquidity crunch, substantial input cost escalation including power & fuel and upward revision of freight coupled with frequent power cuts and peak hour restrictions are some of the major factors responsible for the loss.

### Production Performance

The company produced during 1997-98 and 1998-99 (April-September), 129.57 thousand tonnes and 77.56 thousand Tonnes of hot metal and 30.9 thousand Tonnes and 23.8 thousand tonnes of Pig Iron, 50.4 thousand Tonnes and 25.38 thousand Tonnes of alloy and special steels and 6.7 thousand Tonnes and 4.0 thousand Tonnes of Ferro Silicon respectively.

### Sales & Marketing Performance

Demand for Alloy & Speical steels remain sluggish. Major sectors viz. Auto Forging Units and Engineering Industries continue to show no sign of improvement. Due to this market condition, some of the small producers of alloy and special steels have closed down their units and some are running with lower rate of production. During 1997-98 and 1998-99 (April-September, 98) alloy & Special steel sales were 49 thousand Tonnes and 26.7 thousand Tonnes respectively.

The drop in price of Pig Iron on account of drastic reduction in demand forced VISL to restrict production, as market prices were not remunerative. The Sales of Pig Iron in 1997-98 and 1998-99 (April-September) was 25 thousand tonnes and 27.6 thousand tonnes respectively.

### Capital Schemes Review

The Company has completed the conversion of all the 10 Nos. furnaces (7 in HTS & 3 in Forge Plant) to Dual Fuel Firing System. One Tempering Furnace (T1) has also been converted to BF gas firing and one more annealing furnace is also being converted.

In order to comply with the stipulation of Karnataka Pollution Control Board, raising the height of 20 Chimneys have been completed and the balance work of one chimney is under progress.

Schemes for Technological Upgradation of main production facilities in VISL at an estimated cost of Rs.19.92 crores and installation of 7.5 MW gas based Power Plant at an estimated cost of Rs.21.69 crores are under implementation.

### Human Resources Management Review

Total manpower strength as on 31.3.1998 was 5,249 comprising of 559 executives and 4,690 non-executives and as on 30.9.98 was 5,125 comprising of 535 executives and 4,590 non-executives.

Percentage of SC/ST to total employment was 12.38 percent approximately as on 31.3.98.

For enhancing efficiency and skill of work force, the Company continued to give stress on imparting training to both executives and non-executives. With a view to reduce the surplus manpower, the Company has been taking several measures and accordingly under VR schemes, 334 employees took voluntary retirement during the year. National Renewal Fund has provided an amount of Rs.12.35 Crores for the Voluntary Retirement Scheme. Industrial relations continued to be cordial.

### Official Language Policy

The Company has taken vigorous steps to implement the Official Language Policy of the Government. Many of the employees have joined the Correspondence Course in Hindi started by the Holding Company, SAIL. Suitable awards are given to all employees who pass the various examinations in Hindi conducted by SAIL.

### Welfare Measures

During the year 1997-98, the company spent an amount of Rs.5.27 crores on educational, housing, medical, social and other welfare needs of the employees.





## Rashtriya Ispat Nigam Ltd. (Visakhapatnam Steel Plant)

### Introduction

Visakhapatnam Steel Plant the country's first shore-based plant and the sixth Public Sector Integrated Steel Plant had attained high levels of growth rate in production and superior technological norms within a short time. VSP with its superior quality of products established its presence both in the domestic and international markets. The plant was awarded the ISO 9002 for SMS and Downstream units covering all the products making it the first integrated Steel Plant to achieve this honour. VSP with its multifaceted superiority in quality, energy conservation and pollution control is harnessing its inherent potential to achieve the set goals by improving productivity, by upgrading the technologies, optimal investment and by judicious use of manpower.

### Production Performance

During 1997-98, VSP recorded production as follows : 3.16 million tonnes (mt) Hot Metal, 2.25 mt of saleable steel and 2.54 mt of liquid steel. VSP during Apr-Sep'98 achieved a production of 1.52 mt of Hot Metal, 1.26 mt of Liquid Steel and 1.10 mt of Saleable Steel which represents target fulfillment of 91% and 87% respectively. There has been 4% growth in the Liquid steel and Saleable Steel over the Apr-Sep'97. Production of Billets, Bars and MMSM products has also registered a growth of 2%, 13% and 28% respectively over the corresponding period of last year. There has been increase in the production of value added steel from 1,14,605 tonnes during Apr-Sep'97 to 1,18,534 tonnes during Apr-Sep'98. The production performance of the first half of the year is given below :

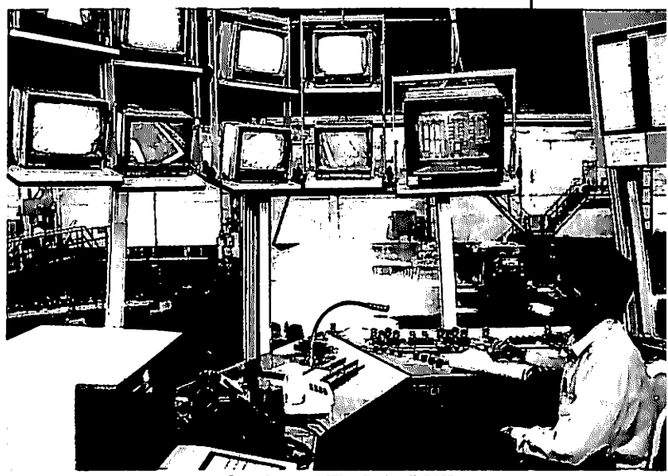
April-September, 1998

(Unit 000' tonnes)

| Product | Target | Actual | %Growth over prev. year |
|---|---|---|---|
| Hot Metal | 1667 | 1524 | - |
| Liquid Steel | 1393 | 1262 | 4 |
| Saleable Steel | 1261 | 1100 | 4 |

### Techno-Economic Performance

VSP continued to improve its techno-economic parameters. During Apr-Sep'98 VSP achieved BF Coke rate of 499 kgs/thm against the target of 500 kg/thm. Average converter life has also increased to 508 heats against budgeted figure of 500 and the average heat weight to 150.4 tonnes against the budgeted figure of 150 tonnes. There has been continuous improvement in the yield of Bar and MMSM products surpassing budgeted levels. A record charging of nut coke to the extent of 53kg/thm during August, 98 was achieved to replace BF coke in Blast Furnace.



*Control room of Wire Rod mill, VSP*

### Marketing Performance

Domestic sales of Steel Products during the first six months of 1998-99 were Rs.1,151 crores compared to 966 crores during the corresponding year of 1997-98. Domestic Sales of Pig Iron has also increased to Rs.14 crores compared to Rs.10 crores earlier. In the domestic market about 0.91 mt of steel was sold in 1998-99 as compared to 0.72 mt of steel sold in the first half of 1997-98.

The growth in the sale of Bar products was 29% and that of Medium Merchant & Structural Mills was 48%.

The economic crisis in the South-East Asian Markets and the large scale dumping of Steel of CIS countries affected adversely the export performance. As regards total sales there was a total growth of 6% in volume.

Inspite of sluggishness in the domestic market and the general recession, severe competition from other main and secondary producers and imports, VSP managed to retain its share in the market and sold about 1.03 mt of Steel in 1998-99 compared to 0.97 mt in 1997-98.

## Financial Performance

During 1997-98 VSP has registered a cash profit of Rs.280.22 crores after considering writeback of Rs.235.85 crores interest provided on Govt. of India loans during the earlier years. VSP registered a cash loss of Rs.69.13 crores against MoU target cash profit of Rs.61.31 crores for the period Apr-Sep'98. The net loss registered during the period is Rs.286.28 crores. The company has been making losses mainly due to the heavy capital related charges, the glut in the steel market and increase in the cost of vital inputs such as coal and iron ore etc.

## Power and Mines

The power requirement of VSP is completely met from its own captive power generation sources. VSP is the first integrated Steel Plant in India to have entered into a MOU with the State Electricity Board for exporting power for a period of 3 years commencing from January 1997. During 1997-98 the net export of power to APSEB was 32 MW. This has increased to 40 MW during Apr-Sep'98.

Captive of mines of RINL at Madharam and Jaggayyapeta in Andhra Pradesh have registered a growth of 42.4% and 8.11% respectively in production during Apr-Sep'98. Likewise Manganese mine at Garbham in A.P. registered a growth of 39.78% from Apr-Sep'98 compared to the corresponding period of 1997-98.

## Energy Conservation

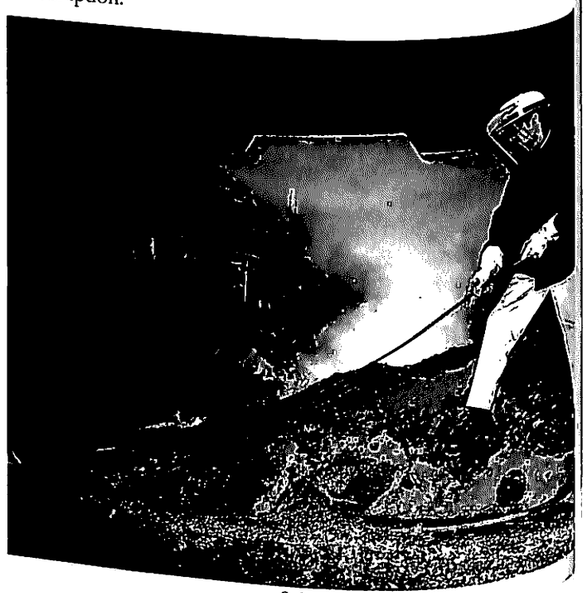
The proper implementation of Energy Conservation techniques resulted in improvement in techno-economic indices as given below :

| | 1998-99 (till Sep'98) | 1997-98 | 1996-97 |
|---|---|---|---|
| BF Coke Rate – Kg/thm | 499 | 515 | 513 |
| Specific energy consumption Gcal/tls | 7.68 | 7.56 | 7.59 |
| Heat conspn.in Sinter Plant (Mcal/tcs) | 61 | 59 | 77 |
| Heat conspn in Blast Furnace (Mcal/thm) | 535 | 540 | 572 |
| Heat conspn.in SMS (Mcal/tls) | 72 | 72 | 79 |

## Pollution Control and Environment Management

VSP has been according highest priority for preservation of the environment. Accordingly, sustained efforts are continuing for controlling all emissions and effluents to keep up with the prescribed norms. Ambient air, stacks and effluents are being monitored daily as per the statutory norms and prompt actions taken to rectify any deviations observed.

A comprehensive study was made of all sources of phenolic spillages. Effective measures like recycling tar sludge in batteries, recycling spillages in by-products and providing oil collection pits etc. have been undertaken to maintain effluent quality within the norms. Recycling of solid wastes was taken up which led to the saving of raw material consumption.



*Safety at work, VSP*

Investment on Environment and Pollution Control:

(Rs. in crores)

| | 1997-98 |
|---|---|
| Total revenue expenditure in VSP | 3463 |
| Revenue expenditure on pollution control | 85.6 |
| During Apr-Sep'98, the revenue expenditure on Pollution control. | 41.72 (Prov.) |





## Afforestation

Afforestation Programme undertaken by VSP during Apr-Sep.1998 is given below :

| Land alloted for plantation (in acres) | Land covered with plantation (in acres) | Balance (in acres) | %age of area covered out of land allotted | No. of plants planted (lakhs) | No. of plants survived (lakhs) | % of survival |
|---|---|---|---|---|---|---|
| Inside plant 1730 | 1210 | 520 | 69.94 | 4.00 | 3.00 | 70% |
| Township 7265 | 6223 | 942 | 86.85 | 29.20 | 20.00 | 70% |

## Safety

Safety has been accorded highest priority in VSP. Training in safety and remedial actions taken have led to reduction in the number of accidents over the years. Elimination of unsafe conditions, adoption of safe working practices and high standards of house keeping have been ensured. Safety committees have been formed for spreading safety consciousness among the employees. Contract workers are allowed to be engaged only after their training in safety. Regular and periodical safety inspections and supply of high quality personnel protective equipments have also been taken up.

## Industrial Relations

During 1998-99 a number of initiatives were taken up to promote and maintain cordial IR climate for smooth operation of the Plant. The collective bargaining system through Joint Consultative Machinery was strengthened. Sporadic instances like sudden work stoppages, go-slow and pressure tactics have diminished due to the availability of JCM as an institutional channel for ventilating grievances and meeting the genuine demands of the employees. The elections for determining the majority union were held by Labour Department, Govt. of A.P. through secret ballot in June,98. The elections were conducted peacefully and without hampering normal production activities. The issue of payment of bonus was settled by signing a Memorandum of Settlement with the recognised Union. The overall IR Climate during the period remained congenial as may be seen from low rate of absenteeism, minimum loss of mandays, peaceful elections and settlement of issues through negotiations and discussions.

## Implementation of Official Language

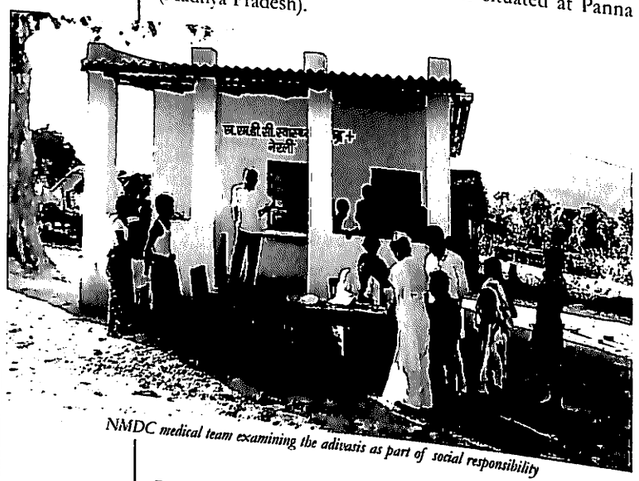
During the year, 71 employees were trained in Hindi Prabodh and 29 employees trained in Hindi Praveen. 8 employees are undergoing training in Hindi Stenography. 2 Hindi Workshops were organised wherein 6 Executives and 25 Non-executives were trained. A Hindi Implementation Day was organised on 13.5.98. The employees of Town Administration, Medical, Training and HRD Departments have participated in this programme. Various Hindi competitions were organised for the employees and prizes were distributed.

Hindi Pakhwada (Fortnight) was also organised in VSP during the month of September, 1998. During this period various Hindi Competitions like Hindi Noting and Drafting, Essay Writing, Good Handwriting, Hindi Typewriting were conducted and prizes were given to the winners of the competitions in the Hindi Day Celebrations organised on 14.9.98.

# National Mineral Development Corporation Limited (NMDC)

## General

Incorporated on November 15, 1958, the National Mineral Development Corporation Limited (NMDC) is an undertaking of the Government of India engaged in the business of developing and exploiting mineral resources of the country (other than coal, oil, natural gas and atomic minerals). Presently its activities are concentrated on mining of iron ore limestone and diamonds. NMDC operates the largest mechanised iron ore mines in the country at Bailadila (Madhya Pradesh) and Donimalai (Karnataka). The limestone project is at Chawandia, Rajasthan and the Diamond Mine is situated at Panna (Madhya Pradesh).



*NMDC medical team examining the adivasis as part of social responsibility*

## Iron Ore

### Production

During 1997-98, NMDC produced an all time high of 14.59 million tonnes of iron ore. During the year 1998-99 (upto Sept.98), 6.10 million tonnes of iron ore has been produced.

### Exports

Exports of iron ore produced by NMDC is canalised through the Minerals and Metals Trading Corporation (MMTC). Iron ore export is mainly to Japan, South Korea and China. In 1997-98 Export of iron ore stood at 7.2 million tonnesvalued at 516 crores. In 1998-99 (upto Sept.98), NMDC exported 3.03 million tonnes of iron ore valued at Rs.251 Crores approximately .

### Domestic Sales

During 1997-98 domestic sales of iron ore was 8.5 million tonnes. In the year 1998-99 (upto Sept.98) sale of iron ore to domestic consumers was 3.71 million tonnes.

## Diamonds

During 1997-98, 30591 carats of diamonds were produced. In the year 1998-99 (upto Sept.98) the production was 17,541 Carats .

## Finance

The authorised share capital of the company is Rs.150 crores. The paid up equity share capital was Rs.132.16 crores. Government of India loans outstanding are Nil.

## Financial Performances

The financial performance of the company for the year 1997-98 and 1998-99 (upto Sept.98) are given below :

(Rs. in crores)

| Item | 1997-98 | 1998-99 (upto Sept. 98) |
|---|---|---|
| Sales/Turnover | 757.69 | 383.85 |
| Gross Margin | 252.55 | 140.31 |
| Profit/loss before tax | 216.67 | 121.95 |

## Disinvestment of Shares of NMDC

The Government of India has disinvested shares of NMDC for the first time in the year 92-93. A total of 21.30 lakh shares representing 1.61% of the paid-up capital has been dis-invested. The dis-investment fetched the Government an average price of Rs.83.52 per share and maximum price of Rs.100/- per share against the face value of Rs.10/- per share. During the year 1997-98, 5,154 shares of Rs.10/- each have been disinvested in favour of the employees of the Corporation at the price of Rs.71/- per share. In the year 1998-99 (upto Sept.98) no disinvestment of shares were done.

## Operating Results

During 1997-98, the Company earned a profit of Rs.195.15 crores before tax. In the year 1998-99 (upto Sept.98) the Company earned a profit (before tax) of Rs.121.95 crores.





## Recognition/Awards in 1998-99

Received Abheraj Baldota Environment Award for Envioronmental Protection and Sita Ram Rungta Memorial Award for Social Awareness for Bailadila Deposit-5 from Federation of Indian Mineral Industry (FIMI) at New Delhi on 29th July, 98.

## Workers Participation in Management

The Scheme of workers' participation in management is working satisfactorily at all the three levels viz.Shop,Plant (Project) and Apex (Corporate) level.The meetings of the Joint Councils takes place regularly and follow up action taken.

## Capital Schemes

### a) Bailadila-10/11A

Govt. of India approved the scheme of developing deposit-10/11A with a estimated capital cost of Rs.430.50 crores including foreign exchange component of Rs.18.61 crores. Project Implementation has been taken up and Equipment required for construction and mine development which were ordered have arrived. These are deployed at Deposit-11A suitably for mine development work. Work in Deposit-10 could not be started since M.P.Government has given conditional clearance. Temporary working permission has been granted by MOEF and by State Government upto 17.06.99. In respect of Deposit-10 and Deposit-10 (Float Ore), MOEF has communicated the final approval to M.P. Government and the papers are under processing by M.P.Government Mineral Resources Department for renewal of lease.

Due to delay in getting the mining lease, the project is likely to be delayed as per present projection by approximately 22 months and the same is likely to be completed by June, 2001.

*Blasting operations are in progress at Bailadila deposit-5*

### b) Ultra Pure Ferric Oxide Plant, Visakhapatnam

NMDC's Board of Directors in Feb. 95 approved setting up an Ultra Pure Ferric Oxide Plant at Visakhapatnam, A.P. at a cost of Rs.45.98 crores. The construction of this plant is in final stage. The Plant will be commissioned shortly.

## New Business Development

### a) Silica Sand, UPSMDC

As approved by the NMDC Board of Directors, a team visited Lalapur Silica Sand Project site and held negotiations with M/s.UPSMDC for evaluating the compensation. NMDC has submitted its offer with certain terms and conditions which has been accepted in principle by M/s.UPSMDC.

### b) Exploration of Gold in Madagascar

A team has gone to Madagascar for study and discussion with the Government and other Mining Organisations. The team has recommended taking up exploration for Gold on priority. OMNIS a State Mining Corporation in Madagascar had accepted NMDC's proposal and given their consent for forming a joint venture with NMDC for exploration of Gold and other minerals. An MOU has been signed between NMDC and OMNIS, Madagascar for taking up the exploration work. Arrangements are being made for setting up of offfice and commencement of work.

## Manpower Position

As on 30th Sept., 1998 the manpower position in different units of the company is as follows:

| Group | Total No. of Employees | No. of S/C Employees out of Col.2 | No. of S/T Employees out of Col.2 | No. of OBC Employees out of Col.2 |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| A | 966 | 89 | 31 | 51 |
| B | 1049 | 106 | 75 | 26 |
| C | 2813 | 512 | 653 | 75 |
| D | 1863 | 366 | 428 | 145 |
| Total | 6691 | 1073 | 1187 | 267 |

## Research & Development

**Objective/Thrust on R&D**

The R&D projects are taken up in line with the Company's policies and programmes with a view to achieve optimum utilisation of mine wastes and production of value added products.

**Highlights of R&D Activities**

**a) New Technology/Process**

- Creation of Pilot Plant Facilities and Process Development for Pigment Grade Ferric Oxide
- Commercial Plant for Production of Ultra Pure Ferric Oxide from Blue Dust.
- Development of process for production of synthetic Rutile & High Grade Ferric Oxide from Ilmenite concentrate obtained from Bhimunipatnam beach sands.
- Laboratory Study for Preparation of Caustic MgO from Panna Tailings and Panthal Magnesite.
- Development of Ferrite Powder mix from High Grade Ferric Oxide/UPFO
- Process Development for treatment of UPFO effluents
- Development of mineral Beneficiation process for production of High Grade. Ferric Oxide from powdery type of Iron Ore known as Blue Dust.

A Demonstration plant is in three shift operation, producing on an average 1,000 tonnes of High Grade Ferric Oxide of different grades. These products are being supplied to various manufactures of Ferrite components both in India and abroad, for market development.

## Utilisation of Mine Waste

**a) Setting up of Pilot Plant for Brick/Hollow Bricks from Kimberlite waste and its evaluation**

**b) Productivity Improvement**

With the implementation of Slime Beneficiation Plant, based on R&D studies, in the Iron Ore production mines, there is an increase in saleable Iron Ore production to the tune of 5 to 6% leading to increased productivity.

With the implementation of Perm-Roll magnetic separation technique, based on R&D studies, in the Diamond Processing Plant at Diamond Mining Project, Panna, there is a substantial increase in production and productivity.

**c) Development of New Products**

i) High Grade Ferric Oxide for use in the manufacture of hard and medium soft Ferrite components.

ii) Ultra Pure Ferric oxide for use in the manufacture of soft Ferrite components

iii) Ferrite Powder Mix - A value added ready to use material for manufacture of Ferrite Components.

iv) Pigment Grade Ferric Oxide for use in Paint Industry

v) Synthetic Rutile and High Grade Ferric Oxide from Bhimunipatnam beach sand.

**d) Quality Improvement Programme**

i) Being a member of the Bureau of Indian Standards, participating regularly in updating the testing procedures to Ores and Mineraks.

ii) ISO Quality System is implemented and Certification Audit will be held in October, 98 for obtaining ISO 9001 accreditation certificate for R&D Centre. This is for the Quality Management System and for the Quality of Service/Product being offered by the Centre.

## R&D Expenditure

(Rs. in crores)

| Year | Turnover | Expenditure on R&D | R&D Expenditure as % of Turnover |
|---|---|---|---|
| 1996-97 | 649.39 | 5.94 | 0.92 |
| 1997-98 | 757.67 | 4.86 | 0.65 |
| 1998-99 (Upto Sept. 98) | 383.94 | 2.25 | 0.59 |

## Project Status

**a) No. of Projects in hand as on 1.4.98, viz.**

i) Process development for treatment of UPFO effluents

ii) Development of Ferrite powder mix for High Grade Ferric Oxide/UPFO.

iii) Creation of Pilot Plant facilities & process development for PGFO.

iv) Process development for production of Caustic Magnesia from Kimberlite waste.

v) Setting up of Pilot Plant for brick/hollow blocks from Kimberlite waste and its evaluation.





**b) No. of projects planned for 1998-99, viz.**

i) Utilisation of Accumulated iron ore slime.

Setting up a commercial plant for production of Pig Iron from Bailadila Iron Ore Slimes adopting Romelt process of Russia.

ii) Setting up a Pilot Plant at Diamond Mining Project, Panna for manufacture of masonary bricks/hollow bricks.

iii) Setting up a Mini Pilot Plant for the manufacture of PGFO.

**c) No. of Projects due for completion in 1998-99, 2, viz.**

i) Pilot Plant at Diamond Mining Project, Panna for the manufacture of Masonary bricks/hollow bricks from Kimberlite Tailings.

ii) Mini Pilot Plant for manufacture of PGFO.

**d) No. of Projects completed in 1998-99.**

Commercial Plant for production of Ultra Pure Ferric Oxide from Blue Dust.

## Pollution Control & Environmental Management

I. **Actual Work Carried Out During the Year 1998-99 (upto Sept.'98) includes pollution control measures at:**

a) Bailadila iron ore project, Dep-5, Bacheli

b) Bailadila iron ore project, Deposit-14/11C, Kirandul

c) Donimalai iron ore project

d) Panna Diamond Mining Project

II. **Total Expenditure incurred for environment protection, upgradation and pollution control measures for all projects of NMDC are as follows:**

(Rs.in crores)

| Year | Amount Spent |
|---|---|
| 1996-97 | 8.32 |
| 1997-98 | 11.43 |
| 1998-99 (upto Sept.98) | 2.69 |

*Mass afforestation at Bailadila-14 project to protect environment*

## Mandovi Pellets Limited

Mandovi Pellets Limited (MPL), Goa is a joint venture company floated by Government of India through National Mineral Development Corporation Ltd. and M/s. Chowgule & Co. Pvt. Ltd. (CCPL), a Private Sector Company. The company has its pellet plant at Goa with an annual capacity of 1.8 million tonnes.

During the year 1998-99 (upto Sept.98) the company produced 2.96 Lakh tonnes of pellets and despatched 2.98 lakh tonnes of pellets.The company's income for the year 1998-99 (upto Sept.98) is Rs.3,206 lakhs which includes miscellaneous receipts of Rs.50 lakhs. After adjusting the operating expenditure of Rs.3,393 lakhs, depreciation of Rs.109 lakhs and interest of Rs.48 lakhs, the loss for the year 1998-99 (upto Sept.98) is Rs.344 lakhs .

## Energy Conservation

1. Consumption of Energy per tonne of Iron Ore Excavated

a) Electrical Energy - KW / Tonne of excavation

| Year | Target | Actual |
|---|---|---|
| 1996-97 | 2.85 | 2.21 |
| 1997-98 | 2.85 | 2.27 |
| 1998-99 (upto Sept.98) | 2.22 | 2.47* |

b) Diesel Consumption - Ltrs./Tonne of Excavation

| Year | Target | Actual |
|---|---|---|
| 1996-97 | 0.32 | 0.30 |
| 1997-98 | 0.32 | 0.29 |
| 1998-99 (upto Sept.98) | 0.28 | 0.31* |

* The Consumption is likely to come down by the year end.

### Projects Implemented during 1998-99

a) Extensive use of Fluorescent Lamps for all industrial uses.
b) Installation of PF improving Capacitors and maintenance of PF at + 0.90.
c) Installation of Non-Conventional Energy Sources like Solar Panels for water heating and cooking purposes in Guest House.
d) Reduction in domestic energy consumption.
e) Reduction of idling time of dumpers
f) Recycling of Lubricants.
g) Formulation of Energy Audit Teams and carrying out energy audits.
h) Award schemes for best Suggestions.

## J&K Mineral Development Corporation Limited

Jammu & Kashmir Mineral Development Corporation Limited (J&KMDC) as a subsidiary company of NMDC was incorporated on 19.5.1989 for development of various mineral projects in the state of Jammu & Kashmir. NMDC holds 74% of equity in J&KMDC, the remaining 26% is owned by J&K Minerals Limited, a State Government Public Sector Undertaking. The Dead Burnt Magnesite (DBM) Plant of 30,000 tonnes per annum was sanctioned by Govt. of India in Nov. 1992. But the project construction could not start since the viability of the project was badly affected due to reduction in customs duty on DBM in 1993-94 and further fall in the International price. NMDC intimated this to the Ministry of Steel on whose direction, further activities of the project were kept in abeyance pending establishment of the economic viability of the project. This matter was discussed in detail and it was felt that the project will not become economically viable and therefore it was decided to close the project in its original form for which Government approval was sought.

Subsequently, on the advice of the Government, it was decided in JKMDC Board in the meeting held on 23.12.97 to restart the project in a modified form in three phases as given below :

**Phase-I** Develop the deposit for a production of 25,000 MT of saleable magnesite in the first year at a capital cost of Rs.451.82 lakhs.

**Phase-II** Expand the production to 50,000 MT of saleable magnesite per annum subject to availability of market from the second year onwards.

**Phase-III** Expand the mine capacity to approx. 1 lakh tonnes and set up a 30,000 TPA DBM plant subject to economic viability based on the then prevailing market price for DBM.

The Board of Directors of J&KML and NMDC have also agreed to the above proposal. and Ministry of Steel has been informed accordingly. Works are being taken up in the project in accordance with the above modified plan to start Phase-I. Tenders for development of approach road to the mine and construction of bridges and culverts are under evaluation. Action has also been taken for procurement of additional mining machinery and weigh bridge.





## Kudremukh Iron Ore Company Limited (KIOCL)

### General

The Kudremukh Iron Ore Company Limited (KIOCL), one of the country's largest 100% EOU, was established in April, 1976 to meet the long term requirements of Iran. An Iron Ore Concentrate Plant of 7.5 million tonnes capacity was set up at Kudremukh. This project was to be financed in full by Iran. However, as Iran stopped further loan disbursements after paying US $ 255 million, the project was completed as per schedule with the funds provided by Government of India.

While the project was commissioned on schedule, consequent upon the political developments in Iran, they did not lift any quantity of Concentrate. As a diversification measure, the Government approved the construction of a 3 million tonnes per year capacity Pellet Plant in Mangalore in May, 1981. The plant went into commercial production in 1987 and is now exporting both Blast Furnace and DR grade Pellets to many countries including Turkey, Australia, Indonesia, China, Taiwan, Japan etc., and also to domestic Sponge Iron units such as Ispat Industries, Vikram Ispat..

### Production

A target of 6.2 million tonnes and 2.9 million tonnes is set for production of Iron Ore Concentrate and Iron Ore Pellets respectively during the year 1998-99. As against a target of 2.925 million tonnes of Iron Ore Concentrate fixed for the period April to September, 1998, the actual production was 2.560 million tonnes which represents 88% target fulfilment. Production of Pellets during the period April to September, 1998 was targetted at 1.340 million tonnes and the actual production during this period was 1.045 million tonnes representing 78% target fulfilment.In addition to this, 26,850 tonnes of Pellet Fines were generated during the said period.

The reasons for shortfall in production of Concentrate and Pellets upto September, 1998 during the current year are as under :

a) The Asian economic crisis has had a very serious impact on the Company. Reduction in Oil prices in the Middle East leading to lower consumption of steel and consequent reduction in the production of steel has adversely affected the shipment schedule of KIOCL's buyers viz., Iran and China. They have not been able to keep up their shipping schedules which was agreed to for lifting the contracted quantities. As a result, they have not been able to open LCs. This has led to a situation where KIOCL's stockyards are full forcing the company to stop production activities;

*Crude ore being dumped into crusher at Kudremukh*

b) Due to storage yard being full, KIOCL's Concentrate Plant and Pellet Plant had to be stopped during the current year 1998-99 as under :

| Months | Concentrate Plant | Pellet Plant |
|---|---|---|
| April, 1998 | — | 8 Days |
| May, 1998 | — | 3 Days |
| June, 1998 | 10 Days | — |
| August, 1998 | 9 Days | 8 Days |
| September, 1998 | 12 Days | 8 Days |

c) Continued power cuts and load restrictions imposed by the State Electricity Board.

### Highlights

The Captive Power Plant at Mangalore recorded the highest ever power generation of 16.743 million units during the month of August,1998 surpassing the earlier record of 13.855 million units generated in February,1998.

## Exports

During the year 1997-98, total shipments were 6.145 million tonnes comprising 3.315 million tonnes of Concentrate and 2.830 million tonnes of Pellets. For the year 1998-99, a target of 3.3 million tonnes of Concentrate and 2.800 million tonnes of Pellets has been fixed. As against a target of 1.640 million tonnes of Concentrate and 1.380 million tonnes of Pellets fixed for the period April,1998 to September,1998, actual shipments were 1,333 million tonnes of Concentrate and 1.023 million tonnes of Pellets representing 81% and 74% of the relevant targets respectively. In addition to this, 32,134 DMT of Pellet Fines were shipped during the first half of 1998-99.

Total sales for the year 1997-98 were Rs.593.91 crores. Estimated sales for the year 1998-99 is Rs.625.26 crores. As against a target of Rs. 303.55 crores fixed for the period April,1998 to September,1998, actual sales were Rs.247.41 crores representing 82% of the target.

The Export earnings during the last five years from 1993-94 and upto September,1998, during 1998-99 are detailed below :

(Rs. in lakhs)

| Year | Concentrate | Pellets | Total |
|---|---|---|---|
| 1993-94 | 21022 | 20647 | **41669** |
| 1994-95 | 16729 | 20205 | **36934** |
| 1995-96 | 20676 | 27172 | **47848** |
| 1996-97 | 21900 | 27359 | **49259** |
| 1997-98 | 23310 | 36081 | **59391** |
| 1998-99 (Upto Sept. 98) | 10135 | 14606 | **24741** |

*Afforestation at Kudremukh*





## Financial Performance

An overview of the performance of KIOCL during the year 1998-99 upto September, 1998 together with actual for the previous three years, is indicated below :

(Rs. in lakh)

| Particulars | 1998-99 (Upto Sept. 98) | 1997-98 | 1996-97 | 1995-96 |
|---|---|---|---|---|
| Total value of sales | 24741 | 59391 | 49259 | 47848 |
| Gross Margin | 4269 | 14250 | 13040 | 13759 |
| Total profit on account of operations of the year | 1969 | 9151 | 8562 | 10585 |
| Inventories (excluding finished stock) | 12039 | 11763 | 11712 | 11776 |

## Manpower Position

As on 30th September,1998, the total number of employees in KIOCL were as follows :

| Group | Total No. of employees including SC, ST as on 30th Sept., 98 | SC in position | ST in position |
|---|---|---|---|
| A | 477 | 56 | 12 |
| B | 302 | 12 | 01 |
| C | 1448 | 196 | 45 |
| D | 187 | 57 | 28 |
| (Sweeper) | 43 | 35 | 04 |
| **Total** | **2457** | **356** | **90** |

## Worker's Participation in Management

The Works Committee in the Plants of the Company are functioning effectively and Joint Plant and Shop Councils have contributed to the improved industrial relations as well as workers' participation.

## Safety Measures

A Safety Department is functioning effectively. Pit Safety Committees with Workers' representatives meet regularly to discuss various Safety Measures. Safety rules have been compiled for each work area, covering all safety aspects. All employees have been provided with these booklets. As is the practice, 'Safety Week' was observed during the year.

## Progressive use of Official Language

The Company follows the directives issued by the Government of India regarding progressive use of Hindi for official purposes. Hindi teaching programmes for the employees are a part of training programme of the Company. Cash awards and increments are given to those who perform well in these programmes. The Company's House magazine is published in English, Hindi and Kannada languages. Hindi Week was celebrated between September 14-20 1998 at all locations at Kudremukh, Mangalore and Bangalore.

# Manganese Ore (India) Limited (MOIL)

## Background

Established in 1962, MANGANESE ORE (INDIA) LIMITED (MOIL) is the largest producer of Manganese Ore in India. At the time of inception, 49% shares were held by the Central Province Manganese Ore Co. Limited (CPMO).The remaining 51% were held in equal proportion by Govt. of India and the State Governments of Madhya Pradesh and Maharashtra. Subsequently, in 1977 the shares held by CPMO in MOIL were acquired by Govt. of India and MOIL became a wholly owned Government company with effect from October 1977. As on 31.3.1998, the Government of India held 81.57% shares in MOIL with State Governments of Maharashtra and Madhya Pradesh, holding 9.62% and 8.81% shares respectively.

MOIL produces and sells different grades of Manganese Ore. These are :

- High Grade Ores for production of Ferro Manganese,
- Blast Furnace grade ore required for production of Hot metal and,
- Dioxide Ore which goes into production of Dry Battery Cells.

MOIL has set up a plant based on indigenous technology to manufacture ELECTROYTIC MANGANESE DIOXIDE. This product is also used for the manufacture of dry battery cells.

## Finance

Authorized capital of the company is Rs. 30.00 Crores. Paid-up capital was Rs. 15.33 Crores as on 31.10.1998.

## Performance

### Operating and Financial Results

The Physical and Financial Performance of the company during 1997-98 and 1998-99 (Provisional upto October 1998) are given below :

| | 1997-98 (Actual) | 1998-99 MOU Target | 1998-99 Upto 31.11.98 (Prov.) |
|---|---|---|---|
| Production (Lakh Tonnes) | 6.61 | 16.00 | 3.23 |
| Turnover (Rs. in crores) | 112.80 | 105.00 | 61.62 |
| Profit before tax (Rs. in crores) | 23.76 | 16.00 | 9.64 |

## Productivity

The productivity (output per manshift in tonnes) during 1997-98 was 0.371 and 0.357 in 1996-97)

## Conservation of Energy

Consistent with the National Policy of conserving energy and also to contain the cost of production, the company has embarked upon an economy drive in this sphere. Various steps, including energy audit have been taken to conserve energy and minimise power consumption.

## Repayment of Government loans

The Company repaid in full balance plan loans amounting to Rs.216.07 lakhs together with interest of Rs.28.37 lakhs to the Government of India thereby discharging its complete loan liability.

## Progress of Capital Schemes/ Implementations of projects

The work of renovation and enlargement of Hardy's Shaft upto 33 mtrs and further deepening and lining by 147 mtrs is in progress at Balaghat Mine.

## Research & Development and Technology Upgradation

MOIL has undertaken several Research and Development Schemes for technology upgradation and conservation and optimum utilisation of valuable mineral resources.These schemes detailed below were undertaken to cut down cost of production, improve productivity and safety.

- Use of Cable Bolting and Steel Roof Support in underground mines.
- Use of Sand Stowing in underground Mines in place of manual filling.
- Improvement in underground mining support methods including Geotechnical investigation and cavability studies.
- Diamond drilling to locate new Manganese bearing areas and prove further reserves in the existing leasehold areas.
- Beneficiation of medium and low grade ores as well as medium grade dioxide ore to battery grade.
- Optimisation of process parameters for E.M.D.Plant.

## Diversification Plans

The Company has ambitious diversification plans to manufacture new products/value added products so that the Company can become a multiproduct organisation in the course of time. As a part of its diversification efforts the company has set-up/is implementing the following projects.

## Electrolytic Manganese Dioxide Plant (EMD)

The 700 TPA capacity Electrolytic Manganese Dioxide(EMD) Plant set up as a part of diversification plan is working satisfactorily. The quality of the product is of international standard. The capacity of this plant has been expanded by 200 TPA considering good demand in the domestic market.

## New EMD Plant

The work of preparing project report was awarded to MECON who have submitted their report. The same is being studied by the Company.

## Ferro Manganese Plant- Balaghat Mine

The work of construction of 10,000 TPA Ferro Manganese Plant at Balaghat Mine at an estimated cost of Rs.570 lakhs has already started.The commissioning of the Plant is deliberately being delayed on account of unfavourable market conditions at present. However, trial production was started from October,1998.

## Captive Power Plant

Considering the increasing requirement of power at Balaghat Mine due to setting up of Ferro Manganese Plant and the restraints in power availability in M.P. the Company is setting up 8 MW Captive Power Plant at Balaghat Mine at an estimated cost of Rs.21.80 crores. The Govt. approval is awaited. The preliminary work is in process.

The Company is also examining the possibilities of setting up a High Intensity Magnetic Separation Plant and a Jigging Plant.

## Cost Reduction Plans

The company has introduced several cost reduction measures some of which are as follows :

- Improvement in productivity.
- Proper manpower planning and introduction of Voluntary Retirement scheme (without replacement) to reduce surplus manpower.
- Judicious mechanisation of various mining operation.
- Avoidance of wasteful expenditure.

## Safety Measures

With the continuous depletion of near surface ore deposits, mining is progressively being extended to deeper horizons and extraction is increasingly done through underground working which requires extra attention to be paid to various aspects such as, support system, ventilation and efficient filling of the voids arising out of extraction of ore. Continous emphasis is laid on training of employees and mine working are regularly inspected by members of Pit Safety Committees, Workman Inspectors, Safety Officer and G.M.(Safety).Safety weeks are observed and exhibitions are held to inculcate safety habits. Safety Committee meetings are regularly held during which any unsafe act committed/observed is discussed to avoid recurrence.

The Company pays special attention to ensure safety of the mines and work force employed therein. The Company has participated in Regional Safety Competition and won 18 prizes including the best overall prize in underground and Semi-Mechanised opencast.

## Workers' Participation in Management

The Company has set up a mechanism for the association of workers representatives from the grass root level to the Apex Council which functions at the Corporate level, with workers and Management representatives under the chairmanship of the Chairman-cum-Managing Director to review and find solution to major problems. There is continuing effort to strengthen this arrangement. In addition, works/Canteen/Grievance committees are functioning satisfactorily at each unit. The members of these committees are from different sections of employees.

## Environmental Protection

The Company is conscious of its responsibility towards protection of environment in it's leasehold areas. 76,000 saplings were planted during 1997-98 at different mines with a survival rate of about 75%. The sericulture project at Gumgaon Mine has been further extended to make it commercially viable.

## Progressive Use/Awards for Implementation of Hindi

In order to ensure progressive use of Hindi and implementation of Official Language Act, effective steps have been taken by the Hindi Cell, functioning at the Corporate Office of the company.

To encourage the use of Hindi at all levels various competitions are organised during "Hindi Fortnight" and the winners are suitably rewarded. Facilities for learning Hindi have been made available to employees who are not proficient in the language.

The Company has won second prize i.e.Indira Gandhi Raj Bhasha Award for 1996-97. The Company has also been awarded "Chal-Vyajayanti" prize by the Ministry of Steel for progressive use of Hindi and implementation of Official Language Act.

## Social Commitment

MOIL had adopted a Tribal village viz. Gondi,close to Ukwa Mine in Madhya Pradesh.The Company has introduced a wide range of development activities such as repair of roads, construction of houses for homeless tribals,construction of school building to impart education to tribal children etc. as a part of their ongoing to promote social welfare.

## Personnel

The composition of the work force of the Company as on 1st October 1998 was as under :

| Group | SC | ST | OBC | Others | Total |
|---|---|---|---|---|---|
| A | 18 | 7 | 22 | 168 | 215 |
| B | 25 | 12 | 19 | 165 | 221 |
| C | 345 | 397 | 475 | 717 | 1934 |
| D | 1087 | 1629 | 2100 | 887 | 5703 |
| **Total** | **1475** | **2045** | **2616** | **1937** | **8073** |

Out of the total number of 8,073 employees 1,023 are women.





# MSTC Limited

## Introduction

MSTC Limited was incorporated under the Companies Act, 1956 on 9th September, 1964 and was the Canalising Agent for import of carbon steel melting scrap, sponge iron/ hot briquetted iron and rerollable scrap till February, 1992. It was also the canalising agency for import of old ships for breaking, import of which was decanalised and put under OGL w.e.f. August, 1991. The Company also undertakes disposal of ferrous and non-ferrous scrap arisings from integrated steel plants under SAIL/RINL etc. and disposal of scrap, surplus stores, etc. from other Public Sector Undertakings and Govt. Departments.

## Capital Structure

The Company has an authorised capital of Rs.5 Crores and paid up capital of Rs.2.20 Crores as on 31.3.98 of which approximately 90% is held by President of India and balance 10% is held by Steel Furnaces Association of India, Iron and Steel Scrap Association of India and others.

## Location of Units

The Company's registered and corporate office is located at Calcutta and it has four Regional offices at Calcutta, Delhi, Chennai and Mumbai, four branch offices at Vizag, Bhopal, Bangalore and Vadodara and two resident offices at Bokaro and Rourkela.

## Activities

The Company has two operational Divisions, i.e., International Marketing and Domestic Marketing.

### Domestic Marketing

This Division is responsible for disposal of ferrous scrap and other secondary arisings generated in public sector steel plants under SAIL and RINL as well as disposal of scrap, surplus stores, etc. from other public sector enterprises and Govt. Departments including Ministry of Defence.

### International Marketing

This Division till February, 1992 largely undertook canalised import of carbon steel melting scrap, stainless steel, HBI/Sponge Iron, rerollable scrap, ships for breaking etc. for the secondary steel sector. After decanalisation, this Division no longer deals with any canalised item and arranges imports of scrap as well as other items as per the needs of actual users in competition with other private sector importers.

## Organisational Structure

The Chief Executive Officer of the Company is the Chairman-cum-Managing Director who is assisted by three Chief General Managers and five General Managers in-charge of various Divisions.

## Marketing Scenario : 1997-98

MSTC has been dealing with only one product, i.e., Carbon Steel Melting Scrap for the last few years. This business is dependent on fluctuations in the fortunes of Electric Arc Furnaces/Induction Furnaces sector. Key determining factors for demand are international prices of scrap, freight market, foreign exchange conversion rate and domestic prices of finished product. Steel Industry continues to face slowing down of growth. Import of scrap by MSTC is for consumers in secondary steel sector. MSTC's bulk consumers in this sector are big units who are buying scrap themselves without depending on third party. These units are also diverting part of the supplies to small consumers. Since these units are using their own VABALs for import, MSTC finds it difficult to penetrate this sector.

## Performance During 1997-98

In 1997-98, the total volume of business achieved was Rs.497 crores against a target of Rs.710 crores. Out of Rs.710 crores, Rs.210 crores was for International Marketing. Due to reduced demand of scrap in the depressed market, most of the importers have had to sell their materials imported during 1996-97 and 1997-98 at a loss. MSTC also sold off their stock at loss due to depressed market condition. As a policy decision, MSTC did not venture into fresh imports till the existing stock was liquidated. In view of the above, it has not been possible to achieve FT target as no import was possible in absence of back to back 100% financial arrangement. International prices of scrap continue to fall and there was no growth of demand of imported scrap in the domestic market.

Against the target of Rs. 500 crores in domestic marketing achievement was Rs. 497 crores. Despite adverse domestic market conditions, the achievement was still 13% higher than 1996-97.

## Strategy for 1998-99

For 1998-99 target of Rs. 565 crores has been fixed for domestic marketing and Rs.100 Crores for International Marketing which is about 13% more than the achievement of last year. Such growth can be achieved only if the market comes out of the present difficult phase and a period of growth starts. Achievement till September 1998 has been Rs.215.56 crores which is more than MOU target till date.

Due to low demand in ferrous scrap, MSTC has widened their import basket and imported Superior Kerosene Oil (SKO), furnace oil and slab end cuttings which are non-traditional items. The target in this sector was Rs.100 crores and it expects to achieve the same during 1998-99.

## MOU with Government

Inspite of slow growth in the domestic market and instability in the prices of scrap in the international market, MSTC has been awarded "FAIR" rating by DPE on MOU Performance evaluation based on provisional figures of 1997-98. MSTC expects that MOU rating for 1998-99 will improve.

## Physical and Financial Performance

The physical and financial performance for the year 1996-97, 1997-98 and 1998-99 upto September, 1998 are given below :

**Financial Results**

| | 1996-97 | 1997-98 | 1998-99 (Prov. upto Sept. 98) |
|---|---|---|---|
| Turnover | 113.3 | 29.58 | 42.44 |
| Opening Profit (before interest depreciation and other provision), | 7.49 | 4.39 | 1.22 |
| Interest and depreciation | 3.67 | 1.54 | 0.21 |
| Profit before tax | 3.82 | 2.85 | 1.01 |

**Physical Performance**

| | 1996-97 | 1997-98 | 1998-99 (Prov. upto Sept. 98) |
|---|---|---|---|
| **Foreign Trade** Carbon Steel Melting, Scrap ('000 MT) and other items of import | | | |
| **Quantity ('000 Tonnes)** | | | |
| **Value** (Rs. in Crores) | 128 | - | 34.50 |
| **Domestic Trade** (Rs. in Cr.) | 81 | - | 28.78 |
| (Despatches of Ferrous scrap arising from steel plant and sale of ferrous scrap, MISC, items from other PSUs/Govt. Deptt. including auction sales for steel plants (stone items) | 441 | 497 | 215.56 |
| **Total volume of business** (Rs. in Crores) | 522 | 497 | 244.34 |

For the year 1997-98 the Company declared a dividend of 20% on the paid-up Capital.

## Employment Statistics (As on 30-09-1998 )

The employment statistics of the company including SC/ST as on 30th September, 1998 are given below :

| General | Executive | Non-Executive | Total |
|---|---|---|---|
| **Head Office** (Calcutta) | 50 | 91 | 141 |
| Calcutta (ER) | 9 | 91 | 30 |
| New Delhi (NR) | 16 | 14 | 30 |
| Bombay (WR) | 14 | 16 | 30 |
| Chennai (SR) | 9 | 8 | 17 |
| **Branch Offices** | | | |
| Bangalore | 8 | 12 | 20 |
| Vizag | 8 | 5 | 13 |
| Rourkela | 0 | 2 | 2 |
| Vadodara | 2 | 0 | 2 |
| Bhopal | 1 | 0 | 1 |
| Bokaro | 1 | 0 | 1 |
| **Total** | **118** | **169** | **287** |

**Scheduled Casts/Tribes, Ex- Servicemen and physically handicapped persons:**

| Group | Total | SC | ST | PH | Ex-S. | OBC |
|---|---|---|---|---|---|---|
| A | 118 | 12 | 7 | 1 | - | 4 |
| B | 48 | 9 | 3 | 1 | 3 | - |
| C | 93 | 25 | 4 | 2 | - | 2 |
| D | 28 | 11 | 1 | 1 | - | - |
| | **287** | **57** | **15** | **5** | **3** | **6** |

**Male/Female**

| | Executives | Non Executives | Total |
|---|---|---|---|
| Male | 103 | 140 | 243 |
| Female | 15 | 29 | 44 |
| | **118** | **169** | **287** |





# Ferro Scrap Nigam Limited

## Introduction

Ferro Scrap Nigam Limited (FSNL) is a joint sector company under the Ministry of Steel with a paid up capital of Rs.200 lakhs in which M/S MSTC holds 60% of the equity shares and the remaining 40% are held by M/S Harsco Inc.,of USA. The Company is thus a subsidiary of MSTC.

## Activities and Objectives

The Company undertakes the recovery and processing of scrap from slag and refuse dumps in the six steel plants at Rourkela, Burnpur, Bhilai, Bokaro, Visakhapatnam and Durgapur. The scrap recovered is returned to the steel plants for recycling/disposal and the company is paid processing charges on the quantity recovered at varying rates depending on the category of scrap. Scrap is generated during Iron & Steel making and also in the Rolling Mills.

In addition, the Company is also providing Steel Mill services such as Scarfing of Slabs, handling of BOF Slag etc.

## Organisational Structure

The Chief Executive Officer of the Company is the Managing Director who normally functions under the guidance of a part time Chairman and a Board of Directors. The Managing Director is assisted by two General Managers and eight Deputy General Managers who are incharge of activities at the main steel plants, personnel and other functions at Corporate Office. The Corporate Office is situated at Bhilai and the Corporation has six field units in the steel plants at Bhilai, Burnpur, Rourkela, Bokaro, Visakhapatnam and Durgapur.

## Physical and Financial Performance

### Physical Performance

The production performance of FSNL for the last two years and for the year 1998-99 (upto 30.09.98) are given below :

| Item | 1996-97 | 1997-98 | 1998-99 (Upto 30.9.98) (Prov.) |
|---|---|---|---|
| Recovery of scrap (Lakhs M.Ts) | 13.03 | 14.73 | 6.82 |
| Market Value of Production (Rs. in Crores) | 573.32 | 648.11 | 300.08 |

**Financial Performance** (Rs. in lakhs)

| Item | 1996-97 | 1997-98 | 1998-99 (Upto 30.9.98 Prov.) |
|---|---|---|---|
| Total Turnover (i.e. service charges realised including misc. income etc.) | 6497.12 | 7214.48 | 3390.91 |
| Gross Margin before interest and depreciation | 2354.15 | 2384.94 | 1152.91 |
| Interest and Depreciation | 618.70 | 567.77 | 530.80 |
| Profit before tax | 1407.08 | 1817.16 | 622.09 |

**Sales Realisation :**

Sales realisation per metric tonne for the last two years and for the year 1998-99 upto 30.09.98 are indicated below :

(in Rs.)

| 1996-97 | 1997-98 | 1998-99 (Upto 30.9.98 Prov.) |
|---|---|---|
| 490.46 | 479.26 | 497.20 |

The Employment statistics of the Company, including SC/ST as on 30.09.98, are given below :

**A. General**

| | Executive | Non-Executive | Total |
|---|---|---|---|
| Corporate Office | 27 | 42 | 69 |
| Rourkela Unit | 20 | 204 | 224 |
| Bhilai Unit | 19 | 277 | 296 |
| Burnpur Unit | 15 | 123 | 138 |
| Bokaro Unit | 19 | 213 | 232 |
| Vizag Unit | 21 | 211 | 232 |
| Durgapur Unit | 17 | 138 | 155 |
| **Total** | **138** | **1208** | **1346** |

**B. Scheduled Castes/Tribes, Ex-Servicemen and Physically Handicapped Persons**

| Group | No.of Employees | SC | ST | Ex-S | PH |
|---|---|---|---|---|---|
| A | 138 | 9 | 4 | 3 | - |
| B | 277 | 9 | 1 | - | - |
| C | 927 | 187 | 143 | 57 | 2 |
| D | 4 | 4 | - | - | - |
| Total | 1346 | 209 | 148 | 60 | 2 |

## Future Programmes

The integrated steel plants have switched over from conventional open hearth route to BOF-concast route. This has resulted in reduction in scrap arisings without affecting the demand for high quality scrap.

In order to meet the requirements of the integrated Steel Plants both in quality and quantity of scrap, FSNL is going for modernisation so as to upgrade the present technology for which discussion with Heckett MultiServ is in progress.

The new jobs undertaken by the company in 1997-98 are as follows :

1. Scarfing of slabs at Bokaro Steel Plant
2. Crushing, Screening and transportation of L.D.Slag to be used in the Sintering Plant, Blast Furnace and as Rail Ballast has been started at Rourkela, Durgapur and Vizag Steel Plants.

In addition, FSNL is also contemplating to expand their activities in the Private Sector Steel Plants for scrap recovery and processing jobs. In this connection, discussions have been held with M/s. ESSAR Steel Ltd., Jindal Vijaynagaram Steel Ltd and M/s. Neelachal Ispat Nigam Ltd., Bhubaneswar.

## MOU with Government

The Company has been awarded 'Excellent' rating by DPE on MOU Performance evaluation for the year 1997-98. The Physical and Financial performance of the Company for the half year ending 30th September'98 is 108.08% & 103.05% respectively against the target as compared to 107.94% & 101.85% respectively for the same period during 1997-98.


*Magnetic separator being fed by hydraulic excavator for recovery of secondary scrap from slag at slag dump.*





# Sponge Iron India Limited (SIIL)

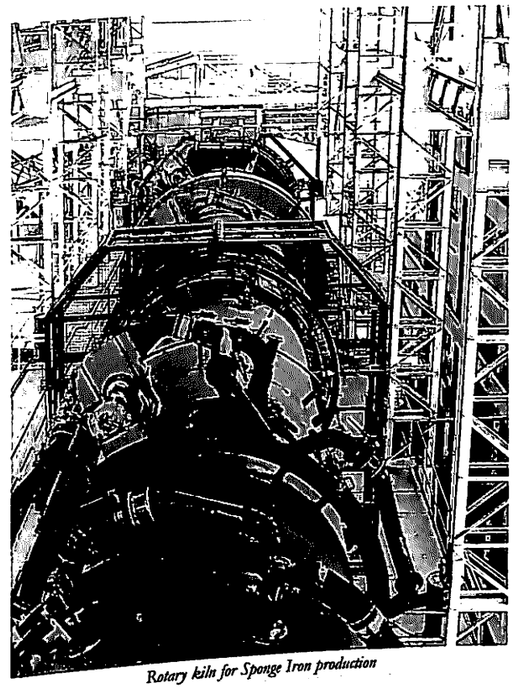
## Introduction

Sponge Iron Plant of the Company was initially established as a demonstration unit with a capacity of 30,000 tpa with UNDP/UNIDO assistance to establish the techno-economic feasibility of producing sponge iron (a part substitute for ferrous scrap used by steel-melting electric arc furnaces) from lump iron ore and 100% non-coking coal. The unit, based on non coking coal from Singareni Collieries Company Limited (SCCL) and iron ores available at various regions in Andhra Pradesh and neighbouring states of Madhya Pradesh and Karnataka went into regular operations in November, 1980. Being a Demonstration plant it is designed to be operated on a semi commercial basis, i.e. both for production of saleable product and for R&D work. Several improvement and modifications were effected to the Sponge Iron Plant based on Rotary Kiln Process to suit the local raw materials and operating conditions, as a result of which it has not only established the viability of the technology but also paved way for the development of Sponge Iron Industry in the Country .

Taking note of the successful operations of the Demonstration Plant, Government of India approved doubling its capacity from 30,000 tpa to 60,000 tpa by setting up a second kiln of like capacity. This unit, which was designed and built by the Company's engineers incorporating various improvements and design modifications carried out in the Demonstration Plant for adapting the technology to Indian conditions, went into regular production from October, 1985.

The Company has also successfully designed and built a plant for briquetting of sponge iron fines (below 5 mm size) which were earlier not usable by electric arc furnaces and were being discarded. The Briquetting Plant was commissioned during October, 1987 and is operating to capacity.

A new and innovative project aimed at conservation of energy was commissioned with effect from 1.3.1993 for effectively utilising the sensible heat in the kiln off-gases for generation of electric power. By doing so it has not only improved the thermal efficiency of the process but also substantially reduced the dependence on external power thus effecting saving in costs.The Submerged Arc Furnace Project with an installed capacity of 45,000 tpa is set up by SIIL for smelting sponge iron (including sponge iron fines) into high quality (low phos,) pig iron. After having completed the trial



*Rotary kiln for Sponge Iron production*

runs by January, 1996 wherein it was established that the plant could achieve chemical composition at the required level for special grade pig iron, the plant was shutdown without going in for commercial operations due to Shortage of availability of power, unremunerative pricing and input cost escalation.

In order to utilise the existing infrastructure installed with a capital cost of about Rs.30 crores possibilities of going in for production of Ferro Alloys have been explored, during which it was found that production of Silico Manganese can be taken up with the existing furnace and other equipments after making some modifications. As per the current estimates the SAF Plant would be taking up production of Silico Manganese. Necessary modifications have been carried out during the second half of 1997-98.

## Finance

The authorised share capital of the Company stood at Rs.40.00 crores on 31/3/1998; paid up capital was Rs.32.58 crores. (Rs.31.75 crores held by Government of India and the balance of Rs.0.83 crore by the Government of Andhra Pradesh).

## Production

The physical and financial performance of the Company during the last two years together with provisional figures for 1998-99, is furnished in the table below :

| | 1996-97 | 1997-98 | 1998-99 (Prov. upto Sept. 98) |
|---|---|---|---|
| **Production** | | | |
| Sponge Iron (t) | 51402 | 57610 | 24574 |
| Power Generation (LKwh) | 75 | 115 | 23 |
| Capacity utilisation (%) | 86 | 96 | 82 |
| **Sales (t)** | | | |
| Sponge Iron | 55778 | 45905 | 29545 |
| **Sales Turnover (Rs. in lakh)** | 2548 | 2074 | 1306 |
| Generation of Internal Resource (Rs. in lakhs) | 40 | -157 | -151 |
| Net Profit (Rs. in lakh) | -130 | -336 | -253 |

As against the target of 26,800 tonnes, actual sponge iron production upto Sept. 1998 was 24,574 tonnes representing 92% of the target.

## Sales and Profitability

Against a target of 34,300 tonnes upto 30 September, 1998, actual despatches were 29,545 tonnes representing 86% achievement of the target.

Operations upto the end of 30th September, 1998 have resulted in an provisional net loss of Rs.253 lakhs.

## Cost Reduction

Earlier iron ore size to feed in to rotary kiln was altered from 5-20mm to 3-20mm for improving the economics of operations. +20mm size ore used to be crushed to obtain necessary size of 3-20mm for reduction plants. During curshing of ore less than 3mm size fines are generated and are considered as waste. They have to be disposed off at cheaper rates. In order to reduce the specific iron ore consumption as well as cost of production, it was planned to procure calibrated iron ore of size 5-15 mm from M/s National Mineral Development Corporation (NMDC), Bailadilla. After continuous follow up with NMDC, company succeeded in getting ore of required size (5 to 15mm). This allowed to feed ore as it is into rotary kiln for reduction by eliminating the ore preparation like oversize crushing, scrubbing, etc.

Efforts are made to procure sized limestone of 0 to 5mm instead of purchasing lumpy limestone and crushing the same to the required size. This reduced the cost of crushing and conveying and also the handling losses.

Control over purchase of equipment spares and consumables resulted in saving of about Rs.9,34,638/- when compared to previous year. Inventory level of spares and consumables was brought down from Rs.188.64 lakhs to Rs.171.00 lakhs. Savings in the consumption of raw materials have been effected by improving quality and by bringing down inventory level of principal raw materials i.e., iron ore and coal. By generating 22,59,800 units of power during the period from April, 1998 to September, 1998, there was a saving of Rs.26.26 lakhs worth of electrical energy otherwise to be drawn from State Electricity Board.

## Efforts made Towards Indigenisation

The first reduction plant was set up by Lurgie Chemie of West Germany. Hence most of the equipment were imported from Germany. As a part of indigenisation about Rs.1.30 lakhs worth radiation protection tubes were procured locally for replacement of imported spares during the half year.

## Manpower

The total number of Non-Executives as on 30/9/1998 was 434 out of which 74 employees belong to SC Category (17.05%), 47 persons belong to ST Category (10.82%). There are 33 women (7.60%), 8 Physically Handicapped persons.

The total number of Executives as on 30/9/1998 was 81, out of which 14 employees belongs to SC Category (17.28%) and one employee belongs to ST Category (1.23%).

| Group | Total No. of Employees | SC | ST | Ex-Servicemen | Physically Handicapped | Women |
|---|---|---|---|---|---|---|
| Group A | 81 | 14 | 1 | — | — | — |
| Group B | 79 | 13 | 6 | — | 1 | 2 |
| Group C | 197 | 34 | 16 | — | 3 | 13 |
| Group D (Excluding Sweepers) | 150 | 21 | 24 | — | 4 | 11 |
| Group D1 | 8 | 6 | 1 | — | — | 7 |
| **Total** | **515** | **88** | **48** | **—** | **8** | **33** |





## Employees Participation in Management

As per the directives of the Government of India, a Scheme for Employees participation in Management has been implemented in the Company. Various Committees under 'Workers' Participation in Management' have been reconstituted w.e.f. 25/7/1996. The Committees are functioning systematically and the contribution by way of suggestions made by the members so far have given reasonably good results which, in turn, resulted in improvement of overall performance of the plant. One Plant level Committee, Works Committee, two Shop Level Committees, Canteen Management Committee, Safety Committee, Communal harmony Committee and Games and Sports Committee have been constituted with representatives of Management and the employees and regular meetings are held to discuss various problems and finding solutions internally. Members of the other registered Trade Unions were also included in various Committees. As directed by the Government of India and in order to increase induction of women at various levels in the Management, the women employees are also included in various statutory and non-statutory committees.

## Hindi Implementation

From 01/04/1998 to 30/9/1998, 70 documents were released in bilingual form in accordance with Section 3(3) of Official languages Act, 1963. 'Learn Hindi Sentences' Scheme is under progress. Hindi Day has been celebrated on 14/9/1998 and Essay Writing and Elocution Competitions were conducted and winners were rewarded with prizes.

## Anti-Pollution Measures

As a part of afforestation programme to control pollution levels, about 400 plants were planted. Regularly the pollution level of stacks emissions and water outlets are being checked by A.P. Pollution Control Board and the actions suggested by them, basing on their report, are attended immediately. Besides with available facilities pollution level monitoring is done departmentally also, to keep pollution levels within control.

## Waste Land Development

About 2.5 hectors of waste land was levelled and about 360 saplings were planted as a part of afforestation and waste land development during the half year.

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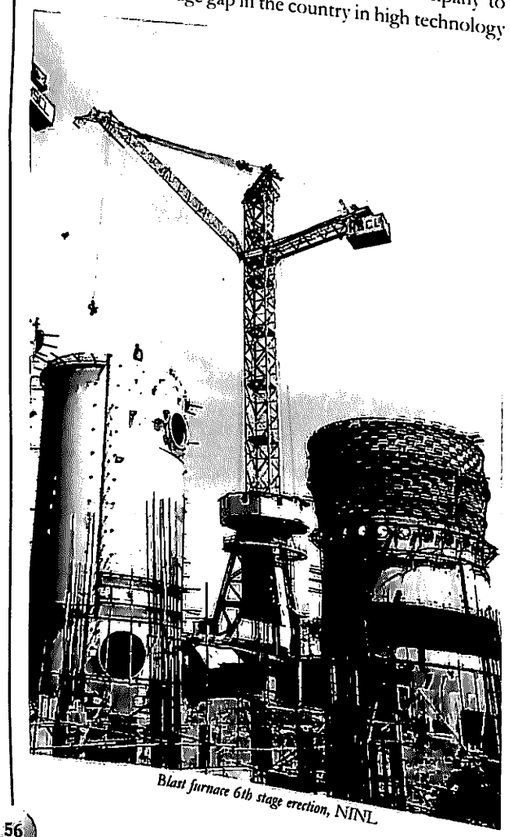
## Metallurgical & Engineering Consultants (India) Ltd. (MECON)

### General

As the first consultancy and engineering organisation in the country to be accredited with ISO:9001, the last 39 years have seen MECON emerging as one of the largest design, engineering and consultancy organisations in the world. It has developed considerable expertise not only in the field of consultancy services like design, basic & detailed engineering, front end engineering, project management, construction & site management services etc., but also in design and supply of equipment for the ferrous, non-ferrous, oil and gas, petrochemical and other general industries on engineering, procurement, construction & commissioning (EPCC) basis. This expertise has helped the company to bridge the knowledge gap in the country in high technology areas. MECON has diversified its services into power, environmental engineering, ocean engineering, ports & harbours, roads, highways & bridges, petro-chemicals, gas pipelines, material handling.



*Blast furnace 6th stage erection, NINL*

Long association with integrated steel plants has enabled MECON to build a strong technological base. The organisation has acquired, absorbed and innovated technologies to suit the needs of clients. It continues to acquire state–of–the–art technologies from developed countries like USA, France, Netherland, Switzerland, Germany, UK, Italy, China, Austria, etc. The know-how acquired has been successfully assimilated through direct on–the–job experience.

MECON has developed its own design for coke oven batteries and is one amongst the few in the world to have the know-how in this area. Today, coke oven batteries designed by MECON are operating at Durgapur and Rourkela Steel Plants. Towards further development in this direction, MECON, in collaboration with M/s GIPROKOKS, Russia has executed the first 7 meters tall coke oven battery in the country, at Bhilai in 1988. MECON has successfully executed design, erection, heating up and commissioning including guarantee test for 7 meters tall Coke Oven Batteries and Coke Dry Cooling Plants at Visakhapatnam Steel Plant, Bokaro Steel Plant, Bhilai Steel Plant, and other Private Sector Units.

In the field of Coal and Chemicals, MECON has designed and supplied 30,000 t/yr Benzol Plant based on state-of-the-art hydro refining process at Visakhapatnam Steel Plant. MECON has also executed, Acid re-generation plant on a turnkey basis for the Bokaro Steel Plant and Sulphuric Acid Plant for Bhilai steel Plant.

In the area of Continuous Casting MECON in association with M/s MDH of Germany has executed CCP – II Project, on turnkey basis, under Modernisation of Rourkela Steel Plant.

MECON has executed, on turnkey basis, converter Gas Cleaning Plant for Converters 1, 2 & 3 for Visakhapatnam Steel Plant.

In the area of Blast Furnaces, MECON has undertaken modernisation, technological upgradation services for Bhilai, Durgapur, IISCO, Burnpur, Rourkela and Bokaro Steel Plants. MECON is providing consultancy services for setting up Integrated Steel Plant for Neelachal Ispat Nigam Limited and Jindal Vijaynagar Steel Ltd. (based on Corex technology), etc.





In addition to Iron & Steel, MECON has rendered its services to various other sectors like petro – chemical & refinery, power generation both captive & utility units, infrastructure development, bulk material facility, non-ferrous, raw material & mining, environmental engineering, etc. Some of the areas are detailed in subsequent paragraphs.

MECON has played a significant role in serving non-ferrous industries. We are at present rendering our detailed engineering services for installation of Aluminium Foil Plant of Hindalco at Silvasa, cold rolling mill complex of BALCO at Korba, aluminium automotive wheel project of Hindalco & NALCO and EPC services for upgradation of alumina plant of MALCO.

MECON is associated in setting up an external coal handling system on turnkey basis for TNEB for its North Chennai Thermal Power Project. MECON has also provided its services for handling of Iron ore and other raw materials as well.

MECON offers complete spectrum of consultancy & engineering services in the field of Environment. We have rendered our services to various projects funded by multilateral agencies like World Bank/ DFID/ OECF and other industries like SAIL, NFC, IREL, HCL, HZL, BALCO, FACOR, TISCO, etc. for various pollution control projects

In the field of Highway & transportation, MECON has carried out a number of assignments. At present we are rendering our services to Haldia Development Authority. MECON also carries out traffic & transportation study. At present Govt. of Maharashtra has asked us to provide services for two flyovers in Mumbai.

MECON occupies a strong place in rendering its expert engineering services in planning infrastructure water supply facilities, water treatment, water circulation systems.

### Capital Structure

As on 31.3.98 the authorised capital of the company was Rs. 400 lakhs. The issued subscribed and fully paid –up equity share capital was Rs. 241.84 lakhs of which Rs. 40.31 lakhs was on account of Bonus shares issued during 1996 – 97.

### Performance

The table below summarises the financial performance of the company during 1997–98 and 1998–99 (upto 30.09.1998) :

(Rs. in Lakhs)

| Sl. No. | Particulars | 1998-99 (upto 30.9.98) | 1997-98 |
|---|---|---|---|
| 1. | Turnover | 7700.00 | 18581.42 |
| 2. | Profit before tax | (-) 1238.00 | 317.10 |
| 3. | Tax provision | — | 150.00 |
| 4. | Profit after tax | (-) 1238.00 | 167.10 |

Note : (-) indicates losses.

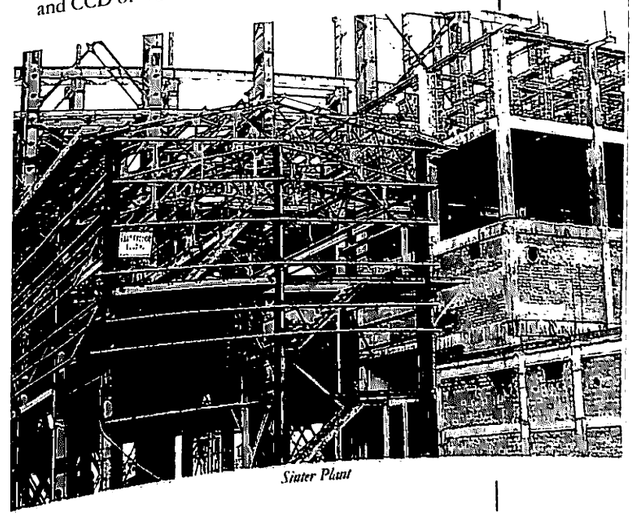
### Major Assignment

#### Domestic

**Assignments Secured** (upto 30.9.98)

**Iron & Steel**

- Detailed engineering & consultancy services for BOF complex of integrated steel plant at Satarda forUsha Ispat Ltd.
- Detailed engineering & consultancy services for sinter fines disposal system in sinter plant no. 3 of BSP.
- Study report for energy efficiency improvement in secondary steel sector for Govt. of India (Ministry of Steel).
- Consultancy services for coke oven battery no. 1, 2 & 3 and CCD of VSP.



*Sinter Plant*

**Rolling Mill**

- Detailed engineering, design & consultancy for hot & cold annealing & pickling line of Jindal Strips Ltd, Hissar.
- Design & Engineering for Modernisation and Supply of Equipment for existing 4 – Hi Cold Rolling Mill including Supervision of Erection & Commissioning for Vallabh Steels Limited, Ludhiana.
- Supply & installation of Optical Guide Setting Projector with Light Sources for Finishing Blocks of Wire Rod Mill for Visakhapatnam Steel Plant, Visakhapatnam.

**Petro – Chemical & Refinery**

- Detailed engineering & consultancy services for mechanised petro coke handling facilities at Barauni refinery of IOCL.
- Consultancy services for POL terminal of IOCL at Jasidih.
- Consultancy services for petroleum coke handling system of RPL at Jamnagar.
- Consultancy services for Koyali Pipeline Oil Terminal of IOCL.
- Consultancy services for Oil Accounting System of IOCL.

**Power**

- Detailed engineering & consultancy services for setting up a 25MW captive Power Plant for Usha Martine Infrastructure Services Ltd.
- Consultancy services for Refurbishment of Obra Thermal Power Station of UPSEB.
- Consultancy services for Balimela Hydro Electric Power Project in Orissa.
- Detailed engineering & consultancy services for CO boiler at HPCL, Vizag.

**Non – Ferrous**

- Detailed engineering & consultancy services for installation of aluminium alloy wheel plant for NALCO.
- Detailed engineering & consultancy services for expansion of Zinc smelter at Vizag, for HZL.
- Detailed engineering & consultancy services for expansion of Zinc smelter at Debari, for HZL.
- Engineering & consultancy services for aluminium roll project products for International Aluminium Products Limited.
- Consultancy services for Copper Cathod Granules Plant of Bhagyanagar Metals Limited, Secunderabad.

**Hydro Engineering**

- Detailed engineering & consultancy services for pressurised water circulation system at Barauni Refinery of IOCL.
- Consultancy & project management services for water supply system for Haldia Development Authority.

**Roads, Highways & Bridges**

- Engineering & consultancy services for two flyovers of Maharashtra State Road Development Corporation Ltd.
- Consultancy services for Kalghatgi – Dharwad Road for Nandi Highway Developers, Pune.

**Bulk Material Handling**

- Design, engineering, manufacture, supply, storage, construction of civil & structural works, erection, painting, testing & commissioning of External Coal Handling System – Package II for Tamilnadu Electricity Board, Chennai.
- Engineering & consultancy services for Material Handling Facilities at Vizag Port for NALCO.

**Mining**

- Consultancy services for iron ore slurry pipe line from Bailadila to Vizag for ESSAR Projects Ltd.
- Consultancy services for Granite Mining & Processing Plant of BSMDC, Ranchi.

**Environmental Engineering**

- Environmental monitoring for existing steel plant of SAIL at Bokaro.
- Consultancy services for water quality monitoring of Subarnrekha river for Ministry of Environment & Forests, Govt. of India.
- EIA/EMP report for Bauxite Mining Project in Rajnandagaon for BALCO.
- Study report for environmental issues in power sector in Bihar for project funded by World Bank/DFID.
- Consultancy for Hazop & Risk Analysis for Barauni, Kanpur Pipeline including pumping station
- Consultancy services for pollution control for Wheel & Axle Plant at Bangalore.





- Consultancy services for resettlement & rehabilitation plan for Bangalore - Mysore infrastructure corridor.

**Architecture & Town Planning**

- Project management services for IPCL township at Bharuch.
- Consultancy services for housing & office complex of Shipping Corporation of India at Haldia.

**General Engineering**

- Inspection of plant & equipment for sinter plant no. 3 of BSP.
- Third party inspection services for plant & equipment being procured by South Eastern Coalfields Ltd.
- Consultancy services to fix up agency for installation of coal handling equipment at Ennore Port.
- Supply of 18 Nos. Air Bottle Toroidal for Defence Research Development Laboratory, Ministry of Defence, Government of India, Hyderabad.

## Overseas

**Assignments Secured**

- After rendering project execution assistance for Phase – I activities, MECON has signed an agreement with M/s United Gulf Steel Mill Company (UGSMCL) for setting up of a 350,000 t/yr medium section mill. Under this agreement, MECON will be providing consultancy, engineering, inspection, construction supervision and project monitoring services for the proposed rolling mill project in Kingdom of Saudi Arabia.
- MECON has received an assignment from Saudi Designers Engineering Consultants (SDEC), Dammam, KSA for deputation of MECON design engineers to the office of SDEC for carrying out design work for the UGSMCL's Rolling Mill Project. Presently, three (3) of our junior level design engineers are posted in KSA for this assignment.
- MECON continues to provide engineering assistance services to Iranian steel sector through deputation of engineers for their modernisation/ upgradation schemes.
- Presently MECON is rendering basic engineering & procurement services for Zinc – Lead Pilot Project in Nepal for M/s Nepal Metal Company Ltd.
- MECON continues to provide engineering assistance services to M/s Zee Engineering, Indonesia through deputation of structural/ instrumentation engineers for their offshore process platform work in Qatar/ Indonesia.

## Globalisation

- MECON continues to make efforts for harnessing overseas business potential inspite of difficult economic scenario in most of Asian Economies. MECON has been exerting efforts in securing overseas assignments in Middle East, CIS and African as well as in SAARC countries. Taking cognizance of industrial development especially in steel and infrastructural sectors in Middle East, CIS as well as in African countries, MECON is directing its efforts in this region either directly or through local support. MECON has associates in number of countries. The success in services sector are having positive impact in skill development of human resources besides foreign exchange earnings.

## Industrial Relations

- On the industrial relations front, the Company continued to have peaceful and cordial relations with employees. Welfare benefits in the area of education, health, sports, etc. for the employees and their family members continued to be extended.

## Manpower Position

- Employees' strength of MECON at the end of the year as on 31.03.1998 came down to 3287 from 3464 as on 31.03.1997, out of which 759 belong to SC and ST categories. During the period, 22 non-engineering/non – professionally qualified employees (of which six executives) have availed the benefits under the Voluntary Retirement Scheme. The manpower position as on 30.9.1998 is 3262.

## Official Language Policy

- Various activities to motivate the employees for use of Hindi in Official work continued to be organised during the year. Official Language Policy of the Government of India is being implemented in the Head Office and other Branch Offices of MECON with full vigour. In addition to the coaching, workshop and training of officials for doing the work in Hindi Quiz, debate & essay writing contest, in Hindi were organised. The results were very encouraging. Hindi

Pakhwara was observed in the Company from 1st September, 1998 to 15th September, 1998. Your Company received following awards for its efforts in this direction. Adjudged second best and shield & certificate were awarded to MECON for conducting TOLIC activities and the Sr. Officer of MECON, who worked as Secretary, TOLIC, was awarded a certificate in recognition of his active contribution.

## Conservation of Energy

- Ministry of Steel and Mines, Deptt. of Steel have assigned MECON vide their letter dated July 31, 1998 to carry out study on Energy Efficiency Improvements in secondary steel sector on all India basis. In Phase – I, the study has to be completed and report will be prepared whereas, the Phase – II of the activity will be implementation of the suggested measures for improvement. MECON has received the assignment for Phase – I at the moment. Efforts are on to obtain some assignments in this vital areas. A number of proposals have been submitted to various clients.

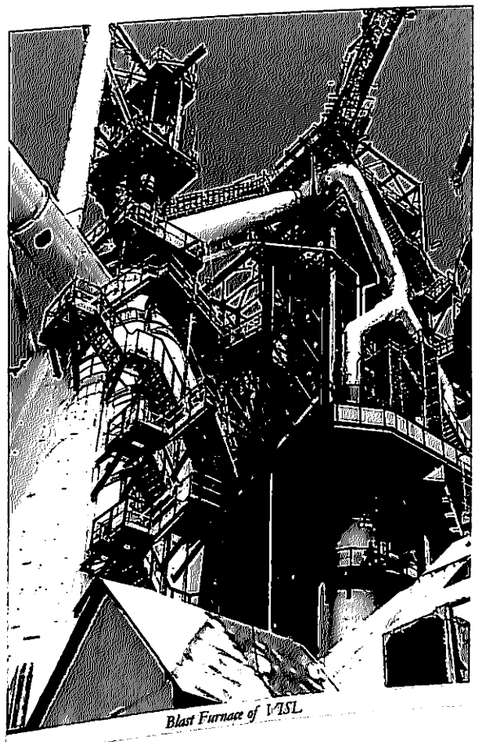




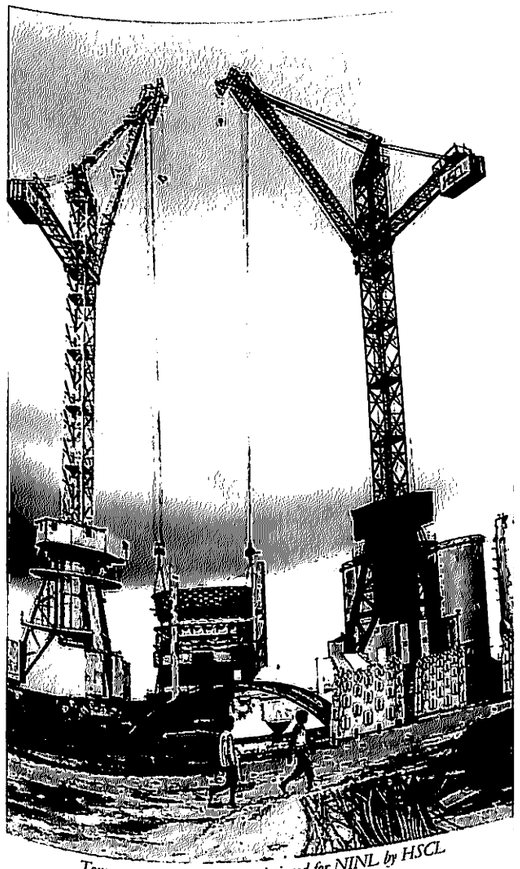
# Hindustan Steel Works Construction Limited (HSCL)

## General Background

Hindustan Steelworks Construction Limited (HSCL) was incorporated in June,1964 with the primary objective of creating in the Public Sector an organisation capable of undertaking complete construction of modern integrated steel plants.HSCL has executed works in Steel Plants right from the inception till commissioning viz., Bokaro Steel Plant,Vizag Steel Plant,Salem Steel Plant and was associated with the Expansion and Modernisation activities of Bhilai Steel Plant, Durgapur Steel Plant,IISCO(Burnpur) as also Bhadravati Steel Plant.With the tapering of works, the Company diversified its activities in other sectors like Power,



*Blast Furnace of VISL*



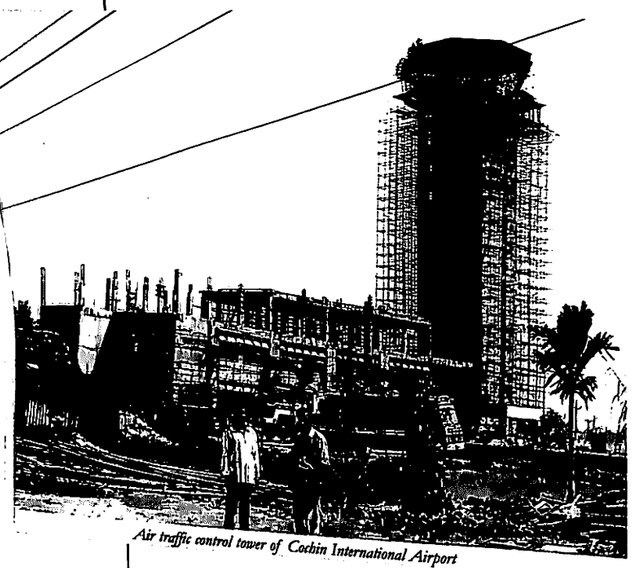
*Tower crane erected & commissioned for NINL by HSCL*

Coal, Oil and Gas as also infrastructural facilities like Roads and Highways, Bridges, Dams, Underground communication and Transport system besides Industrial and Township complexes involving high degree of planning, co-ordination and modern sophisticated techniques.

The Company has developed its expertise in the areas of Piling, Soil investigation, Massive Foundation works, High rise structures, Structural Fabrication and Erection, Refractory, Technological Structures and Pipelines, Equipment Erection, Instrumentation including testing and commissioning.

The company also specialises in carrying out Capital Repairs and Rebuilding works, including Hot repairs of Coke Ovens and Blast furnaces and other allied areas in the Integrated Steel Plants.

To meet the present day need for setting up of number of infrastructural facilities, the Company has tie-up arrangements with some reputed agencies both in India and abroad for providing technical know-how.



*Air traffic control tower of Cochin International Airport*

## Capital Structure

The Authorised and Paid-up Capital as on 30.9.98 was Rs.20 crore. The total amount of loan from Govt. outstanding as on end of September'98 was Rs.282.87 crore (Plan Loan Rs.93.00 crore and Non-Plan Loan Rs.189.87 crore).

## Performance

The financial performance of the company during the period 1997-98 and 1998-99 is as under :

(Rs. in crores)

| Year | 1997-98 | 1998-99 (April-Sept.) (Prov.) |
|---|---|---|
| Turnover | 321.77 | 85.23 |
| Gross Loss | 60.41 | 47.70 |
| Net Loss | 224.65 | 149.25 |

The bulk of the loss arises out of interest burden on Govt. loan.HSCL secured orders valuing Rs. 82 crores from 1.4.98 to 30.9.98.On account of general recession in the economy coupled with substantial curtailment of capital projects by SAIL, HSCL's turnover has decreased. The downard slide is only temporary. With the expected turn around in the economy, substantial improvement in turn over is expected in 1999-2000.

## Manpower Position

The manpower position of the company as on 30.9.98 alongwith the statistics of the SC/ST, Female, Ex-servicemen & Physically Handicapped Employees is given below :

| Group | Total Stre-ngth | SC/ST | %age | Female Empl-oyee | Ex-Service -man | PH |
|---|---|---|---|---|---|---|
| A | 1557 | 134 | 9 | 12 | 6 | 3 |
| B | 772 | 116 | 15 | 17 | 7 | 8 |
| C | 10774 | 3205 | 30 | 879 | 51 | 23 |
| D | 837 | 236 | 28 | 24 | 120 | 8 |
| **Total** | **13940** | **3391** | **26** | **932** | **184** | **42** |

## Social Welfare

### Welfare Plan for SC/ST

- HSCL assists in providing schools in areas where SC/ST employees mostly reside.
- Assistance is given for supply of drinking water.
- Plots are alloted to workers for making hutments in the land alloted at sites of client with free electricity, water supply and sanitation arrangements,etc.
- Children of SC/ST employees get due preference in the matter of schooling at Projects.

### Employee Voluntary Welfare Scheme

A Central Welfare Scheme for HSCL employees was introduced with effect from 1.4.87. It covers all sections of employees in the Company. The Scheme is intended to provide immediate financial assistance to the dependents of employees in the event of death due to any reason anywhere while in service in the Company , by a system of voluntary contribution by employees at the maximum rate of Rs.10/- per month.

## Safety Measures

HSCL has formulated safety code and following steps have been taken for its implementation :

Safety Organisations are functioning in all the major Steel plant units with safety engineers reporting to respective head of units. Employees are educated, advised and instructed to use safety appliances which are invariably made available by the company for execution of hazardous jobs. Periodic seminars are also conducted to acquaint the personnel with the latest safety measures and also to review safety requirement of various worksite in HSCL.





## Workers Participation in Management

| S.No. | Name of the Committee/Council | Details |
|---|---|---|
| 1. | Joint Productivity Council/Shop Council | Joint councils at unit level for major units at B.S.City & Bhilai and Shop Councils at Shop level to have participation in economy and cost reduction, wastage control, safety quality improvement and implementation in production and productivity, etc. |
| 2. | Apex level Joint Forum | This comprises of the management of HSCL and the National level trade Unions i.e., INTUC, CITU, AITUC, HMS and independent Unions. Fromthe inception of the formation of the Apex Level Joint Forum Body in 1981, there have been 31 meetings till 30.9.98. |

*Raw water reservoir of NTPC, Kayamkulam*

## Bharat Refractories Limited

### Brief History

Bharat Refractories Ltd. (BRL), a Government of India Undertaking was incorporated on 22nd July, 1974 and at present has the following four Units :

i. Bhandaridah Refractories Plant at Bhandaridah;

ii. Ranchi Road Refractories Plant at Ramgarh;

iii. Bhilai Refractories Plant at Bhilai; and

iv. IFICO Refractories Plant at Ramgarh;

The Company is engaged in the manufacture and supply of various kinds of refractories not only to the integrated steel plants but also the mini and midi steel plants.

### Capital Structure

The authorised share capital of the Company as on 31st March, 1998 is Rs.11,300.00 lakh against which the paid-up capital is Rs. 10,390.42 lakh.

### Production Performance

The production performance of the different units of the Company during 1997-98 and 1998-99 ( upto September, 1998) was as follow :

(Quantity in Tonne and Value Rs. In Lakhs)

| | 1997-98 Actual | | 1998-99 (Provisional) Target | | Upto September, 1998 Actual | |
|---|---|---|---|---|---|---|
| | Qty. | Value | Qty. | Value | Qty. | Value |
| Bhandaridah Ref. Plant (BhRP) | 16242 | 2219.64 | 11250 | 1312.50 | 7255 | 965.12 |
| Ranchi Road Ref. Plant(RRRP) | 5738 | 1820.28 | 3300 | 1253.88 | 2760 | 941.88 |
| Bhilai Ref. Plant (BRP) | 10839 | 2053.61 | 17694 | 3123.54 | 5239 | 938.93 |
| IFICO Ref. Plant (IFICO RP) | 14047 | 1462.75 | 8088 | 1779.12 | 4481 | 551.90 |
| **Total** | **46866** | **7556.28** | **40332** | **7469.04** | **19735** | **3397.83** |

**Note :** Figures of IFICO RP as indicated above includes the figures of IFICO Ltd. from April'97 to 30th Sep'97 which has merged with BRL w.e.f 1.10.1997.

### Financial Performance

During the year 1997-98, the loss before interest and depreciation in respect of BRL amounted to Rs.1283.43 lakh, but after providing interest , depreciation and prior period adjustment to the tune of Rs. 149.68 lakh, Rs. 324.57 lakh and Rs.317.18 lakh respectively, it incurred a net loss of Rs. 2074.86 lakh. During the year 1998-99 (Upto september,1998), the Company incurred a net loss of Rs. 1,614.47 lakh.

The Subsidiary, IFICO Ltd. incurred a net loss of Rs.339.21 lakh upto 30th September, 1997 prior to merger with BRL w.e.f 1st October, 1997.

### Foreign Collaboration

Bharat Refractories Ltd. has been able to adapt successfully, the technical know-how acquired from KRC Ltd., Japan for various items of high performance refractories. Except for Spinel and Magnesia spinel bricks, the technology of which could not be adapted due to constraints of firing facilities, commercial production of all other items, namely, Magnesia Carbon Bricks, Slide Gate Refractories, Gunning Repair Materials and Cast Mixesfor Steel Ladle have already stabilised. Consequently, the Company has emerged to be one of the major suppliers of MCB to SAIL Steel Plants. The Company has also started commercial production of Coke Oven Silica Bricks, for which know-how was acquired from Shinagawa Refractories Co. Ltd., Japan.

The Company has also entered into foreign collaboration agreement with M/s PLIBRICO, France for manufacture of Castables for Blast Furnace, Trough. The Company is proposing to set up facilities for production of refractories for Continuous Casting of steel.

### Research & Development

During the year 1997-98, in-house R&D was carried out in respect of the following areas :

- High performance Magnesia Carbon Bricks with high micron Fused Magnesia and high purity graphite.





- Further improvement on zonal lining concept of Magnesia Carbon Bricks at Converter.
- Further improvement of Magnesia carbon Refractories for lag zone and metal zone of Ladle at Mini-steel plants.
- 87% MgO Tap Hole Mass.
- Improved variety of Trough Mass for VSP.
- Resin bonded Tap Hole Mass for Blast Furnace.
- Special Magnesite Mortar for Durgapur Steel Plant.
- Super Duty Silica bricks.
- Direct Bonded rebonded Mag-chrome refractories.
- 95% MgO Tap Hole Mass.
- Coke Oven Patch Mass\Silica Ramming Mass.

Most of the above products are developed and commercialised. The revenue and capital expenditure on R& D during 1997-98 was Rs.23.74 lakh and Rs. 0.41 lakh respectively.

### Energy Conservation

Some of the steps taken for improvement in the conservation of energy are as under :

- Pre-heating of Furnace Oil is done for achieving better automisation of oil in burners.
- Callibration of Fuel pump and nozzle of engines at regular intervals.
- Adoption of approriate setting pattern of green bricks.
- Uses of recommended lubricating oil for engines.
- Switching off of unwanted load for reducing electricity consumption.

### Environment Management and Pollution Control

All the units of the Company have obtained/applied for valid "Consent" from the concerned State Pollution Board. De-dusting units have been installed at the Plants to control air pollution. We have appointed experts for analysis of pollution levels and suggestions made by them are being implemented. The norms prescribed by the State Pollution Board are being strictly complied with.

### Industrial Relations

The Industrial Relations climate in the Company are generally cordial and harmonious.

### Safety Measures

Effective measures have been taken to ensure adequate safety in all the Plants.

### Manpower

The manpower position of Bharat Refractories Ltd. as on 30th Sept, 1998 was as follows :

| Indicator | Total No. of employees | No. of SC | No. of ST | No. of Ex-Serviceman | No. of PH | No. of Women Employee | No. of OBC |
|---|---|---|---|---|---|---|---|
| BRL | 3729 | 371 | 498 | 74 | 28 | 164 | 1782 |

### Contract Labour

Contract labourers are engaged occasionally on non perennial jobs. They are being paid statutory wages. In addition, they are provided other benefits like Provident Fund, Medical Facilities, Leave etc.

### Implementation of Official Language

The Company has been vigorously pursuing implementation of the Official Language Policy of the Govt. To improve the use of Hindi, a number of workshops, Rajbhasa Seminar, Competitions, Meetings and Training Programmes were conducted from time to time. As a result, the Company has been awarded the prestigious Indira Gandhi Rajbhasa Shield for the highest work done in Hindi in the 'A' region consecutively for four years from 1993-94 to 1996-97 and also Ispat Rajbhasa shield consecutively for two years from 1995-96 to 1996-97 for achieving targets of annual programmes to the highest extent.

## Bird Group of Companies

### Introduction

The undertaking of the erstwhile Bird & Company Limited was taken over by the Govt. of India by virtue of the Act No.67 of 1980 viz. The Bird & Company Limited (Acquisition and Transfer of Undertakings and other properties) Act, 1980. Consequently shares held by Bird & Company Limited in twentyone companies specified in schedule I to the Act stood transferred to the President of India.

Based on the shareholding pattern, out of the twentyone companies the following eight companies of the Bird & Co. came under the administrative control of the Department of Steel:

a) Eastern Investments Limited (EIL)
b) The Orissa Minerals Development Co. Ltd. (OMDCL).
c) The Bisra Stone Lime Company Limited (BSLC).
d) The Karanpura Development Co. Ltd. (KDCL).
e) Scott & Saxby Ltd. (SSL).
f) Kumardhubi Fireclay & Silica Works Ltd. (KFSW).
g) Burrakar Coal Co. Ltd. (Burrakar).
h) Borrea Coal Co. Ltd. (Borrea).

The KFSW was engaged in manufacturing and marketing of refractory materials and was linked with Bharat Refractories Limited.

### Performance of Operational Companies of Bird Group (excluding KFSW).

The basic problems of all the sick companies of the group at the time of take over were the following:

i) Excessive manpower, high wage structure and heavy burden of fixed expenses.
ii) Huge accumulated losses.
iii) Erosion of working capital.
iv) Heavy burden of outstanding liabilities.
v) Inadequate corporate plan.
vi) Inadequate market demand.
vii) Continuous pressure from unions for higher wages leading to strained industrial relation.
viii) Weak management due to flight of professionals.

During the past few years majority of the basic problems listed above were and are being tackled through carefully prepared action plans. With active support from the Department of Steel, problems relating to excessive manpower, erosion of working capital etc. have been tackled to a great extent. Side by side actions have also been taken to improve the marketability of products through better product mix and enrichment of quality.

The overall performance relating to sales turnover and gross margin before charging depreciation and interest on govt. loans of four operating companies as a whole for the past few years as well as the current year is indicated in the following table :

( Rs. in lakhs )

| | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 (Apr.98- Oct.98) |
|---|---|---|---|---|---|---|
| Sales | 3602 | 3908 | 4773 | 5147 | 3681 | 1656 |
| Gross Margin before charging int. on Govt. loans & Deprn. | +13 | +276 | +538 | +241 | -113 | -110 |

EIL is an investment company formed by amalgamation of other investment companies of Bird Group. Coal Companies - Burrakar and Borrea, have become non operational after nationalisation of coal mines. Three Companies, viz., OMDC, BSLC & KDCL are mining companies. Scott & Saxby Ltd. is engaged in jobs relating to sinking of deep tubewells and mineral exploration.





It may be observed from the figures given above that the group had registered a continuous growth in terms of sales turnover till 1996-97. The group was also able to come out from the demoralising scenario of the past when there were cash losses before depreciation and interest on govt. loans. However, the performance of the group during the year 1997-98 had been adversely effected due to drastic fall in demand of the products of the main companies of the group. The position during the current year, i.e., 1998-99 has not yet indicated any sign for improvement. If the market demand for the products of Bird Group improves, the group as a whole, may be in a position to avoid cash loss that is, loss before charging depreciation and interest during 1998-99.

### Performance of Companies

#### The Orissa Mineral Development Company Limited (OMDCL)

OMDCL is one of the oldest iron ore and manganese ore producing companies. It was incorporated in the year 1918 with a subscribed capital of Rs.60 lakhs. The Company has mining area over 32.57 square km. in Keonjhar District, Orissa for iron ore and manganese ore.

The Company turned the corner and started making net profit from 1991-92. The company earned a net profit of Rs. 43 lakhs during 1996-97 before considering adjustments for non-trading activities. During 1997-98 due to drastic fall in the demand of BF grade Mn. Ore and Iron Ore, the company has suffered a set back. OMDCL has taken actions to step up the production of higher value products like sized iron ore with higher Fe content,medium grade manganese ore, dioxide and spencer grade manganese ore. Even these actions may not lead to net profit during 1998-99 if the demand of OMDCL products does not improve.

The performance of the Company in recent years is given below :

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 Apr.98- Sept.98 |
|---|---|---|---|---|
| Production ('000 MT) | 772 | 768 | 467 | 263 |
| Turnover (Rs. in lakhs) | 2769 | 3302 | 1846 | 1040 |
| Gross Margin before charging int. on Govt. loans & Depreciation. ( Rs. in lakhs ) | 524 | 618 | 210 | 146 |
| **Net Profit/Loss (Rs. in lakhs )** | **53** | **43** | **-475** | **- 252** |

The Company is examining possibilities to diversify its activities to make value added products like washed fines, manganese based industry etc. However due to the depressed market condition the company is going slow with its diversification activities.

With effect from 1994-95 the Company has started repaying the Govt. loans. Company paid during 1994-95 Rs. 10 lakhs, Rs.100 lakhs in 1995-96, Rs.103 lakhs in 1996-97 and Rs.2.00 crores in 1997-98.

#### The Bisra Stone Lime Company Limited (BSLC)

The Company was incorproated in 1910 and had been at one time largest producer of limestone and dolomite in India. The Company has mining leases over 2771.62 hectares in Birmitrapur in the District of Sundergarh, Orissa. The mines of the company are situated in a backward area where most of inhabitants are from schedule tribe and schedule caste communities. The company all through solely depended on steel plants of SAIL and RINL for the supply of its products. The demand from these steel plants has drastically come down. The company is not in a position to avoid cash loss before charging depreciation and interest on govt. loans.

The performance of the Company in recent years is as follows:

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 Apr.98- Sept.98 |
|---|---|---|---|---|
| Production ('000 MT) | 896 | 743 | 666 | 231 |
| Turnover (Rs. in lakhs) | 1846 | 1740 | 1549 | 537 |
| Gross Margin before charging int. on Govt. loans & Depreciation. ( Rs. in lakhs ) | 19 | -361 | -332 | -268 |
| **Net Profit/Loss (Rs. in lakhs )** | **-1629** | **-1477** | **-2224** | **-1264** |

In order to survive the company will have to drastically reduce its manpower. With financial assistance from Govt. of India the company successfully implemented voluntary retirement scheme under which 2424 persons have retired during the period from 1st April '92 to 30th September '98. This reduced the fixed overhead to a large extent.

## The Karanpura Development Company Limited (KDCL)

The Company was incorporated in July 1920, and has a subscribed capital of Rs. 20 lakhs. The company produces limestone suitable for cement manufacturing from its mines in District Hazaribagh, Bihar.

The Company suffered a set back during December 1995 when in pursuance to a notification issued by the Govt. of India prohibiting mining of limestone through contractors, the activities of the Company came to standstill. The company could resume normal mining operations from December 1996 onwards with the help of departmental workers and through deployment of hired equipment for raising of limestone.

During the year 1997-98, the company has earned cash profit before charging interest on govt. loans and depreciation. It is expected that the company will earn a cash profit of Rs.29 lakhs before charging depreciation and interest on govt. loans during the current year i.e. 1998-99. With a view to reduce the surplus manpower voluntary retirement scheme has been introduced. Till date 92 employees have been separated under VRS.

The performance of the Company in recent years is as follows :

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 Apr.98-Sept.98 |
|---|---|---|---|---|
| Production ('000 MT) | 56 | 24 | 83 | 34 |
| Turnover (Rs. in lakhs) | 98 | 47 | 170 | 69 |
| Gross Margin before charging int. on Govt. loans & Depreciation. (Rs. in lakhs) | -6 | -18 | 9 | -0.26 |
| **Net Profit/ Loss (Rs. in lakhs )** | **-41** | **-56** | **-29** | **-3** |

## Scott & Saxby Limited (SSL)

The Company is a wholly owned subsidiary of KDCL. The Company is mainly engaged in the activities of sinking deep tubewells and mineral exploration work. Owing to continued disruption in the normal working environment the Company was compelled to declare 'Suspension of Work' w.e.f. 14.11.92 at its factory and at all the working sites on that date. After prolonged negotiation a Tripartite Memorandum of Settlement was signed on 19.8.96 by representatives of Govt. of West Bengal, workmen of negotiating unions and the management of SSL. The Order for 'Suspension of Work' has been lifted w.e.f. 1.11.96 and activities restarted at the workshop and the work sites. The gross margin before govt. interest and depreciation has remained positive during 1996-97 and 1997-98.

Till date 242 employees out of total 365 have been separated under VRS leaving a balance of 123 employees. Performance of the Company in recent years is as follows :

| | 1995-96 | 1996-97 | 1997-98 | 1998-99 Apr.98-Sept.98 |
|---|---|---|---|---|
| Turnover ('000 MT) | 60 | 58 | 116 | 53 |
| Gross Margin before charging int. on Govt. loans & Depreciation. (Rs. in lakhs) | 1 | 2 | 2 | 1 |
| **Net Profit/Loss (Rs. in lakhs )** | **-130** | **-136** | **-139** | **-87** |

## Kumardhubi Fireclay & Silica Works Ltd. (KFSW)

Kumardhubi Fireclay & Silica Works Ltd. (KFSW) is one of the oldest refractory units in India, having been set up in 1919 in Kumardhubi in Dhanbad District of Bihar. Management of KFSW an erstwhile Bird Group of Companies was taken over by the Govt. of India in 1980.

It performed well upto end of 1982 whereafter due to its obsolete plant and machinery it started incurring losses. Because of its continued losses a reference was made to Board of Industrial & Financial Reconstruction (BIFR) in 1987 under the provisions of SICA (S.P.) Act, 1985. BIFR declared it a sick company in 1989 . Efforts made to revive this ailing company did not succeed and BIFR in its meeting held on 13th September, 1994 decided to close down KFSW. An appeal was preferred by workers union against the decision of BIFR before the Appellate Authority for industrial and financial reconstruction, who, in their meeting held on 24th November, 1995, have dismissed the appeal of workers union.

Hon'ble High Court of Calcutta vide its order dated 7.01.97 passed the orders for winding up of KFSW and appointed Official Liquidator .





# PRIVATE SECTOR

## The Tata Iron & Steel Company Ltd.

The Tata Iron and Steel Company Ltd. (TISCO) was set up in 1907 at Jamshedpur, Bihar. The first ingots were rolled in TISCO in 1911. The plant has captive collieries at Sijua, Jamadoba and West Bokaro and captive iron ore mines at Noamundi in Bihar and Joda in Orissa.

The Company embarked on a 2 MT expansion programme which was completed in 1958. Subsequently, the first major modernisation programme was undertaken by the company in 1980 when outdated Duplex Process was replaced by a modern LD Shop alongwith Continuous Casting and other allied facilities. Immediately thereafter, the company started work on Modernisation Programme Phase-II. The principal facilities in this phase included the modern high speed Bar and Rod Mill of 300,000 tpa capacity, raw material Bedding and Blending Yard, 1.37 mtpa Sinter Plant, 2x30 MW Power Plant etc.

TISCO completed its modernisation programme, phase III in October, 1994 which increased its saleable steel capacity to 2.7 mtpa. The major facilities under this programme includes 1 mtpa capacity Hot Strip Mill, two Slab Casters, 1 mtpa capacity New LD Shop, a half Coke Oven Battery, a 500 tpd capacity Oxygen Plant, three Lime Calcining Kilns, a New Captive Power Generation Plant of 30 MW capacity and expansion/modernisation of raw material facilities, transportation system and infrastructure.

In addition, TISCO has commissioned a modern 1 mtpa capacity G Blast Furnace in October, 1992 which is operating at its rated capacity. The Hot Strip Mill was commissioned in March, 1993. The first Slab Caster was commissioned in October, 1993 and the second in August, 1994. The new LD Shop No.2 was commissioned in October, 1994.

## Modernisation Phase-IV

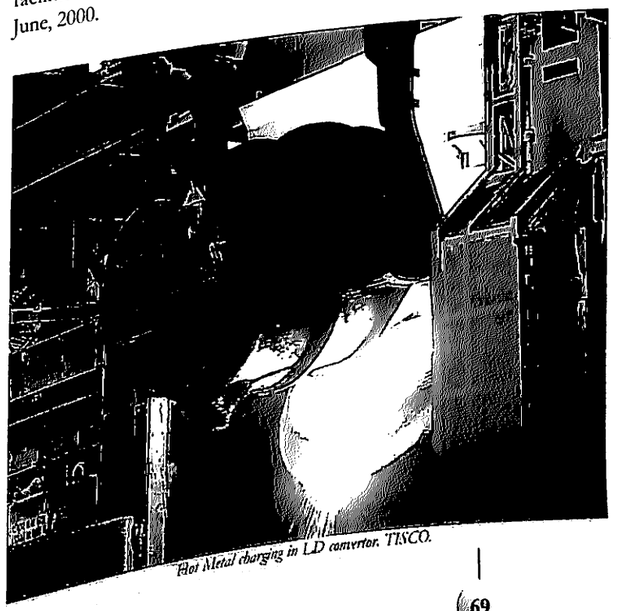
TISCO has embarked on a Modernisation Programme Phase IV, at an estimated cost of Rs.2520 crore which includes:

a) increase in capacity of hot metal from 3.28 to 3.8 mtpa;
b) increase in crude steel production capacity from 3.05 to 3.50 mtpa;
c) increase in saleable steel capacity from 2.70 to 3.30 mtpa;
d) expansion of LD-2 by providing a third vessel;
e) installation of third slab claster;
f) increase in capacity of Hot Strip Mill to 2 mtpa;
g) Setting up of a Bar Mill
h) Installation of a bloom caster
i) Modernisation of the Medium and Light structural Mill.

With the above facilities 100% oxygen steel making and continuous casting willbe achieved resulting in improvement in yield, lower energy consumption and lower operating cost.

With the additional facilities being commissioned in stages, Rolling Mills 1, Sheet mill and Narrow Strip Mill and part of SMS-3 have already been closed down. With progressive commissioning of facilities, Rolling Mill-2, Merchant Mils and remaining portion of SMS-3 shall be closed down soon.

TISCO is installing a 1.2 Million TPA Cold Rolling Mill at Jamshedpur Works at a cost of Rs.1800 crores. The mill will have state-of-the-art facilities for pickling, rolling, annealing, galvanising packaging etc. alongwith associated facilities. The mill is scheduled to be commissioned in June, 2000.



*Hot Metal charging in LD converter, TISCO.*

## Production

Production of Crude Steel, Saleable Steel & Finished Steel during the last three years is as follows:

(Unit : Metric Tonnes)

| Products | 1996-97 | 1997-98 | April-Sept.97 | April-Sept.98 |
|---|---|---|---|---|
| Crude Steel | 3105572 | 3225707 | 1570043 | 1639571 |
| Saleable Steel | 2818816 | 3008670 | 1440692 | 1519458 |
| Finished Steel | 2008215 | 1904146 | 975496 | 1044027 |

**Performance Parameters**

(Unit : Metric Tonne)

| Products | 1996-97 | 1997-98 | April-Sept.97 | April-Sept.98 |
|---|---|---|---|---|
| **B.F. Productivity** | | | | |
| A-F Furnace | 1.31 | 1.31 | NA | 1.28 |
| G Furnace | 1.89 | 2.04 | 2.06 | 2.10 |
| **Coke rate** | | | | |
| A-G Fee (Kg/t hot metal) | 546 | 554 | 558 | 546 |
| **Specific Energy Consumption** | | | | |
| Specific energy consumption (G.cal/tonnes cs) | 8.717 | 8.355 | 8.502 | 8.323 |

In addition to Tata Iron & Steel Co. Limited, there are large number of units mainly in private sector which are engaged in the production of various steel items like steel ingots/billets/blooms, hot rolled long products, hot rolled flat products, cold rolled flat products, coated products, wires etc.

Structural changes continued to take place in private sector. While two major steel plants based on world class capacity & latest technologies (twin shell electric arc furnace & thin slag casting and Corex technology) were commissioned in Western & Southern India, inefficent & uncompetitive units continued to close down.

## Contribution of Private Sector

Private sector is playing a dominant role in augmenting the steel availability in the country. Their contribution in finished steel production increased to 63.5% in 1997-98 as compared to 50.8% in 1992-93. In spite of difficult phase through which Indian steel industry is passing currently, their contribution has further increased to 67% during April-September, 1998.

## Status of various segment of steel industry in Private Sector is as under

### Electric Arc Furnace Units

**Status**

| | Number | Capacity (in tonnes) |
|---|---|---|
| Commissioned Units | 187 | 143 |
| Closed Units | 10675360 | 5341360 |

**Production**

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| Mild Steel | 1606.7 | 1509.6 | 616.9 |
| Medium/High Carbon Steel | 1086.4 | 1183.2 | 640.0 |
| Alloy Steel | — | — | — |
| Stainless Steel | 1058.7 | 1093.1 | 360.1 |
| Others | 149.6 | 146.2 | 153.5 |
| **Total Reported** | 46.3 | 2.8 | — |
| **Total Estimated** | 3947.7 | 3934.9 | 1749.0 |
| **Grand Total** | 166.9 | 125.4 | 70.5 |
| | **4114.6** | **4060.3** | **1864.5** |

The above figures do not include production of steel by the Casting Units registered with erstwhile DGTD.

### Hot Rolled Long products Units

**Status**

| | Number | Capacity (In tonnes) |
|---|---|---|
| Commissioned Units | 1089 | 22579172 |
| Closed Units | 395 | 7261837 |

**Production**

Production of Hot Rolled Long Products manufacturing units which are reporting their production to the office of the Development Commissioner for Iron & Steel, during the last three years is given below :

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| Bars/Rods (incl. Squares) | 1847.6 | 1836.5 | 826.3 |
| Wire Rods | 592.2 | 1023.4 | 430.6 |
| Structural | 684.5 | 814.6 | 398.4 |
| Hoops | — | 0.2 | — |
| Special Sections | 508.1 | 489.7 | 309.0 |
| Slabs/Plates | 9.3 | 0.6 | 5.8 |
| **Total Reported** | 3641.7 | 4165.1 | 1970.1 |
| **Total Estimated** | 2263.6 | 2147.2 | 1007.2 |
| **Grand Total** | **5905.3** | **6312.3** | **2977.3** |

### Steel Wire Drawing Units

**Status**

| | Number | Capacity (In tonnes) |
|---|---|---|
| Commissioned Units | 86 | 1086327 |
| Closed Units | 34 | 311957 |

**Production**

Production of steel wire drawing units, which are reporting their production to the office of the Development Commissioner for Iron & Steel, during the last three years is given below :

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| Mild Steel | 126.8 | 125.0 | 59.4 |
| Medium/High Carbon Steel | 224.2 | 221.6 | 99.2 |
| Alloy Steel | 9.2 | 9.0 | 4.7 |
| Stainless Steel | 11.2 | 13.2 | 6.2 |
| Others | 9.7 | 12.9 | 4.3 |
| **Total Reported** | 381.1 | 382.4 | 173.8 |
| **Total Estimated** | 93.2 | 94.3 | 50.3 |
| **Grand Total** | **474.3** | **476.7** | **224.1** |

### Hot Rolled Steel Sheets/Strips/Plates Units

**Status**

| | Number | Capacity (In tonnes) |
|---|---|---|
| Commissioned Units | 10 | 3022500 |
| Closed Units | 4 | 222500 |

**Production**

Production of hot rolled steel sheets/strips, which are reporting their production to the office of the Development Commissioner for Iron & Steel, during the last three years is given below:

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| Hot Rolled Steel | 1979.7 | 2482.2 | 1106.4 |
| Sheets/Strips | – | – | – |
| **Total Reported** | 1979.7 | 2482.2 | 1106.4 |
| **Total Estimated** | 60.3 | 73.8 | – |
| **Grand Total** | **2040.0** | **2556.0** | **1106.4** |

### Cold Rolled Steel Sheets/Strips Units

**Status**

| | Number | Capacity (In tonnes) |
|---|---|---|
| Commissioned Units | 75 | 2922916 |
| Closed Units | 15 | 223480 |

**Production**

Production of Cold Rolled Steel Sheets/Strips Unit, which are reporting their production to the office of the Development Commissioner for Iron & Steel, during the last three years is given below:

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| Mild Steel | 1383.9 | 1558.9 | 785.6 |
| Medium Carbon Steel | 60.9 | 79.6 | 42.1 |
| High Carbon Steel | — | — | — |
| Alloy Steel | 0.6 | 0.6 | 0.5 |
| Stainless Steel | 17.1 | 22.3 | 14.7 |
| Others | 79.7 | 67.5 | 49.3 |
| **Total Reported** | 1542.2 | 1728.9 | 892.2 |
| **Total Estimated** | 227.8 | 205.5 | 114.2 |
| **Grand Total** | **1770.0** | **1934.4** | **1006.4** |

### GP/GC,PVC/Vinyl Coated sheets/Strips Units

**Status**

| | Number | Capacity (In tonnes) |
|---|---|---|
| Commissioned Units | 18 | 1140150 |
| Closed Units | 3 | 84500 (incl.Colour coated) |

**Production**

Production of GP/GC Sheets/Strips units, which are reporting their production to the office of the Development Commissioner for Iron & Steel, during the last three years is given below :

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| GP/GC Sheets/ Strips (including colour coated) | 628.6 | 777.0 | 426.1 |
| **Total Reported** | 628.6 | 777.0 | 426.1 |
| **Total Estimated** | — | — | — |
| **Grand Total** | **628.6** | **777.0** | **426.1** |

### Tin Plate Units

**Status**

| | Number | Capacity (In tonnes) |
|---|---|---|
| Commissioned Units | 2 | 150000 |
| Closed Units | 1 | 60000 |

**Production**

Production of Tin Plate units, which are reporting their production to the office of the Development Commissioner for Iron & Steel, during the last three years is given below :

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| Oil Can Size | 35.3 | 39.0 | N.A. |
| Non Oil Can size | 13.0 | 14.5 | |
| **Total Reported** | 48.3 | 54.6 | 28.1 |
| **Total Estimated** | — | — | — |
| **Grand Total** | **48.3** | **54.6** | **28.1** |

### Sponge Iron Units

Presently there are 23 units covering a capacity of 6.06 million tonnes per year. Out of these, there are 20 coal based units covering a capacity of 2.456 million tonnes per annum and 3 gas based units, covering a capacity of 3.610 million tonnes per annum.

Production of Sponge Iron Units, which are reporting their production to the Office of the Development Commissioner for Iron & Steel during the last three years is given below :

(In '000 tonnes)

| Category | 1996-97 | 1997-98 | 1998-99 (April-Sept.98) |
|---|---|---|---|
| **Total Reported** | 4990.57 | 5325.0 | 2638.9 |
| **Total Estimated** | 56.70 | — | — |
| **Grand Total** | **5047.27** | **5325.0** | **2638.9** |

### Pig Iron Industry

Pig Iron is one of the basic raw materials required by the foundry and casting industry for manufacture of various types of castings for the engineering sector.

Post liberalization, considerable interest has been shown by a large number of entrepreneurs mainly in the private sector for setting up mini blast furnaces for production of pig iron. The Financial Institutions/ Commercial Banks have sanctioned financial assistance to 21 units with net pig iron available capacity of approx. 38.74 lakh tonnes.

However, some units like, Malvika Steel Ltd., Jindal Vijayanagar Steel ltd. Are producing excess pig iron over and above the earmarked capacities since their steel making facilities are yet to be commissioned. Taking these and the capacity of the old lone unit i.e. of Kalinga Iron Works into consideration, the gross pig iron manufacturing capacity in the private/secondary sector as of December, 1998 is estimated at 3.6 million tonnes.

A list of units manufacturing pig iron in the private/ secondary sector is given below:





| S.No. | Name of the Unit | Location | Capacity (lakh tonnes) |
|---|---|---|---|
| 1. | Kalinga Iron Works | Barbil, Karnataka | 1.40 |
| 2. | Sesa Industries Ltd. | Bicholim, Goa | 1.80 |
| 3. | Mid-West I&S Co. Ltd. | Srikakulam, A.P. | 0.90 |
| 4. | Usha Ispal Limited | Redi, Maharashtra | 3.00 |
| 5. | Sathavahana Ispat Ltd. | Anantpur, A.P. | 1.20 |
| 6. | Tata Metaliks Ltd. | Kharakpur, W.B. | 0.90 |
| 7. | Kirloskar Ferrous | Raichur, Karnataka | 2.40 |
| 8. | Lanco Ferro Ltd. | Chittor, A.P. | 0.90 |
| 9. | Uni-Metal Ispat Ltd. | Bellary, Karnataka | 0.75 |
| 10. | Usha Martin Industries | Jamshedpur, Bihar | 1.10 |
| 11. | Malvika Steel Ltd. | Jagdishpur, UP | 5.11 |
| 12. | Southern I&S Co. Ltd. | Salem, Tamil Nadu | 1.80 |
| 13. | Electro St. Casting Ltd. | Kharda, W.B. | 1.10 |
| 14. | Nagapur Alloy Castings | Raipur, M.P. | 3.50 |
| 15. | Kajaria Iron Castings | Durgapur, M.P. | 1.10 |
| 16. | Kalyani Ferrous Ind. Ltd. | Raichur, Karnataka | 1.20 |
| 17. | Jindal V. Nagar St. Ltd. | Bellary, Karnataka | 8.00 |
| | **Total** | | **36.16** |

Actual production of pig iron in India during the last 5 years from the main producers and the units in the private/ secondary sectors given below:

| S. N. | Name of the Unit | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 (April Nov.) |
|---|---|---|---|---|---|---|
| 1. | SAIL | 0.75 | 0.55 | 0.68 | 0.78 | 0.47 |
| 2. | TISCO | 0.40 | 0.42 | 0.35 | 0.40 | 0.25 |
| 3. | VSP | 0.85 | 0.77 | 0.70 | 0.52 | 0.24 |
| 4. | **Total Main Producers** | 2.00 (72%) | 1.74 (62%) | 1.73 (52%) | 1.72 (50%) | 0.96 (50%) |
| 5. | Private/ Secondary Producers | 0.78 (28%) | 1.06 (38%) | 1.57 (48%) | 1.69 (50%) | 0.97 (50%) |
| | **Grand Total :** | **2.78** | **2.87** | **3.30** | **3.39** | **1.93** |

**NB**: The figures within brackets indicate the percentage contribution by the respective sectors.

Presently, the pig iron industry is passing through difficult times. Several blast furnance/units have reportedly been closed down. The industry has been adversely affected by the general economic slow down leading to stagnant demand and sales realisation, imposition of anti dumping duty on imported coke. Government has since reduced the anti dumping duty and also abolished the special customs duty on imported coke. These are expected to benefit the industry.

### New Steel Projects

In the context of long term demand projection of steel, Government have adopted a two pronged strategy for increasing the steel production in the country in future.

- Through Modernisation and expansion of existing public sector steel plants in the country; and Encouraging creation of new steel capacities in the private sector.

SAIL has undertaken a massive modernisation programme in its plants at Durgapur, Rourkela and Bokaro. Similarly, TISCO have also taken up Phase IV modernisation.

After the announcement of New Industrial Policy in 1991 and various other policy initiatives taken by the Government, substantial interest has been shown by the private sector in setting up new steel plants. So far, 19 units with a total

capacity of approx. 13 million tonnes (Saleable Steel) involving an investment of around Rs.25,000 crores have already been sanctioned by the All India Financial Institution. Of these, 6 units have already been commissioned. Others, some of which have already commissioned part manufacturing facilities are at various stages of implementation. Details of the units which have already been commissioned or partly commissioned are given below:

| S. No. | Name of the Unit and Location | Process Route (Product-mix) | Capacity (L.T.) (Saleable Steel) |
|---|---|---|---|
| 1. | Nova Udyog Ltd. (Nainital, U.P.) | Electric Arc Furnace (Bars and rods) | 2.40 (Closed) |
| 2. | Indian Seamless S&A Ltd. (Pune, Maharashtra) | Electric Arc Furnace (Bars and rods/Seamless Bar) | 1.50 |
| 3. | Lloyds STeel Ltd. (Wardha, Maharashtra) | Electric Arc Furnace (HR/CR/GPGC sheets/coils) | 6.00 |
| 4. | Essar Steel Ltd. (Hazira, Gujarat) | DC Electric Arc Furnace (HR Coils) | 20.00 |
| 5. | Prakash Ind.Ltd.(Champa M.P.) | Electric Induction Furnace (Billets/Long Products) | 1.20 |
| 6. | Jindal Strips Ltd.(Raigarh, M.P.) | Electric Arc Furnace (Slab/Billets) | 4.00 |
| 7. | Jindal V.Nagar Steel Ltd. (Bellary, Karnataka) | Corex-Basic Oxygen Furnace (HR Sheets/Coils) (HSM&Corex-1 Commissioned) | 15.70 |
| 8. | Malvika Steel Ltd (Jagdishpur, U.P.) | BF-BOF long products (Blast Furnace Commissioned) | 6.00 |
| 9. | Southern I&S Co. Ltd.(Salem Tamilnadu) | BF-BOF Long Products (B. Furnace&SMS Commissioned) | 3.00 |
| 10. | Ispat Industries Ltd.(Raigad, Maharashtra) | Twin Shell Fce. HR Sheets/Coils (Ph-1 commissioned) | 30.00 |
| 11. | Mukund Ltd.(Raichur, Karnataka) | Energy Optimising Furnace Billets (EOF-1 commissioned) Electric Arc Furnace | 3.40 |
| 12. | Rajender Steel Ltd.(Raipur, M.P.) | HR Coils (Part capacity commissioned) | 5.00 |





# RESEARCH & DEVELOPMENT

## Empowered Committee on Research & Development

Ministry of Steel and Mines,Department of Steel has constituted on 24.2.98 an Empowered Committee under the Chairmanship of Secretary to the Govt. of India, Department of Steel and with Members drawn from Ministry of Science & Technology, National Laboratories, Steel plants, consultants, etc. This committee will sanction research and technology development projects with the money available from the interest proceeds of the Steel Development Fund (SDF).

**Research & Technology Mission which is to serve as the Secretariat of the** Empowered Committee is under formulation. During 1998-99 (till December 1998) the Empowered Committee has met once and approved the following R & D projects. (Rs. in crores)

| Year | No. of project approved | Total Cost | Amount to be funded from SDF | Amount disbursed |
|---|---|---|---|---|
| 1998-99 | 5 | 1.492 | 1.052 | 0.32 |

Besides Rs. 0.9 crores has been spent ( till December, 1998) from SDF on different Science & Technology (S&T) activities.

## Research & Development Activities by Iron and Steel Producers

Iron and Steel producers, both in the public and private sector, continued to pursue their research and development activities to deal with their plant specific problems, assimilate and innovate newer technologies, utilise Indian minerals and raw materials in larger proportion, reduce pollution, conserve energy and reduce cost of production.

Total amount of money spent on Research and Development by iron & steel plants and other related industries during last 3 years were as follows: (Rs. in crores)

| | 1996-97 | 1997-98 | 1998-99 (Upto Sept.,98) |
|---|---|---|---|
| **Public Sector** | | | |
| Steel Authority of India Ltd. | 45.53 | 47.05 | 20.02 |
| Rashtriya Ispat Nigam Ltd. | 2.50 | 2.50 | 1.25 |
| National Mineral Development Corpn. Ltd. | 5.94 | 4.86 | 2.25 |
| Kudremukh Iron Ore Co. Ltd. | 1.25 | 2.00 | 0.60 |
| Manganese Ore (India) Ltd. | 0.77 | 0.85 | 0.19 |
| Sponge Iron India Ltd. | Nil | 0.06 | 0.0025 |
| **Sub Total** | **55.99** | **57.32** | **24.3125** |
| **Private Sector** | | | |
| Tata Iron & Steel Co. Ltd. | 14.31 | 10.03 | — |
| Mukand Ltd. | 0.4942 | 0.6532 | 0.2029 |
| Sunflag Iron & Steel Co. Ltd. | 3.00 | 3.00 | — |
| Usha Martin Industries Ltd. | 0.26 | 0.23 | — |
| UMI Alloy Steels Ltd. | 0.21 | — | — |
| Ferro Alloy Corpn. Ltd. | 0.06994 | 0.0516 | 0.0187 |
| Mahindra Ugine Steel Co. Ltd. | 0.3870 | 0.5446 | 0.5000 |
| **Sub Total** | **18.73** | **15.51** | **0.42** |
| **Grand Total** | **74.72** | **71.83** | **24.73** |

**Area(s) of Research**

The approved proposals cover the areas of energy efficiency improvement in secondary steel sector (EAF/IF), beneficiation of Iron Ore Slimes, improvement of coking characteristics of non-coking coal, new mining methods & techniques for ground control to enable mining of rich Manganese Ore, and development of on-line expert system for continuously cast products. (billets/ blooms/ slabs).

Performance of individual/undertakings during 1998-99 are reported to have been as follows:

## Steel Authority of India Limited (SAIL)

Research and Development Centre for Iron and Steel, SAIL, Ranchi is trying to meet challanges in technological expertise and competence to fulfil the need of SAIL steel plants and customers.

### Significant Achievement

**New technology/Process**

**1997-98**

- An increase in specific productivity by 20% has been achieved in Sinter Machine # 1 of DSP through improved suction and uniformity of sintering process. Productivity of Blast Furnace #4 of RSP has been increased to 1600 t/day by optimising the tuyere parameters and drainage practice.
- One emulsion burner has been designed, fabricated and tested in both old and new boilers of BSP using Pitch Creosote Mixture (PCM). In proper mixing of air for combustion and the emulsion could be obtained and three such burners have been installed resulting in additional generation of 20 t/hr of steam at a pressure of 40 bar.
- An improved heating facility for ladle on Steel Transfer Car (STC) in SMS-II,. BSL has been designed, fabricated, installed and commissioned. It has resulted in complete elimination of cold heat; heating of circulating ladles up to 900-1000 C; and improvement of ladle life of 24.8 to 25.8 heats.

**1998-99**

- The strip rinsing system in Pickling Line (PL) #2 at BSL, was improved with the introduction of flat jet Poly Venyl-Di Flourine (PVDF) nozzles and modified poly-propylene rinsing headers. This resulted in reduction in chloride ions in emulsion of Tandem Cold Mill (TCM) - II from average 200 ppm to 60 ppm. Brighter strips with increase in average surface reflectance from 40% to 70% was achieved by introducing air wiping system in TCM-II and wet skin pass system in Skin pass Mill-II. The overall impact of these activities lead to reduction of diversion of CR products due to surface defects like black patch, soot and rusting etc. to 0.1%.
- The mathematical models were developed using a new technique namely, Artificial neural network (ANN) for predicting the campaign life of BOF using real life data from DSP. Prediction results with ANN technique were much better than those obtained from other techniques like Group Method of Data Handling (GMDH) and regression. The prediction errors were within 6%.
- A control system has been designed, developed and implemented at DSP for automatic positioning of coiler jaws. The control system consists of PLC, Non-contact Infrared Sensors and mechanical gear reducer assembly. This control system adopts dynamic breaking and armature current control for slow rotation of coiler motor. This system has eliminated the earlier practice of manual jaw alignment.
- The technology of slag splashing was introduced in Converter-C of SMS-1, BSL in Aug'97 after extensive cold model and hot model studies. The technology has been extended to converter-B, D and E. There has been considerable improvement in converter lining life after introduction of slag splashing facilities.
- RDCIS along with IIT, Kharagpur has developed a laboratory scale remote viewing optical sensor based instrumentation for detection of onset of slag in the molten steel stream on two principles viz emission spectrum technique and image processing technique.
- In order to avoid the problem of deslagging the hot metal after desulphurisation at RSP laboratory experiments were carried out with emulsified slag sample collected from DSP & RSP using various additives. It was found that lime addition (optimum-20%) proved helpful in fludising the slag in hot metal with a metal separation of around 80% of total weight of slag metal emulsion.

### Development of new products

**1997-98**

- Experimental production of spade M-1 plates at RSP
- Development of modified 409M abrasive and corrosion resistance stainless steel at RDCIS.

**1998-99 (upto September, 1998)**

- Development of SAE 1020 steel at BSL.
- Development of low nickel austenitic stainless steel through ASP-SSP route at SSP.
- Development of fire resistant steel at RDCIS.

**Energy Conservation**

Consumption of energy in four integrated steel plants (all forms to G. Cal.) including electricity consumption (KWH) per tonne of crude steel have been as follows:





| Year | Target | Performance |
|---|---|---|
| 1996-97 | 8.65 | 8.39 |
| 1997-98 | 8.45 | 8.28 |
| 1998-99 (Upto Sept.98) | 8.10 | 8.28 |

**R&D Expenditure**

(Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 14131 | 45.53 | 0.32 |
| 1997-98 | 14624 | 47.05 | 0.32 |
| 1998-99 (Upto Sept.98) | 6794 | 20.02 | 0.29 |

## The Tata Iron and Steel Company Limited (TISCO)

**Objectives of R&D Activities**

- To make Tata Steel a Profitable & World class producer of Quality Steels.
- To identify and develop new products and processes so that the Company stays ahead of its competitors.

**Significant Achievement during 1998-99**

- Two grades of interstitial free(IF) steels (Nb & Ti-stabilised) have been commercialized; the customers have found the r-values ( 1.9) quite attractive.
- Si-free (Semi-processed ) Electrical Steels have been developed and marketed. The watt-loss values of ≈ 5W/kg (at 0.5 mm, 1.5 T, 50 Hz) have been fully accepted by the customer.
- Corrosion Resistant (CRS) rebars (CRS-42) through the CC route (without LF) have now been commercially introduced. CRI values are attractive.
- An appropriate coal blend has been worked out for battery No. 8 (during its prestabilisation period) in order to produce acceptable coke under safe coking operation.
- An off-line simulator for the ladle cycle at LD#2 has been developed which predicts the bulk temperature of liquid steel at any stage in the cycle as well as the thermal profile of the refractory linings.
- Grinding aid for the grinding of cement clinker at Sonadih has been recommended that would result in productivity increase by 2.5 tph and power reduction of about 4%.
- A new reagent based on CaO-Al-$CaF_2$ has been developed for desulphurisation at OLP; plant trials have established that for non-desulphurised heats, the reduction in sulphur upto 40% can be achieved.
- An optimised procedure has been identified for producing good quality S.G. Iron Pellets of IS-400/12 grade.

**Energy Conservation**

Total Energy Consumption in G. Cal/tonne of Crude Steel during last 3 years has been as follows :

| 1996-97 | 1997-98 | April-Sept.,1998 |
|---|---|---|
| 8.717 | 8.355 | 8.321 |

Major Achievements in Reduction of Energy Consumption:

- Higher Coke Oven gas yield by 6N cum/t is achieved during April-Sept.'98.
- The middling coal consumption for steam & power generation is reduced significantly by 41358 t in boilers due to higher usage of by-product gases.
- Lowest specific Petro-fuel consumption of 5.38 Kg/tss is achieved.
- The system of oxygen enrichment of cold blast in A-F Blast Furnaces was commissioned in April '98 for better furnace productivity.
- Rich Coke Oven Gas firing system was introduced in M/c. # 1 of Sinter Plant # 1 for better energy efficiency.
- Lowest-ever Plant Specific Energy Consumption of 8.321 Gcal/tcs during April-Sept'98 achieved.

**R&D Expenditure**

(Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 6351.46 | 14.31 | 0.22 |
| 1997-98 | 6433.49 | 10.03 | 0.16 |
| 1998-99 (Upto Sept.98) | — | — | — |

## Rashtriya Ispat Nigam Ltd. (RINL)

### Objectives/Thrust on R&D

The research and development efforts of the company are directed towards process improvement in the form of carrying out small but decisive changes, continuous search for variation in raw materials, recycling of wastes, additions in the technologies available in the company and optimisation of process parameters to derive the benefits of enchanced efficiency, reduction of cost, improved productivity and improved product quality.

### Highlights of the R & D Activities

- Production and stabilization of 12 mm rebar in Wire Rod Mill (WRM)
- Stabilization of two line rolling of higher diameter rounds and rebars in Bar Mill.
- Production of high carbon and forging quality steel through ladle furnace for special applications.
- During the period April-September'98 Spring steel billets were developed.
- R&D Expenditure

(Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 3339.00 | 2.5 | 0.08 |
| 1997-98 | 3071.19 | 2.5 | 0.081 |
| 1998-99 (April-Sept.98) | 1404.76 | 1.25 | 0.089 |

### Energy Conservation

| Parameters | Unit | 96-97 | 97-98 | 98-99 (Till Sept.98) |
|---|---|---|---|---|
| BF Coke rate Specific energy consumption | Kg/thm | 513 | 515 | 499 |
| | Gcal/tls | 7.59 | 7.56 | 7.68 |
| Heat conspn in Sinter Plant | Mcal/tls | 77 | 59 | 61 |
| Heat conspn. in Blast Furnace | Mcal/tls | 572 | 540 | 535 |
| Heat conspn. in SMS | Mcal/tls | 79 | 72 | 72 |

### Savings during last 3 years:

| Item | Unit | 96-97 Vol. | 96-97 Rs.Cr. | 97-98 Vol. | 97-98 Rs.Cr. | 98-99 (till Sept.) Vol. | 98-99 (till Sept.) Rs.Cr. |
|---|---|---|---|---|---|---|---|
| LD gas Generation | NM Cube | 206.1 | 7.16 | 229.9 | 9.77 | 118.7 | 5.63 |
| Power generation at BPTS | MWH | 5754 | 8.64 | 78919 | 11.84 | 36889 | 5.53 |
| Power generation at GETS | MWH | 81820 | 12.17 | 63920 | 9.59 | 40575 | 6.09 |

## Kudremukh Iron Ore Company Limited (KIOCL)

### Objectives of R&D Activities:

1) Objective of R&D activities at KIOCL are directed towards quality improvement through process development/modifications to suit multiproduct needs and to modify Process Flow Chart. Various value added by-products are also being developed like ceramic Tiles, super concentrate etc., with a view to optimise/ extend existing production activities.

### Details of Activities

R&D activities undertaken at KIOCL include implementation of new technology/processes like Column Flotation and High Rate Thickner for reduction of silica in final product to enable value addition and ensure better quality pellets. Also after identification of problems like high material and energy consumption, studies are undertaken to minimise high value material consumption and also energy consumption. This is a continuous process and is tackled on merit of the cases.

M/s J.K. Tech of Australia have been engaged for studies on optimization of energy consumption for Ball Mill Regrinding circuit as grinding consumes major portion of energy for the process requirement.

M/s Met-Chem of Canada have been engaged for mathematical modeling and detailing statistical process control methods for pellentsation.





### R&D Expenditure

(Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 492.59 | 1.25 | 0.25 |
| 1997-98 | 593.91 | 2.00 | 0.33 |
| 1998-99 (Upto Sept.98) | 247.40 | 0.60 | 0.24 |

## Manganese Ore (India) Limited

### Objectives and Thrust Areas

The R&D efforts in MOIL have mainly been directed in the following areas:

i) Development of alternative Mining and Support methods.
ii) Exploratory Core drilling, Trenching, Pitting etc. for locating new reserves and upgrading the confidence levels of the existing reserves.
iii) Beneficiation of medium and low grade ore, as well as medium grade Dioxide ore to battery grade.
iv) Development of processes for manufacture of Manganese base compounds.
v) Improvement of surface environment around mining areas.

### R&D Expenditure

(Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 108.39 | 0.77 | 0.71 |
| 1997-98 | 112.80 | 0.85 | 0.75 |
| 1998-99 (Upto Sept.98) | 52.62 | 0.19 | 0.36 |

## Sponge Iron India Ltd.

### Objective/Thrust on R&D:

1) To develop further the existing direct reduction process and operation in order to lower the specific consumption norms of raw materials as well as to improve overall economics of operations.
2) To find out and assess the techno economic feasibility of raw materials received from agencies if any, to whom technical know-how is imparted for sponge iron manufacture.
3) Better utilization of waste products and energy generated during the process to boost the economics of the reduction process.

### Highlights of R&D Activities

- New Technology/Process:
- Development of a suitable and convenient system in order to inject iron ore fines into the rotary kiln for coverting them into sponge iron fines is almost near to completion.

### Productivity Improvement

- By injecting waste iron ore fines of less than 3mm size from the discharge end of rotary kiln for reduction improved the productivity of the plant.
- Reduction in consumption of material and improvement in yield and quality: By increasing the production with the help of reduction of iron ore fines by injecting them from discharge end of rotary kiln reduced the overall specific consumption of iron ore per metric tonne of production.

### Reduction in Energy Consumption

- The development of suitable liner in the feed tube helps to change the profile of flow of material at the preheating zone leading to better utilization of energy supplied from reductant i.e coal.

### Development of New Products

- Experiments are under progress for reducing Manganese ores using solid reductants i.e. non-coking coal and lignite.

### Quality Improvement Programme

- Better utilization of energy by incorporating specially lined feed tube helps for maintaining quality further consistantly.

### Energy Conservation

| Period | Target kwh/T Of sponge iron | Actual performance | Improvement over previous year % |
|---|---|---|---|
| 1996-97 | 160 | 160 | 11 |
| 1997-98 | 160 | 116 | 27 |
| 1998-99 (Upto Sept.98) | 160 | 100 | 14 |

R&D Expenditure (Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 25.48 | - | - |
| 1997-98 | 20.74 | 0.06 | 0.29 |
| 1998-99 (Upto Sept.98) | 13.06 | 0.0025 | 0.02 |

## National Mineral Development Corporation Ltd.

**Objectives of R&D Activities**

To achieve optimum utilization of mine wastes and production of value added products.

**Highlights of R&D Activities**

- Development of process for production of synthetic Rutile & High Grade Ferric Oxide from Ilmenite concentrate obtained from Bhimunipatnam beach stands.
- Development of Ferrite powder mix from High Grade Ferric Oxide/UPFO.
- Process Development for treatment of UPFO effluents.
- Development of mineral Beneficiation process for production of High Grade Ferric Oxide from Blue Dust.
- Setting up of Pilot Plant for Brick/Hollow Bricks for Kimberlite waste and its evaluation.
- With the implementation of Prem-Roll magnetic separation technique based on R&D studies in the diamond processing plant at Diamond Mining Projects, Panna, there is a substantial increase in production and productivity.

**R&D Expenditure** (Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 649.25 | 5.94 | 0.91 |
| 1997-98 | 757.67 | 4.86 | 0.65 |
| 1998-99 (Upto Sept.98) | 383.94 | 2.25 | 0.59 |

## Sunflag Iron & Steel Company Ltd.

**Highlights of R&D activities (1998-99)**

- Post Combustion Injection Technology in EAF for enhancing Oxygen usage & Energy saving.
- Intelligent Arc Furnace Controller for opting EAF operation, electrode, productivity, power and refractory consumption.
- Gainful utilization of Iron Ore fines.
- Power input optimisation to reduce further power consumption.

**Improvement in Energy Consumption**

Consumption of Energy (all forms of G'Cal) including Electricity consumption (kwh) per tonne of Crude Steel for whole plant;

| Period | Plant Target (Geal/TCS) | Actual (Geal/TCS) ance | Improvement over previous year % |
|---|---|---|---|
| 1996-97 | 8.80 | 8.700 | +11.1 |
| 1997-98 | 8.5 | 8.709 | -0.10 |
| 1998-99 (Upto Sept.98) | 8.3 | 9.377 | -7.67 |

**R&D Expenditure** (Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | — | 3.00 | — |
| 1997-98 | 338.85 | 3.00 | 0.885 |

## Malvika Steel Ltd.

**Highlights of R&D Activities**

a) Modification in BF refractory lining.
b) Modification in Cast House runner design and layout.
c) Increasing the length of PCM-II.
d) Modification in ladle repair shop.
e) Modification in pig yard.
f) Modification of the PCM runner ("Y" shape from "I" shape)
g) Nut Coke charging in BF on a regular basis.
h) Stock Rod modification.
i) Gas seal pressure measurement.





j) Continuous monitoring of burden permeability, velocity at tuyeres and the raft temperature has been incorporated in the PCC system.
k) Development of Level-2 automation.

## Ferro Alloys Corporation Ltd.

**Objectives**

Product/process development, improvement in existing furnace operations in the production of Ferro alloys, Pollution Control and Energy Conservation.

**Highlights of Achievements, 1998-99**

**New Technology process**

- Usage of hot charge mix (chrome concentrate+Lime) directly in the production of low carbon Ferro chrome.
- Balancing of fixed carbon inputs in the form of Coke & Coal in the production of HC FeCr, HC FeMn and SiMn to get low Phosphorus content in the alloy around 0.025 to 0.030% and better electrode management.
- SiCr Slag as flux in the production of HC Ferro Chrome.
- Waste product in the production of Sea Water Magnesia is used as binder along with molasses in agglomeration of chrome ore fines.

**Productivity Improvement**

- Introduced nozzle tappings in the production of HC FeCr and SiMn for better productivity.
- Sensible heat from the hot metal is used during casting to increase the productivity by dressing 3-10mm metal chipps in the pans

**Reduction in Energy Consumption**

- Usage of beneficated ore agglomerates in the production of HC FeCr, improved the productivity and also reduced the specific power consumption.
- Change in the orientation of charging chutes in the submerged arc smelting furnaces helped in avoiding heat losses and considerable advantage in specific power consumption of the alloy.

**R&D Expenditure** (Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1995-96 | 149.43 | 0.0816 | 0.055 |
| 1996-97 | 133.35 | 0.06994 | 0.052 |
| 1997-98 | 146.78 | 0.0516 | 0.035 |
| 1998-99 (Upto Sept.98) | — | 0.0187 | — |

## Mukand Limited

**Objectives**

- Yield improvement and quality upgradation for customer satisfaction.
- Increase in exports and substitution in imports.

**Process Development**

1. Computer based Mathematical Modelling for quality improvement in susceptible grades.
2. Improvement in Welding characteristics of Cr-Mo steels for foundry.
3. Standardisation of metalllurgical parameters for $M_4CrMO$ steel castings.
4. Development of High Emmissivity Coating for foundry furnaces.

**R&D Expenditure** (Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 868.49 | 0.4942 | 0.06 |
| 1997-98 | 816.50 | 0.6532 | 0.08 |
| 1998-99 | NA | NA | NA |

## Mahindra Ugine Steel Company Limited

**Highlights on R&D activities(1998-99)**

**Development of New Technologies & Products**

- New Polygonal ingot of 6 T developed which reduced the tendency of ingots developing longitudinal corner cracks.
- Hydraulically operated slide gate system installed in the Arc Furnace which prevents carry over of slag; thus improving cleanliness.
- Hydraulic circuit of 2 Centro-Maskin machines modified to reduce one motor of 7.5 KW each.
- Water seal being incorporated in Rolling Mill Walking Beam Furnace to save heat losses.

**R&D Expenditure** (Rs. in crores)

| Year | Turnover | Expenditure R & D | R&D Expenditure as % of turnover |
|---|---|---|---|
| 1996-97 | 317.83 | 0.3870 | 0.12 |
| 1997-98 | 259.11 | 0.5446 | 0.21 |
| 1998-99 (Budgeted) | 100.00 | 0.5000 | 0.50 |

# MANAGEMENT INFORMATION SYSTEM

The Computerised Management Information System (MIS) developed for Department of Steel with the assistance of National Informatics Centre (NIC) is functional in the area of Accounting and Budgeting, Section Activity Monitoring System, Industrial Entrepreneurs Memoranda System, VIP References Monitoring, Public Grievances Monitoring and Steel Control & Supply(Imports/Exports, Duties, Prices, apparent consumption and category-wise production.

The Computer Centre in the Department has been established as central facility is equipped with two Pentium Servers (Unix & Windows-NT based) and 3 nos. of Pentium based Client nodes, one no. Scanner for document imaging operations and switches & hubs as a backbone for Local Area Network and Internet Operations in the Department. Apart from NIC Central facility, about 50 Pentium/486 based computers as a client nodes on LAN have been operational with various Senior level Officials and key desks/ sections in the Ministry.

A Local Area Network of about 50 nodes has been established in the Department with the assistance of NIC for resource and information sharing among the various user communities in the Department. The Internet access has been provided on all 50 nodes for browsing and E-mail operations. Efforts are being made to establish Department-wide Intranet by opening Work-flow and Web-enabled applications in Iron & Steel Sector. E-mail accounts on Internet has been created for various Users in the Department for making smooth workflow between Department's PSUs and other sub-ordinate Offices on day-to-day basis.

A Homepage on Internet has been launched for Department of Steel with the assistance of NIC, which provides details on Iron & Steel Sector Policies, Demand and Supply Trends on Steel Sector. The Homepage is being updated regularly.

NIC Computer Centre is actively involved in promoting software standardization by providing Window-based Office Automation suits and a move towards paperless office. Various in-house training programmes on LAN operations, E-mail & browsing operations on Internet and Windows-based Office Automation Suits have been organised by NIC Computer Centre in the Department from time to time.

A Five-year IT Plan has been prepared for the Department in which 2 to 3% budget has been earmarked for providing computers, software development and training to the users in the Department. In this Plan, main emphasis has been given to computerise monitoring and work-flow applications in the first phase. Subsequently, the databases will be setup in Iron & Steel Sector with the closer co-operation of Department's sub-ordinate offices & PSU's.





# ORGANISATIONAL STRUCTURE

The Department of Steel is under the charge of the Minister of Steel and Mines who is assisted by Minister of State for Steel and Mines

The Department is responsible for the planning and development of Iron & Steel Industry, development of essential inputs such as iron ore, lime stone, dolomite, manganese ore, chromite, ferro alloys, sponge iron etc. and other related functions. There are 10 Public Sector Undertakings under the administrative control of the Department of Steel. The details are given in Annexure-I

The Department has a Secretary, 3 Joint Secretaries, 4 Directors, 4 Deputy Secretaries (including one Under Secretary promoted as Deputy Secretary in situ on ad hoc basis), 9 Under Secretaries (including 3 Section Officers promoted as Under Secretaries in situ on ad-hoc basis) 2 development officers, one Deputy Director (Official Language) and other supporting level officers and staff. The Department also has a common Financial Adviser in the rank of Additional Secretary and a common Chief Controller of Accounts with the Department of Mines. A Technical Wing, consisting of an Industrial Adviser, 2 Development Officers, 2 Assistant Development Officers provides support and give advice in respect of technical matters.

The Organisational Chart of the Department is at Annexure-II. The details of classification/category of personnel in position are given in Annexure-III.

The Department has an attached office viz., Office of the Development Commissioner for Iron & Steel (DCI&S) at Calcutta. The DCI&S is an Officer of the rank of Joint Secretary and is assisted by a Joint Development Commissioner. The Organisational Chart of the Office of DCI&S is at Annexure-IV

Annexure -I

## List of Public Sector Undertakings under the Administrative Control of the Department of Steel

1. Steel Authority of India Limited (SAIL), Ispat Bhavan, New Delhi-110003.

1.1 Indian Iron and Steel Co. Ltd.(IISCO), Burnpur, Distt. Burdwan, West Bengal-713325.

1.2 IISCO, Ujjan Pipe and Foundry Ltd., 50, Chowrangee Road, Calcutta-700071. (Subsidiary of IISCO, Under liquidation).

1.3 Visveswaraya Iron & Steel Ltd., Bhadravati, Karnataka -577301. (Subsidiary of SAIL)

1.4 Maharashtra Elektrosmelt Ltd., Mul Road, Chandrapur-442401. Maharashtra ( Subsidiary of SAIL)

2. Rashtriya Ispat Nigam Ltd.,(RINL) Administrative Building, Visakhapatnam-530031, Andhra Pradesh.

3. Metallurgical and Engineering Consultants (India) Limited (MECON) , MECON Building Ranchi-834002, Bihar.

4. Kudremukh Iron Ore Co. Limited (KIOCL) II Block, Kormangala, Bangalore-560034, Karnataka

5. National Mineral Development Corpn. Ltd. (NMDC), Khanij Bhavan, 10-3-311/A, Castle Hills, Hyderabad-500028, Andhra Pradesh.

5.1 J&K Mineral Development Corporation, 19/9, Trikuta Nagar, Jammu-180012.(Subsidiary of NMDC).

6. Hindustan Steelworks Construction Ltd., (HSCL), No.1, Shakespeare Sarani, 8th Floor, Calcutta-700071, West Bengal.

7. Bharat Refractories Ltd., (BRL), Sector IV, Central Avenue, Bokaro Steel City, Bokaro-827004, Bihar.

8. Sponge Iron India Limited (SIIL), Khanij Bhavan, 10-3—311/A, Castle Hills, Hyderabad-500028, Andhra Pradesh.

9. MSTC Ltd., 225-F, Acharya Jagdish Bose Road, Calcutta-700020, West Bengal.

9.1 Ferro Scrap Nigam Limited (FSNL), FSNL Bhavan, Post Bag No.37, Equipment Chowk, Central Avenue, Bhilai-490001, Madhya Pradesh (subsidiary of MSTC Ltd.)

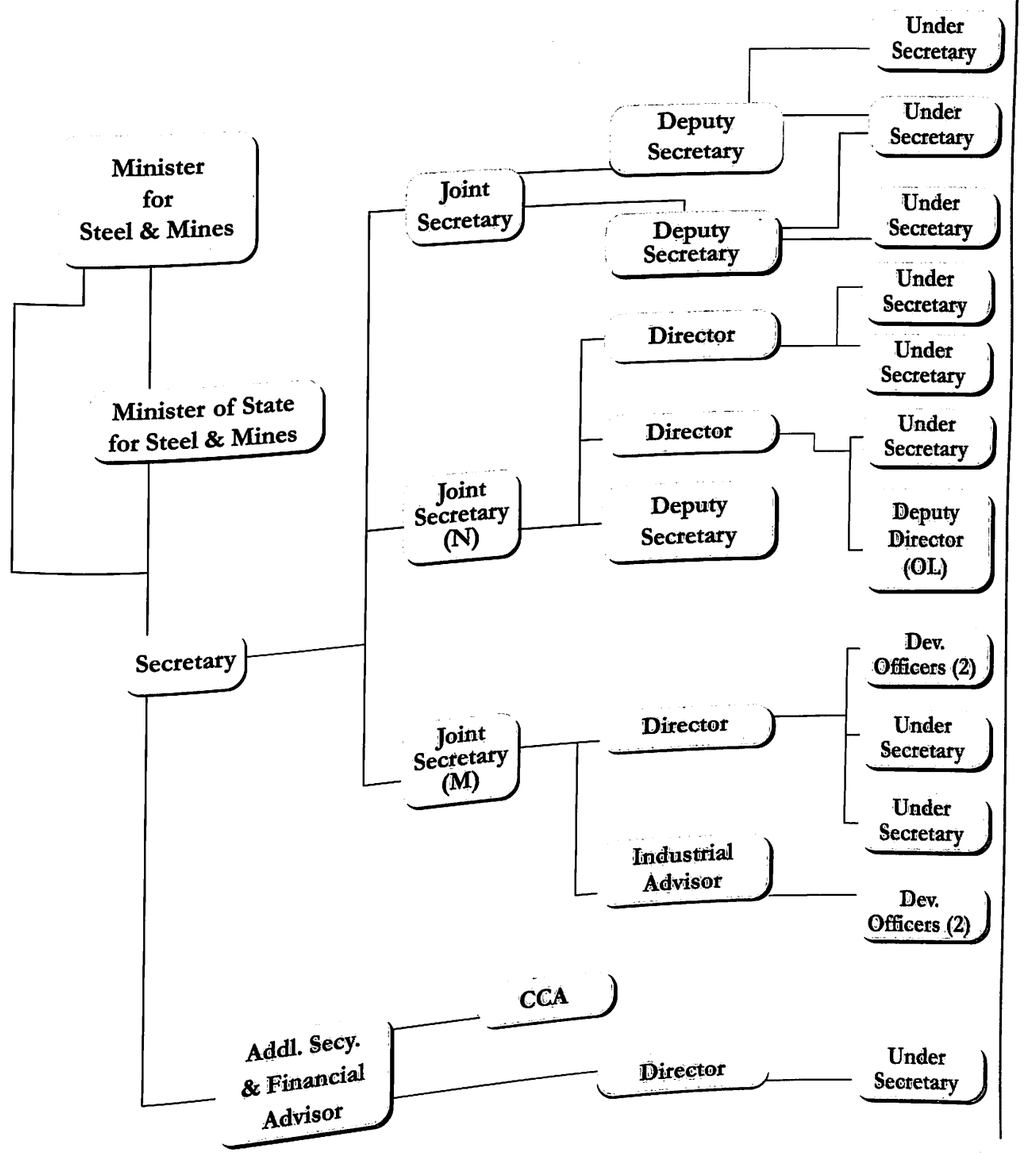
10. Manganese Ore India Limited (MOIL), 3, Mount Road Extension, Post Bag No.34, Nagpur-440001, Maharashtra.





Annexure-II

## Department of Steel Organisational Chart



Annexure-III

## Statement showing the number of SC/ST/OBC/Ex-Servicemen, Men and Women as on 1.11.98 in respect of Department of Steel (Sectt.)

| Classification of Post | No. of Employees in position | Men | Women | SC | ST | OBC | PH | Ex-SER. |
|---|---|---|---|---|---|---|---|---|
| Group 'A' | 34 | 30 | 04 | 05 | 0 | 1 | - | - |
| Group 'B' | 87 | 70 | 17 | 13 | 6 | 4 | - | - |
| Group 'C' | 91 | 64 | 27 | 18 | 5 | 9 | 1 | - |
| Group 'D' | 72 | 69 | 03 | 32 | 9 | 6 | 1 | 1 |
| **Total** | **284** | **233** | **51** | **68** | **20** | **20** | **2** | **1** |

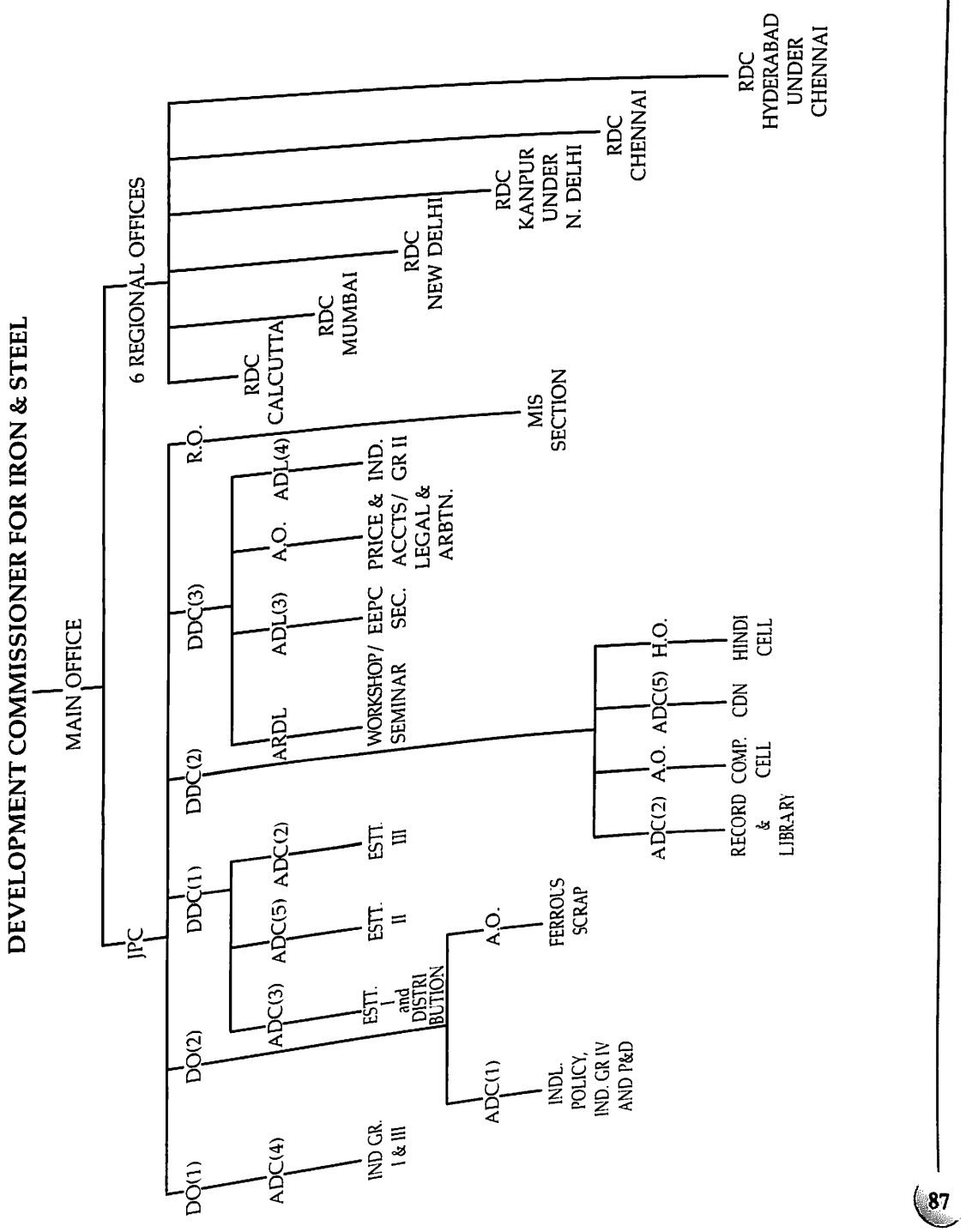




Annexure-IV

## Office of the Development Commissioner for Iron & Steel

Organisational Chart



# WELFARE OF WEAKER SECTIONS

A Cell under the charge of a Liaison Officer functions for monitoring implementation of Government policy relating to reservations for the representation of Scheduled Castes, Scheduled Tribes and other backward classes in the Department of Steel, the attached and subordinate offices and the Public Sector Undertakings under its administrative control. Periodic reviews and annual reports received from the Public Sector Undertakings regarding recruitment/ promotion of SCs/STs/OBCs against the vacancies reserved for them are scrutinished in the Cell and appropriate instructions issued to the PSUs and attached office as and when necessary.

The actual record of PSUs in respect of representation of SCs/STs/OBCs during 1998-99 is indicated below:

## Steel Authority of India Limited (SAIL)

### Recruitment and relaxation

Recuritment for non-executive cadre in SAIL is done through Employment Exchange and reservation for weaker sections is provided as per the directives of the Government.

Recruitment for executives cadre/direct recruitment is done on an All India basis through open competition and/ or campus selection in the executive grade of MT (Tech.), MT(Admn) and JM(F&A). For the weakersections, relaxation in the prescribed standards including relaxation in the age limit are provided.

The candidates belonging to weaker sections who do not qualify in the written test are selected for pre-employment training on a fixed monthly stipend. On completion of the training, they are given regular employment in the executive cadre of MT(T)/MT(A)/JM(F&A).

Percentage of SC/ST employees in SAIL (excluding subsidiaries), total recruitment and total promotions during the year 1997 was as under:

| | |
|---|---|
| Percentage of SC/ST to total manpower in SAIL. | 26.35% |
| Percentage of SC/ST to total recruitment during the year in SAIL. | 27.36% |
| Percentage of SC/ST to total promotions during the year in SAIL. | 23.42% |

Scholarship for undergraduate engineering students :

SAIL has introduced scholarships for the weaker sections of the society.The brief of which are as under :

- Eligibility: Annual income from all sources of the parent/ guardian of the student should not exceed Rs.15,000/-.
- Amount of Scholarship is @ Rs.450 p.m.
- No. of Scholarships provided are : 14.

Besides, scholarships to the blind, deaf and dumb, orthopedically handicapped and disabled children of employees are extended in the SAIL plants/units.

### Peripheral Development

During the year 1996-97 and 1997-98, approximately 47 million and 40 million respectively were spent on various peripheral activities. The following welfare activities are in vogue in SAIL plants/units.

- Electricity, water, housing etc., free of charges
- Free education facility, including adult education, periodical literacy programme, film show etc.
- Free medical facility –mobile dispensary, regular eye camps, family planning camps for weaker sections
- Well-equipped big play-grounds promoting sports activities
- Employment generation schemes- through various construction & developmental activities etc.

### Land

During 1997-98, land for different sports and cultural activities, steel for building of school, and transfer of land for Jhuggi dwellers were given by SAIL as part of company's policy/commitment towards social development and upliftment of weaker sections of society.

## Rashtriya Ispat Nigam Limited (RINL)

Activities undertaken by RINL/VSP for the Advancement of SCs/STs/OBCs are:

a) Presidential Directives in respect of reserverations for Scs/STs/OBCs in recruitment and promotions etc. are strictly followed.

b) Reservations in allotment of houses (10% for A&B types and 5% for C&D types) have been provided and implemented for SC/ST employees.





c) A Sports and Cultural Festival was organised during the month of April, 1998 at Community Welfare Centre, Ukkunagaram in connection with Dr. BR. Ambedkar Jayanthi celebrations - 1998. Painting & Essay writing competitions were also conducted for the school children during the celebrations.

d) In addition to the above, RINL/VSP has introduced a Scholarship Scheme exclusively for the children of SC/ ST employees under which two scholarships of Rs.250/ - (Rupees Two Hundred and Fifty only) per month and one more scholarship of Rs.150/-(Rupees One Hundred and Fifty only) per month are awarded each year. RINL has also launched a Merit Cash Award Scheme for the students of SC/ST Communities under which a First Merit Award of Rs.500/- (Rupees Five Hundred only) are given to students who pass Tenth Class every year from each of the schools in the Company's Township.

Training programmes etc. conducted during the period is as under:

**Comprehensive Managerial Programme**

| S.No | Category | 1998-99 (Upto 31.10.98) |
|---|---|---|
| 1. | General | 220 |
| 2. | SC | 50 |
| 3. | ST | — |
| 4. | OBC | 65 |
| 5. | Phy. Handicapped | — |
| 6. | Women | 32 |
| | **Total** | **367** |

**HRD Training Programme**

| S.No. | Category | 1998-99 (Upto 31.10.98) InHouse | External |
|---|---|---|---|
| 1. | General | 552 | 135 |
| 2. | SC | 155 | 27 |
| 3. | ST | 94 | 3 |
| 4. | OBC | 188 | 22 |
| 5. | Phy. Handicapped | 1 | — |
| 6. | Women | 71 | 8 |
| | **Total** | **1,061** | **195** |

**Development Programmes conducted**

| S.No. | Category | 1998-99 (Upto 31.10.98) |
|---|---|---|
| 1. | General | 2,640 |
| 2. | SC | 539 |
| 3. | ST | 186 |
| 4. | OBC | 562 |
| 5. | Phy. Handicapped | 7 |
| 6. | Women | 95 |
| | **Total** | **4,029** |

**Freshers inducted through Training Scheme**

| S.No. | Category | 1998-99 (Upto 31.10.98) Executive | Non-executive |
|---|---|---|---|
| 1. | General | 126 | 2 |
| 2. | SC | 75 | 8 |
| 3. | ST | 12 | 42 |
| 4. | OBC | 130 | — |
| 5. | Phy. Handicapped | — | — |
| 6. | Women | 10 | — |
| | **Total** | **353** | **52** |

Statistical information regarding representations of SC/ST/ OBC/Women/Physically Handicapped/Ex-Serviceman is as under:

| Classification | Total No. | No. of Men | % of Men | No. of Women | % of Women | No. of SC | % of SC | No. of ST | % of ST | No of OBC | % of OBC | No. of PH | % of PH | No. of Ex-s | % of Ex-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gr A | 3343 | 3186 | 95.30 | 157 | 4.70 | 520 | 15.25 | 121 | 3.62 | 426 | 12.74 | – | – | – | – |
| Gr B | 1559 | 1550 | 99.42 | 9 | 0.58 | 308 | 19.76 | 114 | 7.31 | 273 | 17.51 | 2 | 0.13 | 18 | 1.15 |
| Gr C | 9358 | 9157 | 97.85 | 201 | 2.15 | 1547 | 16.53 | 560 | 5.98 | 1668 | 17.82 | 33 | 0.35 | 110 | 1.18 |
| Gr D | 3212 | 3149 | 98.04 | 63 | 1.96 | 535 | 16.66 | 238 | 7.41 | 730 | 22.73 | 36 | 1.12 | 112 | 3.49 |
| Total | 17042 | 17042 | 97.54 | 430 | 2.46 | 2910 | 16.66 | 1033 | 5.91 | 3097 | 17.73 | 71 | 0.41 | 240 | 1.37 |

| Classification of post | Vacancy Notification from 1.1.98 to 31.10.98 | | | | Vacancies Filled by | | | |
|---|---|---|---|---|---|---|---|---|
| | Other Community | SC | ST | OBC | Other Community | SC | ST | OBC |
| Group A | 14 | 3 | 2 | 5 | 166 | 86 | 12 | 159 |
| Group B | – | – | – | – | – | – | – | – |
| Group C | 3 | 3 | 2 | 1 | 3 | – | – | 2 |
| Group D (excluding sweepers) | 8 | 2 | 1 | 5 | 1 | 2 | – | – |
| **Total** | **25** | **8** | **5** | **11** | **170** | **88** | **12** | **161** |

**Note:** Some of the posts were notified in the year 1997, but filled in the year 1998 and the recruitment for some of the posts notified recently is still under process.

## National Mineral Development Corporation Limited (NMDC)

### Manpower

The total number of regular employees in NMDC as on 30.9.98 was 6691 out of which 1073 persons belong to Scheduled Castes (16.03%),1187 Scheduled Tribes (17.74%), 267 OBCs (4%) and 389 women (5.81%).

### Other Welfare Measures

The Corporation gives facilities for promotion of education among the children of SCs/STs by offering scholarships in Local Kendriya Vidyalayas and by providing free education facilities to children of tribals who seek admission in project schools. A school exclusively for children of tribals is being run by the Corporation at the Bailadi- la-5 Project. NMDC has helped State Government for running of ITI at Bhansi exclusively for Tribal youths, by providing the entire infrastructural facilities for running this ITI. The local people are given training at the trining institutes run by NMDC through the Apprenticeship scheme. All tribals residing in the project area are offered free medical facilities at the NMDC project hospitals. Members of Scheduled Tribe communities avail of the service of the Project Cooperative Societies, even if they are not employees of the Corporation.

At Bailadila Projects, NMDC has constructed two community centres. Weekly film shows and other entertainment are provided at these centres. A weekly market (Haat) is being organised in Kirandul and Bacheli where the Adivasis get an opportunity to sell their products directly to consumers. NMDC also had been helping the villages around the Projects by providing hand pumps, digging wells for providing drinking water, mobile dispensary facilities, construction of approach roads to their villages etc.

As part of peripheral development programme, skill development programme for ST candidates of nearby villages adjoined Bld-14 and Bld-5 projects at the training institute, Kirandul were continued with good response from Adivasis.

### Training Programmes

In the training programmes conducted during, the year 1998-99 (Upto Sept.98), SC/ST/OBC/Physically Handicapped and Ex-servicemen were also covered. The details are given in the following Table:

| Year | SC | ST | General (Incl.OBCs, PH & Ex Servicemen) |
|---|---|---|---|
| 1998-99 (upto Sept.98) | 161 | 181 | 1081 |

## Kudremukh Iron Ore Company (KIOCL)

### Manpower

The total number of employees in KIOCL as on 30/9/98 was 2,457 out of which 356 persons belong to SC (14.48%), 90 persons belong to ST (3.66%) and 15 persons belong to OBC (0.6%), moreover there are 154 women (6.26%), 29 Physically Handicapped (1.18%) and 124 Ex-servicemen (5.04%).

### Welfare Measures

a) The Company has set up full fledged facilities at Kudremukh and Mangalore establishments by establishing modern township, hospital, recreation facilities etc., 10% type "A" & "B" quateres and 5% "C" & "D" quarters are reserved for SC/ST employees.





b) 8 number of Merit-cum-Means and Merit Scholarships are reserved for children of SC/ST employees for whom the qualifying standard of First Class or 60% whichever is higher is relaxable to 50% in the agreegate.

### Periodic meetings with SC/ST Representatives

SC/St Cell Liaison Officer meets the SC/ST Welfare Association periodically at Kudremukh, Mangalore and Bangalore. The Management representatives also meet the Welfare Association once in a quarter besides the CMD meeting them one in a xis months. The grievances of SC/ST employees are discussed and appropriate action in taken to redress their grievances.

Further, the Management has enhanced the fund for celebration of Dr. Ambedkar's Jayanthi at Kudremukh and Mangalore from existing Rs. 10,000/- to Rs. 15,000/- and Rs. 5,000/- to Rs. 10,000/- respectively.

### Training Programme:

In the training programme organised at periodic intervals, SC/ST/OBC are also nominated alongwith others. Training programmes have been arranged especially for "D"group employees of SC/ST for improving their career growth.

In addition to the above, Liaison Officer for SC/ST, representatives of SC/St from "A" & "B" group were sent to participate in "New Reservation Policy Programme" conducted by (CENTAD) Centre for Training a Development at various places like Delhi, Mysore and Bangalore. Management of KIOCL invited Shri CC Unnikrishnan, Under Secretary to Government of India (DPE) to conduct a seminar on "New Reservation Policy" and the maintenance of the cadre/post based Roster at Mangalore, Bangalore and Kudremukh. The representatives of Sc/St Association and Officers belongs to SC/St alongwith other officers were also nominated to participate the seminars.

SC/ST/OBC candidates are nominated alongwith other gneral candidates to undergo one week computer training programme to learn latest packages like MS Office, Windows-95, Word, Excel, Power Point, Internet etc., at Bangalore.

### Manganese Ore (India ) Limited (MOIL)

MOIL is a Labour Intencive Organisation with over 8,000 employees on its rolls. About 76% of the total strength belongs to SC/ST/OBC. MOIL has undertaken several measures for the Welfare of the Weaker Sections. Some of them are as listed below:

a) Adoption of Tribal Village.
b) Training in Sericulture for Economic Development.
c) Help to Schools surrounding mines.
d) Organising Eye Camps/Child Welfare Camps.
e) Grant of subsidy to Gram Panchayat for Water supply Scheme.
f) Giving financial Assistance to Social Institutions who are working for the rehabilitation of aged and handicapped persons.
g) Donated tricycles to handicapped persons. Provided Sewing Machines for development of the Tribal Women.

MOIL constantly upgrade the various welfare measures provided to the Weaker Sections, with a view to improve the quality of life.

### Manpower

Manpower as on 31/10/98 out of a total manpower of 8,073. 1,475 employees belongs to SC category (18.27%), 2,045 employees belong to ST category (25.33%), 2,616 employees belong to OBC category (32.40%), 1,937 employees belong to others (24%). Moreover there are 1,023 Women employees (12.67%), 19 Physically Handicapped empoyees (0.24%) and 152 Ex-servicemen employees (1.88%). The Group-wise percentage of SC/ST and OBC employees are as follows:

| | SC | ST | OBC |
|---|---|---|---|
| Group A | 8.37% | 3.25% | 10.23% |
| Group B | 11.31% | 5.43% | 8.6% |
| Group C | 17.84% | 20.53% | 24.56% |
| Group D | 10.01% | 28.5% | 36.82% |

## MSTC Limited

The Presidential Directives issued from time to time pertaining to policies and producers of the Government in regard to reservation, relaxation, concession, etc. for the SC/ST/OBC candidates have been kept in view while taking action/decision on any matter laid down therein.

In order to improve the efficiency of the employees belonging to the reserved categories and to prepare them to take up higher positions in the future, special attention was paid to their training and development in their respective fields of function. Apart from this, all Welfare facilities provided to other employees of the Company were also extended to them.

In addition, all possible cooperation and assistance was provided to the MSTC SC/ST Employees' council, which function primarily to safeguard the interest of the interest

of the reserved section of employees of the Company.

## Ferro Scrap Nigam Limited (FSNL)

As on October, 1998, out of total manpower of 1346 persons, 209 belong to SC category (15.52%), 148 belong to ST Category (10.99%) and 97 belong to OBC Category (7.20%). Apart from this, there are 19 Women employees (1.41%), 2 Physically handicapped (0.14%) and 60 Ex-Servicemen (4.45%).

While recruitment, apart from the Age relaxation in the prescribed age limit, such categories of employees are also exempted from submitting required Postal orders along with the application for recruitment.

No restrictions in forwarding of application for outside employment are applicable for such categories of employees, whereas, in the case of General candidates, such applications are considered only once in a Calender year, apart from other restrictions.

Under the Scheme "Upliftment of Weaker Section", text boiks/note books were distributed to the first 3 male & female meritorious students of Standard IX,X & XII one each from SC/ST/OBC categories, of Government Higher Secondary School in a nearby village viz., Dundera (Photograph enclosed). This scheme has been implemented by FSNL from the current academic session of 1998-99.

During the year 1998-99, training has so far been imparted to 10 SCs, 8 STs and 15 OBC employees of the Company.

## Sponge Iron India Limited (SIIL)

### Reservation for SC/ST/OBC Candidates

The directives issued by Govt. from time to time to the matter of reservation of posts for SC/ST/OBC have been complied with out Company. There was no backlog of vacancies reserved for SC/ST/OBC candidates in the Non-Executive Cadre. In respect of Executive Cadre there is backlog of 1SC and 2 ST vacancies to be filled up. As the company has introduced Voluntary Retirement Scheme to reduce the existing surplus manpower, no recruitment is being done. However, as and when recruitment takes place, action would be taken to fill the backlog vacancies.

| Classification | Total No. | No. of Men | % of Men | No. of Women | % of Women | No. of SC | % of SC | No. of ST | % of ST | No of OBC | % of OBC | No. of PH | % of PH | No. of Ex-s | % of Ex-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gr.A | 80 | 80 | 100 | – | – | 14 | 17.5 | 1 | 1.25 | – | – | – | – | – | – |
| Gr.B | 79 | 75 | 94.9 | 4 | 5.0 | 13 | 16.4 | 16 | 7.5 | – | – | 1 | 1.2 | – | – |
| Gr.C | 197 | 185 | 93.9 | 12 | 6.0 | 34 | 7.2 | 16 | 8.1 | – | – | 3 | 1.5 | – | – |
| Gr.D | 158 | 141 | 89.2 | 17 | 10.7 | 27 | 17.0 | 25 | 15.0 | – | – | 4 | 2.5 | – | – |
| Total | 514 | 481 | 93.5 | 33 | 6.4 | 88 | 17.1 | 48 | 9.3 | – | – | 8 | 1.5 | – | – |

### Scheme for development of SCs, STs and OBCs

In the matter of recruitment and promotions to various posts, SC/ST candidates are being given the benefits as per the presidential Directives.

### Social Activities

A small cell headed by the Company's Chief Medical Officer looks after the peripheral developmental activities in the nearby areas. Recognising its social responsibilities, the Company undertakes programmes from time to time, which are for the benefit of the people in the local areas.

### Training

SIIL being situated predominatly in a Tribal area and in view of dearth of qualified SC/ST candidates, freshers from the Institute are being recruited in different disciplines and in order to bring them to the required standards, on-th-job training is being given to the SC/ST/OBC employees so as to enable them to acquire skill for possible absorption in regular posts after the training. Besides this, apprenticeship training is also being imparted to the St candidates being sponsored by Integrated Tribal Development Authority (ITDA), bhadrachalam as a part of Special Drive, which is in addition to the candidates sponsored by local I.T.I. No. of persons sent for training is 7.

Statistical information regarding representation of SC/ST/OBC/Women/Physically Handicapped/Ex-Servicemen as on 30.10.98 (1.1.98 to 30.10.98) :





## Metallurgical & Engineering Consultants (India) Limited (MECON)

### Manpower

| Classification | Total No. | No. of Men | % of Men | No. of Women | % of Women | No. of SC | % of SC | No. of ST | % of ST | No. of PH | % of PH | No. of Ex-s | % of Ex-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gr A | 2565 | 2438 | 95.05 | 127 | 4.95 | 246 | 9.59 | 110 | 4.29 | 03 | 0.12 | 10 | 0.39 |
| Gr B | 176 | 144 | 81.82 | 32 | 18.18 | 19 | 10.80 | 35 | 19.89 | 05 | 2.84 | 03 | 1.70 |
| Gr C | 491 | 431 | 87.78 | 60 | 12.22 | 105 | 21.38 | 185 | 37.68 | 08 | 1.63 | 117 | 23.83 |
| Gr. D | 30 | 19 | 63.33 | 11 | 36.67 | 04 | 13.33 | 14 | 46.67 | 01 | 3.33 | – | – |
| Total | 3262 | 3032 | 92.95 | 230 | 7.05 | 374 | 11.47 | 344 | 10.55 | 17 | 0.52 | 130 | 3.99 |

### Particulars of Recruitment made from 01.01.1998 to 30.10.98

| Classification of post | Vacancy Notification from 01.01.98 to 31.10.98 | | | | Vacancies Filled by | | | |
|---|---|---|---|---|---|---|---|---|
| | Other Community | SC | ST | OBC | Other Community | SC | ST | OBC |
| Group A | 15 | 04 | — | — | 15 | 04 | — | — |
| Group B | — | — | — | — | — | — | — | — |
| Group C | — | — | — | — | — | — | — | — |
| Group D | — | — | — | — | — | — | — | — |
| (excluding sweepers) | | | | | 15 | 04 | — | — |
| Total | 15 | 04 | — | — | | | | |

### Welfare Activities

Provisions has been made in the Annual Plan (1998-99) for Community Development activities for improvement of the facilities for SC/ST/OBC to the tune of Rs.5.9 lakh for Community Education, Vocational Training, Afforestation, Community medicine, Model Village, Resources Generation schemes & Misc. expenditure, etc.

## Bharat Refractories Limited (BRL)

### Manpower

The total number of employees in BRL as on 31/10/98 was 3732 out of which 372 belongs to Sc and 501 belongs to ST and 1,404 belong to OBC. Moreover, there are 165 Women, 28 Physically Handicapped and 82 Ex-serviceman.

### Other Welfare Measures

a) Free vaccination facilities are provided to the children of local inhabitants who mostly belong to category of

*CDC donated sewing machine became the mainstream of village co-operative*

*Trainees during their regular class work*

SC/St/OBC as the units are located in tribal belts of Chhotanagpur, Bihar and Chhatisgarh region of Madhya Pradesh.

b) Different plants of the company have taken up construction of wells for supply of drinking water for nearby villagers.
c) A Health Centre has been constructed by Bhandaridah Refractories Plan and handed over to Government of Bihar. SC/ST/OBC people are largely benefited as they constitute 70 to 80% of the local population.
d) Electricity transformer has been provided by IFICO Refractories Plant for extending power supply to the nearby village.

**Training Programme**

Regular training programme are being conducted with the co-operation of Central Board for Workers Education and certain other agencies in which adequate representation for SC/ST/OBC is given :

| Classification | Total No. | No. of Men | % of Men | No. of Women | % of Women | No. of SC | % of SC | No. of ST | % of ST | No of OBC | % of OBC | No. of PH | % of PH | No. of Ex-s | % of Ex-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gr A | 357 | 353 | 98.90 | 4 | 1.12 | 9 | 2.52 | 9 | 2.52 | 44 | 12.32 | 3 | 1 | 4 | 1.12 |
| Gr B | 269 | 263 | 97.76 | 6 | 2.23 | 24 | 8.92 | 13 | 4.83 | 111 | 41.26 | - | - | - | - |
| Gr C | 2,163 | 2076 | 95.97 | 87 | 4 | 170 | 7.85 | 219 | 10.12 | 1106 | 51.13 | 11 | 0.52 | 47 | 2.17 |
| Gr D | 943 | 875 | 92.78 | 68 | 7.21 | 169 | 17.92 | 260 | 27.52 | 143 | 15.16 | 14 | 1.48 | 31 | 3.25 |

| Classification of post | Vacancy Notification from 01.01.98 to 31.10.98 | | | | Vacancies Filled by | | | |
|---|---|---|---|---|---|---|---|---|
| | Other Community | SC | ST | OBC | Other Community | SC | ST | OBC |
| Group A | – | – | – | – | – | – | – | – |
| Group B | – | – | – | – | – | – | – | – |
| Group C | – | – | – | – | – | – | – | – |
| Group D (excluding sweepers) | – | – | – | – | 1 | 1 | 3 | 2 |
| Total | | | | | 1 | 1 | 3 | 2 |

**Note :** Recruitment made on compassionate ground as per the tripartite agreement with the operative union of the Company.





# PROGRESSIVE USE OF HINDI

The Department continued its efforts towards greater use of Hindi in official work during the year 1998-99 keeping in view the Annual programme prepared by the Department of Official Language (Ministry of Home Affairs) for implementation of the Official Language Policy of the Union.

The work relating to the progressive use of Hindi in the Department of Steel is under the administrative control of a Joint Secretary and is looked after by a Director. The Hindi Section consists of a Deputy Director, an Assistant Director, a Senior Translator, three Junior Translator and two LDCs. At present, however one post of the Junior Translator is vacant.

There are 59 Devnagari Typewriters including 33 bilingual electronic Typewriters. Adequate reading material in Hindi is available in the Department. A number of measures have been taken for the promotion of progressive use of Hindi in the Department and in the office of the Development Commissioner for Iron and Steel as well as in the PSUs under the administrative control of the Department of Steel.

Some of the important items with regard to the use of Hindi in the working of the Department and its PSUs are indicated below :

a) Almost all the Public Sector Undertakings under the administrative control of this Department are publishing their house journals in Hindi also. In addition, Hindi magazines and books are available in their libraries.
b) An inspection team of the Department oversees the status of implementation of the provisions of the Official Language Act, Rules in the attached office/Public Sector Undertakings under the administrative control of the Department. During the year under review, the inspection team had made 11 such inspections upto 30th September, 1998.

**Official Language Implementation Committee**

There is an Official Language Implementation Committee under the Chairmanship of a Joint Secretary in the Department. This Committee reviews the progress made in the use of Hindi in the Department, its attached office and public sector undertakings. Meetings of the committee are held from time to time. Two such meetings have been held-up till 30th September, 1998.

**Hindi Salahkar Samiti**

The Committee is under reconstitution.

**Implementation of Section3(3) of the Official Language Act.**

In pursuance of the Official Language Policy of the Government of India, almost all documents covered under Section 3(3) of the Official Language Act are prepared both in Hindi and English. In order to ensure issue of letters in Hindi to Central Government Offices located in Region "A", "B" and "C" Checkpoints have been identified in the Department to ensure compliance of the O.L. Policy.

**Rajabhasha Shield/Trophies**

In order to encourage the use of Hindi in the offices and undertakings under the administrative control of the Department of Steel, a Chal Vaijayanti (Running Shield), a Rajbhasha Shield and two Trophies have been instituted. These awards are given every year to the Office/ Undertakings on the basis of the annual performance. Besides, a medal is also awarded to the officer/employee whose work in Hindi is rated the best in the Department.

**Incentive Scheme for original Work in Hindi**

The cash incentive scheme for original work in Hindi introduced by the Department of Official Language is also being implemented in the Department.

**Cash prizes Scheme for Dictation in Hindi**

An incentive scheme for officers for giving dictation in Hindi is in operation in this Department. Under this scheme two cash prizes of Rs.1000 each are given to the officers who give maximum dictation in Hindi.

**Award for writing original books in Hindi**

A scheme for awarding cash prizes for writing technical books in Hindi on various disciplines related to the steel industry and its allied subjects is also in operation in the Department. An amount of Rs.15,000/- Rs.10,000/- and Rs.7,500/- each is awarded respectively for the first, second and third prizes.

**Hindi Fortnight**

To motivate the officers/ employees of the Department to do their official work in Hindi a Hindi fortnight was observed from 1st September to 15th September, 1998. To increase the use of Hindi in official work an appeal was made by the Honorable Minister encouraging the officers/employees and staff of the Public Sector Undertakings under the administrative control of the Department.

During the Fortnight Hindi Essay writing/Hindi typing/ Hindi stenography/Hindi noting & drafting competitions were held. Besides, Hindi workshops for various categories of officers and staff were also organised. Patriotic Hindi films were also shown to the staff of the Department. The Hindi Fortnight concluded with the distribution of prizes and certificates to the winners.

"Prati dinekshabd" scheme launched in the Department three years back is being continued during the year. Under this scheme one word/phrase in Hindi and its English equivalent are written daily on the black boards installed on all the three floors of the Department. These are generally administrative and technical words/phrases used in day-to-day official work.

**To work in Hindi on every Wednesday**

Wednesday has been designated as "Hindi Day" in the Department and all officials & staff are expected to carry out their entire official work in Hindi on Wednesday.

**Training in Hindi/Hindi Typewriting/Hindi Stenography**

A program has been drawn up for imparting training in Hindi/Hindi Typing/Hindi Stenography to those employees for whom such in-service training is obligatory. Out of a total of 177 officers and staff (except group "D" employees) 168 possess working knowledge of Hindi. So far as Hindi typing and Hindi Stenography is concerned, out of 24 LDC and 38 Stenographers 10 and 27 know Hindi typing and stenography, respectively.