सत्यमेव जयते

GOVERNMENT
OF INDIA

ANNUAL REPORT 1992-93

MINISTRY OF STEEL

Annual Report 1992-93

MINISTRY OF STEEL

Contents

Year's Highlights

— After achieving a record production of saleable steel at 8.028 million tonnes in 1991-92 , Steel Authority of India Ltd. (SAIL) is set to cross the target of 8.216 million tonnes of saleable steel production in 1992-93.

— SAIL recorded the highest ever pre-tax profit at Rs. 367 crores in 1991-92. Maiden dividend of Rs. 79.63 crores paid to Government.

— For the first six months of 1992-93, SAIL recorded a net profit of Rs. 52.67 crores as against Rs. 35 crores for the corresponding period in 1991-92, representing an increase of 50%.

— A capital outlay of over Rs. 12,300 crores has been approved for SAIL during VIII Five Year Plan as against a total outlay and expenditure of Rs. 3575.68 crores and Rs. 3821.42 crores, respectively during the VII Five Year Plan.

— Government continued disinvestment of its equity in SAIL in 1992-93.

— Government set up a Task Force to prepare a 20-year Action Plan for Growth of Indian Iron & Steel Industry.

— Work on Phase-II of Rourkela Steel Plant Modernisation begins. Work on Durgapur Steel Plant modernisation is in advance stages of implementation.

— Visakhapatnam Steel Plant (VSP) completed and fully commissioned in July, 1992.

— VSP dedicated to the Nation by Hon'ble Prime Minister in August, 1992.

— Production of liquid steel at VSP increases by 101% by October '92 over previous year.

— By end of October, 1992, 109% increase in saleable steel over 1991-92 at VSP.

— VSP steps up export of its products. Foreign Exchange earning to exceed Rs. 200 crores.

— VSP awarded "Ispat Suraksha Puraskar" for highest reduction in accident rate.

— Development of Ancillary Units stepped up. Letters of intent issued to 70 entrepreneurs by VSP.

— MSTC maintained its position as a significant importer of steel melting scrap even after decanalisation of imports and expects to import about 7 lakh tonnes during 1992-93.

— FSNL expected to cross a production of 1 million tonnes during 1992-93, recording its highest ever production of scrap. — Both MSTC and FSNL expected to obtain a near excellent rating for the MOU for the year 1992-93.

— KIOCL wiped off accumulated loss of Rs. 37.02 crores in October, 1992.

— Government approval conveyed in November, 1992 to NMDC for implementing Dead Burned Magnesite Plant at Panthal (J&K) through its subsidiary, namely Jammu & Kashmir Mineral Development Corporation (J&KMDC).

— SIIL commissions Waste Heat Recovery project for utilisation of waste heat in the flue gasses emanating from the kiln.

— The Govt. releases 'Guidelines for Entrepreneurs in Iron & Steel Industry' for providing guidance to prospective entrepreneurs.

The Year at a Glance

Chapter-I

1. PRODUCTION OF STEEL

Production of saleable steel in the five integrated steel plants of Steel Authority of India Limited (SAIL) during the year 1992-93 is expected to be about 8.29 million tonne, representing in increase of 3.24 per cent over the production in 1991-92. Production by Visakhapatnam Steel Plant is estimated to be 1.52 million tonnes as against 0.50 million tonnes in 1991-92. TISCO is expected to produce 2.10 million tonnes of saleable steel in 1992-93 as against 2.04 million tonnes in 1991-92.

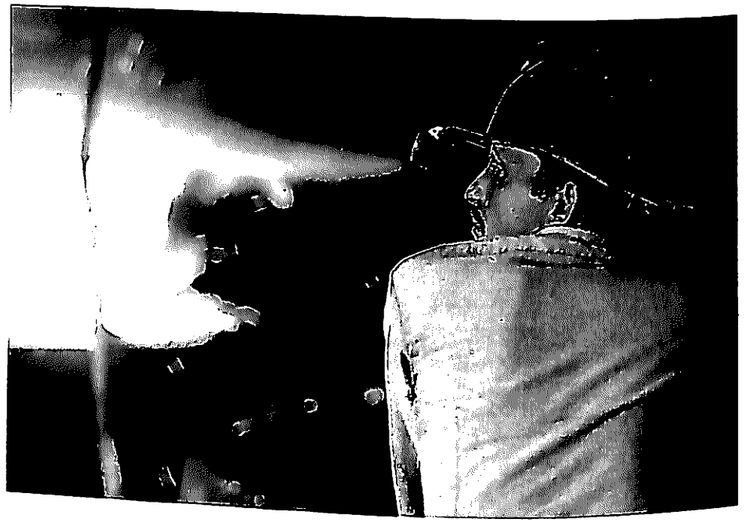
Production of saleable steel by the secondary producers is expected to be 4.05 million tonnes as against 3.40 million tonnes in 1991-92.

Total production of saleable steel in 1992-93 is thus expected at about 15.96 million tonnes, as compared to 13.97 million tonnes in 1991-92, representing an increase of 14.24 per cent.

1.2 DEMAND AND AVAILABILITY OF STEEL

Total demand for finsihed steel in 1992-93 is estimated at 17.76 million tonnes. Against this, the domestic availability in the year is expected at 16.12 million tonnes, leaving a gap of 1.64 million tonnes.

In the case of pig iron, the domestic availability is estimated at 1.79



million tonnes, against an estimated demand of 2.10 million tonnes. The gap is likely to be met to some extent through imports. It is expected that the import of finished steel in 1992-93 may be about 1.1 million tonnes and of pig iron about 0.15 million tonnes.

1.3 PERFORMANCE OF SAIL

Production of saleable steel in the five integrated steel plants of SAIL for 1992-93 (upto December, 1992) was 6.08 million tonnes representing an increase of 4% over the production during the corrsponding period in 1991-92. Production of crude steel was 7.23 million tonnes representing a 2% increase over the production achieved during the corresponding period in 1991-92.

Half Yearly Working Results of SAIL

Inspite of various odds, the net profit of SAIL for six months ended on 30th September, 1992 at Rs. 52.76 crores as against Rs. 35 crores for the corresponding period of last year was up by 50%. The Gross Margin i.e. profit before depreciation and interest was Rs. 707.27 crores against Rs. 580.41 crores during the corresponding period of last year,i.e. an increase of over 20%. During the first six months of the 1992-93 the company has recorded a sales turnover and other income of Rs. 4821 crores, an increase of 13% over the first six months of the previous year.

The increase of production volume of hot metal, crude steel and saleable steel during the first half of the current financial year by 3%, 4% and 5% respectively over the corresponding period last

year has significantly contributed to improvement in Gross Margin. The improvement in volume has been supported by increased utilisation of captive facilities and overall reduction in specific energy consumption.

1.4 MAJOR CONSTRUCTION PROJECTS

a) SAIL Projects:-

1. Implementation of the Durgapur Steel Plant modernisation project is now in its final stage. Except for the blast furnace package, the remaining components of the project are expected to be completed by March, 1994. The modernisation is expected to increase production and productivity in Durgapur Steel Plant and also improve techno-economic parameters.

2. The modernisation scheme for Rourkela Steel Plant in two phases was approved in December, 89. The Revised cost estimates for the project was sanctioned in May, 1992. The project is being implemented generally as per schedule and is to be completed by December, 1995.

(b) VISAKHAPATNAM STEEL PLANT

Visakhapatnam Steel Plant, the first shore-based integrated steel plant with an annual capacity of 3 million tonnes of crude steel has been fully commissioned in July, 1992. The plant was dedicated to the nation by the Hon'ble Prime Minister, Shri P.V. Narasimha Rao on the Ist August, 1992.

The quality of Visakhapatnam Steel Plant has been appreciated by the customers. Besides, competing in the indigenous market, Visakhapatnam Steel Plant has made concerted efforts to enter export market. During 1992-93, about 75,718 T of wire rods and billets valued at Rs. 55.31 crores were exported till end November, 1992. Visakhpatnam Steel Plant has planned to export about 2,00,000 T of wire rods, billets and structurals during the remaining period of the year under report. The foreign exchange earnings by VSP during the year will be of the order of Rs. 200 crores approximately.

1.5 ELECTRIC ARC FURNACE INDUSTRY

At present there are 177 commissioned Electric Arc Furnace Units having a total capacity of about 7.3 million tonnes per annum.

Production of Ingots/Concast Billets by EAF units, which are reporting their production to the Office of the Development Commissioner for Iron & Steel, during the last three years and for April-Dec, 1992 is given below:-

1.6 SPONGE IRON SECTOR

Sponge iron is a metallic product produced by direct reduction of high grade iron or Iron ore pellets into the solid state. Also known as direct reduced iron (DRI) or Hot Briquetted Iron (HBI), it contains a large percentage of metallic iron. This is a partial substitute for steel melting scrap used by the secondary steel sector. The indigenous availability of metal scrap is low and large quantities have to be imported in order to meet indigenous demand from electric are furnace and induction furnace units. Production of sponge iron is, therefore, being encouraged by the Government in order to conserve foreign exchange.

It is expected that production will be 50 to 60 lakh tonnes by the end of 1996-97. The installed capacity of sponge iron units till 1988-89 was only 3.3 lakh tonnes. This has increased to 17.8 lakh tonnes in 1992-93. The total sponge iron production this year is likely to be about 14-15 lakh tonnes against last year's production of 12.8 lakh tonnes.

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Mild Steel	2041.8	2363.0	1672.0	865.0
Medium/High Carbon Steel	394.0	371.6	341.2	176.9
Alloy Steel	533.6	598.8	516.1	285.0
Stainless Steel	153.5	176.0	196.7	102.3
Total Reported	3122.9	3509.4	2726.0	1429.2

The above figures do not include production of steel by casting units registered with DGTD.

The performance of sponge iron units that are already commissioned is given below:-

Name of the Unit	Location	Installed Capacity	Production during 1991-92	Production during 1992-93 (April-Dec. 92)
1	2.	3.	4.	5.
(A) Coal based				
1) Sponge Iron India Ltd.	Kothagudem, Distt. Khammam, A.P.	0.6	0.48	0.35
2) Orissa Songe Iron Ltd.	Nayagarh, Distt. Keonjhar, Orissa	1.5*	1.00	0.70
3) IPITATA Sponge Iron Ltd.	Distt. Keonjhar Orissa	1.2	0.90	0.77
4) Bihar Sponge Iron Ltd.	Chandil Distt. Sinbbhum, Bihar	1.2	1.23	0.90
5) Sunflag Iron & Steel Co. Ltd.	Bhandara, Maharahstra.	1.5	0.92	0.90
6) Jindal Strips Ltd.	Raigarh, M.P.	1.0	—	0.37
7) Goldstar Steel & Alloy Ltd.	Vizianagaram, A.P.	2.2	—	0.30
8) Bellary Steels & Alloy	Bellary, Karnataka	0.6	—	0.05
	Sub-total (Coal based)	9.8	4.53	4.33
(B) Gas-based				
9) Essar Gujarat Ltd.	Hazira, Distt. Surat, Gujarat	8.0	8.28	6.0
	Total (A+B):	17.8	12.81	10.33

*derated to 1.0 lakh tonnes.

1.7 Pig Iron Industry

1.7 Pig Iron, a major raw material for the engineering industry, is in short supply. Efforts are being made to create pig iron manufacturing facilities in the secondary sector. The All-India Financial Institutions have already sanctioned financial assistance to 9 units for a proposed capacity of approximately 10 lakh tonnes. The pig iron unit of Sesa Goa has already gone into production, while other units like Usha Ispat Ltd., Mid West Iron and Steel Ltd. and Tata Metalliks Ltd. are at an advanced stage of implementation. Production from these units is expected to commence in 1993.

ii) Growth of the pig iron industry depends on easy availability of coke. Manufacture of coke has been delicensed under the New Industrial Policy of July, 1991. Efforts are being made to encourage setting up of merchant coke oven batteries in the secondary sector. Coal linkages have been facilitated for 3 merchant coke oven batteries.

1.8 IRON ORE EXPORTS

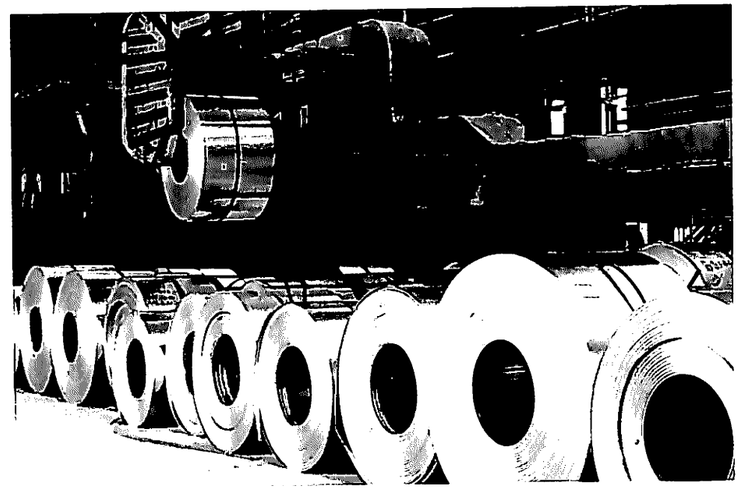
During the year 1991-92, India exported around 32 million tonnes of iron ore. The exports during 1992-93 (upto November, 92) have been around 12.23 million tonnes. Major contribution towards Iron Ore exports has been from two public sector enterprises of the Ministry of Steel, namely the National Mineral Development Corporation Limited (NMDC) and the Kudremukh Iron Ore Company Limited (KIOCL).

1.9 EXPORT OF OTHER MINERALS

In respect of other minerals the Government policy has been in the direction of substituting value added products like ferro alloys in place of raw ores and promoting greater utilisation of the lower grade ores through beneficiation and other means. In keeping with this policy ceiling were fixed on exports of manganese and other ores.

1.10 STEEL CONSUMERS' COUNCIL

The Steel Consumers' Council was constituted on 31.1.1986 under the chairmanship of Minister for Steel and Mines (now Minister for Steel) to provide a forum for interaction between Government and various sections of steel



Galvanised Coils at Bokaro

consumers. The main function of the Council is to advise and assist the Central Government on matters relating to supply availability, quality and the market trends of iron and steel in the country.

The Council has been reconstituted on 31st Oct., 1991 with a fresh tenure of two years. The last meeting of the Steel Consumers' Council was held on 15th June, 1992 at Bombay.

1.11 MANAGEMENT INFORMATION SYSTEM

The computerised MIS introduced in the Ministry of Steel with the assistance of National Informatics Centre (NIC) is functional in the areas of Administration, Public Enterprise Management, Personnel Management, Project Monitoring, Data Bank for Secondary Producers and Financial Accounting and Budgeting. The Computer Centre in the Ministry is equipped with the latest hardware with appropriate linkages with the NIC Super Computer and its Electronic Mail Package. Terminals have been provided to senior officers and also to some sections requiring the facility for interactive usage with the MIS. Training Programmes for the staff for computer usage are also organised by NIC from time to time.

1.12 RESEARCH AND DEVELOPMENT

The major thrust of research and development in iron and steel industry have been towards the basic and applied research aimed for development of products and processes leading to improvement in productivity quality and energy conservation, commercial exploitation of imported technology as well as optimum utilisation and natural resources.

1.13 ENERGY CONSERVATION

A number of energy conservation measures were adopted in the steel industry. As a result:-

— SAIL Plants have achieved a reduction by 3.78% over previous year.

— VSP have achieved 24% reduction during April-November, 1992 compared to the corresponding period last year.

— TISCO has achieved lowest specific energy rate since 1987-88 and lowest coke rate.

1.14 WELFARE OF SCHEDULED CASTES AND SCHEDULED TRIBES AND WELFARE OF MINORITIES

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

The Public Sector Undertakings have also continued the process of identifying and implementing programmes aiming at the upliftment of these communities in the peripheral areas.

1.15 ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

Every project taken up for implementation by the undertakings of Ministry of Steel has a full and complete environmental management plan as an integrated part of the project programmes, duly cleared by the concerned departments and Government Agencies at various levels.

The iron and steel plants have drawn up short term and long term action plans for environmental management and pollution control for expeditious implementation as under:

— Out of the total 118 jobs identified by National Task Force (NTF), SAIL plants have completed 26 jobs by December, 1992 and expects to complete 74 jobs by December, 1993.

— VSP expects to complete all the pollution control jobs identified by National Task Force (NTF) during the current year.

— Out of the total 18 jobs identified by National Task Force (NTF), TISCO have completed 16 jobs by December, 1992 and expect to complete remaining 2 jobs by December, 1993.

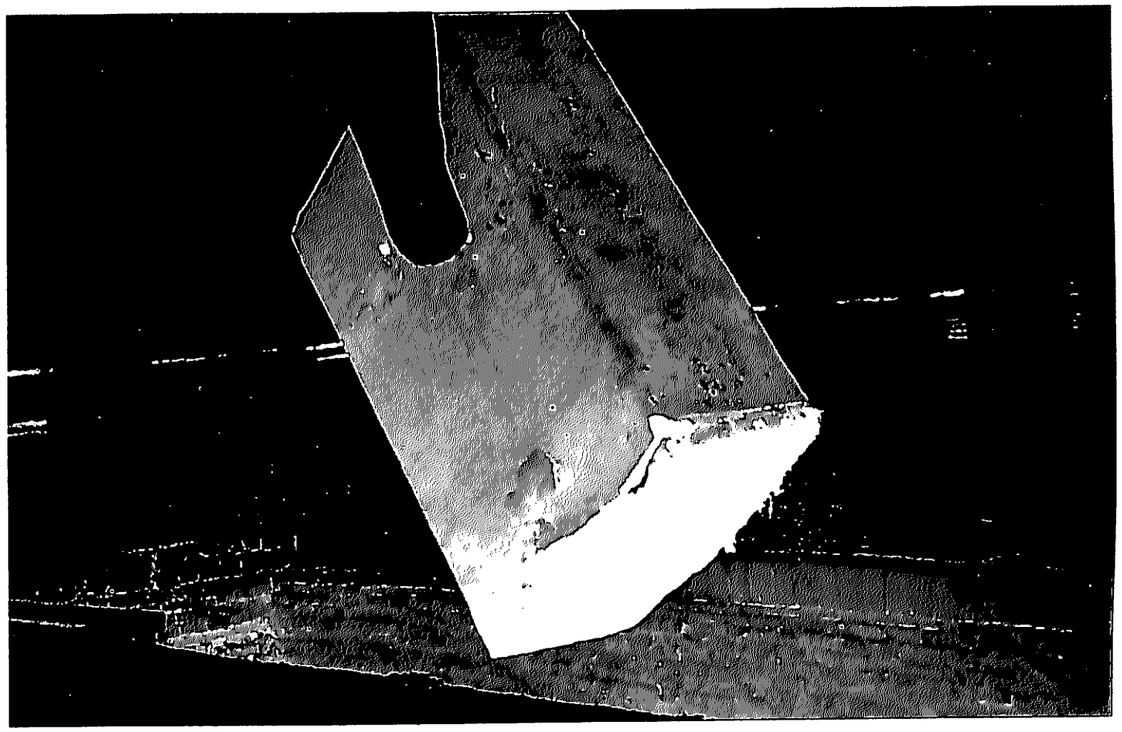
1.16 IMPLEMENTATION OF OFFICIAL LANGUAGE POLICY

The progressive use of Hindi in the Ministry, its attached and subordinate offices and public undertakings has been actively encouraged and a Hindi Week was organised in the Ministry in the month of September, 1992. During the year the Committee of Parliament on Official Language inspected the position of progressive use of Hindi in the SAIL, New Delhi and Rourkela Steel Plant, Rourkela.

Afforestation at Chikla Mine

A Perspective View

Chapter-II



The last couple of years have witnessed several important landmarks in the development of the steel industry in the country. The New Industrial Policy announced in July, 1991 dispensed with compulsory licencing for most of the industries including iron and steel. The vestiges of controls on prices and distribution of iron and steel which have been in operation in various forms since the World War II, were removed with effect from January 16, 1992. The main producers are now free to determine and announce their prices without any government control. In the case of distribution however, some safeguards have been provided in the matter of supplying steel items to Railways, Defence, exporters of Engineering goods, Small Scale Industries Sector and the states in the North Eastern Region, in view of the importance and sensitivitiy of these sectors and their special needs.

The New Trade Policy announced in April, 1992 liberalised the import and export of steel materials. Barring pig iron and mild steel scrap which is in the negative list for exporters, all other steel items have been listed under OGL. This, together with the reduction in import duties, has removed the impediments under the earlier import restrictions. In respect of scrap and pig iron, duty reduction has had a very significant impact. It is now expected that there will be larger inflows of these materials resulting in significant rise in capacity utilisation in the mini-steel plants.

Steel remains the basic industrial material, the foundation on which modern civilisation is built. Over the years, however, the relative position of the steel industry in the hierarchy of industrial sectors has varied owing to scientific and

technological developments and structural changes that have taken place in the economies of many countries. This has brought in its wake, many competitors to steel and newer materials have begun to displace steel in the traditional market. Yet the importance of iron and steel particularly in a developing country like ours cannot be underestimated. Consumption of steel is an index of the economic development of a country. The real contribution of the steel industry lies in its structural diversification in relationship with the up stream and the down stream sectors of the economy. A large variety of steel materials are vital inputs for other industries such as transportation, construction, power, oil expoloration and drilling, mechanised agriculture and the manufacturing sector.

World steel production has remained more or less stagnant over the last few years. After reaching an all time high of 786 million tonnes in 1989 it has declined to 733 million tonnes in 1991. The decline is mainly due to cutbacks in producton in developed economies such as USA, countries in Western Europe and Japan as also erstwhile Soviet Union. At the same time the decade has witnessed considerable restructuring in the industry with the closing of many aging steel plants and investment in new technologies which have raised the levels of productivity in the industry. This trend along with the rapid increase in steel production in the third world countries that has characterised the eighties has led to a fall in the international steel prices. Thus, inspite of the restructuring carried out in developed economies the problem of over capacity has not been completely resolved and difficulties can be anticipated for developed economies in penetrating world markets owing to protectionist policies of developed countries.

India has the requisite resources for a rich and vibrant steel industry. The first Indian integrated steel plant was built in 1907 which was followed in the late fifties and early sixties with setting up of steel plants in the public sector. During the late sixties and early seventies the country saw the emergence of a large number of mini mills. The alternative route of iron making by direct reduction was introduced in the eighties. Today, the country produces approx. 17 million tonnes of crude steel in a year with an installed steel making capacity of approximately 25 million tonnes. The per capita consumption of steel at 26 kgs in India ranks absymally low, and is about half the world average per capita consumption.

Although India made a good start in steel production, it could not capitalise on its early achievements primarily because of inadequate financial resources for the steel sector since the Fourth and Fifth Five Year Plan. Plan allocations for the steel sector, which has risen to 7-8% of total public sector outlay in the Third Five Year Plans, declined continuously over subsequent Plans reaching a level of 3.6% in the Seventh Plan. In the Eighth Plan, this sector has a share of around 3% of the total public sector outlay. Apart from this, the inability to mobilise internal resources due to administered pricing policy and continued unsatisfactory balance of payments problems were also responsible for the low level of investment.

The 8th Five Year Plan has been extended by two years, i.e. terminating in 1996-97. The revised projections of demand, domestic availability of finished steel and pig iron are as follows:-

(In Million Tonnes)

Financial Year	Total Demand Projection	Estimated Production Main Producers	Secondary Producers	Total
I. **FINISIHED STEEL**				
1992-93	17.76	9.36	6.76	16.12
1996-97 (Projected)	25.00	13.03	11.03	24.09
II. **PIG IRON**				
1992-93	2.10	1.69	0.10	1.79
1996-97 (Projected)	3.03	2.13	1.00	3.13

SOURCE OF FINISHED STEEL

Plant wise break-up of the above production levels are as follows:-

(In '000 tonnes)

SAIL PLANTS	FINISHED STEEL		PIG IRON	
	1992-93	1996-97	1992-93	1996-97
BSP	2225	2535	175	480
DSP	578	743	94	211
RSP	1075	1562	40	66
BOKARO	2815	3532	149	551
IISCO	348	354	384	357
Sub-total:	7041	8726	842	1655
VSP	1170	2165	850	475
TISCO	1144	2167	—	—
Total Main Producers	9355	13058	1692	2130
Secondary Producers	6765	11034	100	1000
Total	**16120**	**24092**	**1792**	**3130**

Actual production of Finished Steel in 1990-91 and 1991-92 has been as follows:-

(In '000 tonnes)

SAIL Plants	1990-91	1991-92 (Provisional)
BSP	2060	2149
DSP	549	511
RSP	1058	1093
BOKARO	2331	2645
IISCO	245	317
Total SAIL	6243	6715
VSP	20	247
TISCO	931	993
Total Main Producers	7194	7955
Secondary Producers	6337	6374
Total	13531	14329

SAIL has already embarked on an ambitious modernisation programme of its plants in Durgapur and Rourkela with the objectives of reducing energy consumption, improvement in the quality of processes and products and cost reduction so as to make its products competitive in the international market. Likewise TISCO has also implemented the first two phases of their modernisation programme and is likely to complete the remaining phases in the next couple of years.

In order to accelerate steel production certain steps have been taken in the last one year to assist the potential entrepreneurs in making investment decisions. It is anticipated that the private sector will play a major role in meeting the projected demand for steel by 1996-97 and in order to facilitate the establishment of steel industries in the private sector a comprehensive set of Guidelines for prospective entrepreneurs has been issued by the Ministry of Steel, which provide exhaustive details on the policy framework in the steel industry, availability of essential raw materials, infrastructural facilities, technological capacity, existing within the industries and the environmental standards that are required to be met with.

Ministry of Steel has also entrusted to an expert group the task of formulating 20 Year Action Plan for the growth of the iron and steel industry, setting a realistic target for steel production and also suggesting practical ways of achieving the accelerated growth rate. The Task Force's Report has been received and accepted by the Government and steps to actualise the objectives and recommendations of the Report are being taken.

Raw-Materials

IRON ORE

1. Total Reserves and Distribution

The recoverable reserves of Iron Ore, i.e. haematite and magnetite as on 1.4.90 are placed at 9581 and 3143 million tonnes respectively, distributed over five zones in the country. The grade-wise distribution of haematite ores in different states is given in the table below:-

GRADE-WISE DISTRIBUTION OF HAEMETITE ORE IN THE COUNTRY (AS ON 1.4.1990)

(In million tonnes)

Sl. No.	Zone/ State	High grade ore Fe 65%	Medium grade ore Fe 62-65%	Low grade ore (below 62% Fe)	Unclassified	Others	Blue dust/ black iron	Total
1.	**ZONE 'A'**							
	Bihar	34.4	1791.3	903.2	186.3	-	50.8	2966.00
	Orissa	313.3	1287.6	752.0	304.8	-	8.6	2666.3
	Total	347.7	3078.9	1655.2	491.1	-	59.4	5632.3
2.	**ZONE 'B'**							
	Madhya Pradesh	558.4	483.2	516.0	401.8	.045	71.0	2030.4
	Maharashtra	0.348	34.5	14.8	126.3	-	-	175.9
	Total	558.74	517.7	530.8	528.1	.045	71.0	2206.3
3.	**ZONE 'C'**							
	Karnataka	221.2	437.9	72.3	194.5	.257	.550	926.7
4.	**ZONE 'D'**							
	Goa Region	13.5	153.2	465.4	80.6	36.6	12.2	761.5
5.	**ZONE 'E'**							
	Andhra Pradesh	6.4	5.2	31.7	2.6	-	-	45.9
	Rajashtan	-	.200	6.4	2.334	.046	-	8.9
	Total	6.4	5.4	38.1	4.9	.046	-	54.8
	GRAND TOTAL	:1147.54	4193.1	2761.8	1299.23	36.94	143.15	9581.6

2. Production of Iron Ore

Production of iron ore in the country is through a combination of large mechanised mines in the public sector and several smaller mines operated on manual or semi-manual basis, in the private sector.

These can be broadly grouped under three categories:-

a) Captive mines, owned and operated by individual steel plants, mainly for their own use;

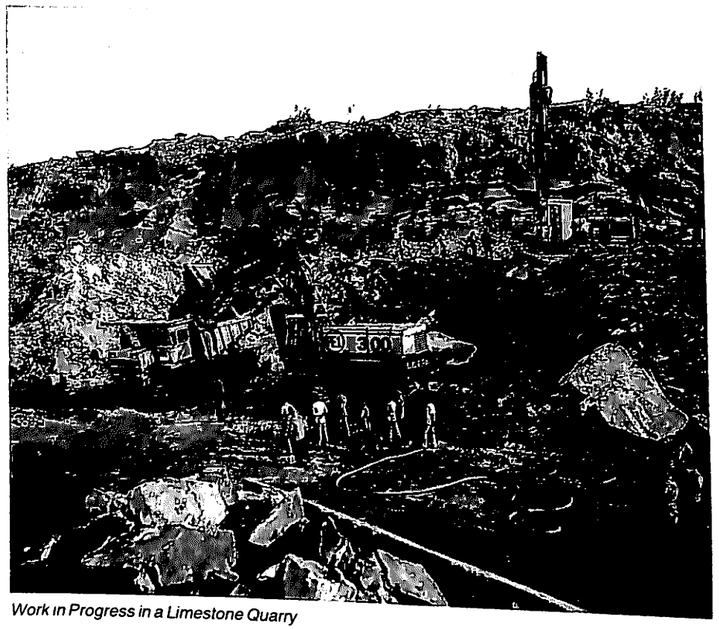
b) Public Sector mechanised mines, owned and operated by central and state Government. undertakings for export and internal consumption of steel plants, and;

c) Smaller mines, owned and operated by private parties, mainly by manual and semi-mechanised methods of mining for export and internal consumption.

3. Production and Despatches-1992

Production of iron ore (including iron ore, concentrates) during the year 1992-93 is estimated at 57.5 million tonnes as against the recorded figure of 57.1 million tonnes in the previous year. Statewise production figures indicate that Madhya Pradesh would be the chief iron ore producing state accounting for 13.7 million tonnes (23.9%) of the total production during 1992-93 followed by Goa 12.8 million tonnes (22.2%), Karnataka-12.1 million tonnes (21.0%), Bihar-10.1 million tonnes (17.6%) and Orissa-8.4 million tonnes (14.6%). Remaining production of about 0.4 million tonnes would be from Maharashtra, Andhra Pradesh, Rajasthan and Haryana.

Despatches of iron ore (including concentrates) in 1992-93 are estimated at 56 4 million tonnes



Work in Progress in a Limestone Quarry

MANGANESE ORE

Reserves

As per the latest inventory, the reserves of manganese ore are estimated at 176 million tonnes. The majority of the reserves are located in following states:-

		% of total reserves
i)	Karnataka	36%
ii)	Orissa	23%
iii)	Goa	13%
iv)	Maharahstra	11%
v)	Madhya Pradesh	9%

Gradewise the largest reserves are of blast furnace grade. The reserves of ferro manganese grade are only 12% of the total reserves.

Production

The main consumers of manganese ore are the Steel plants and ferro alloy industry. The production of managanese ore during 1991-92 and estimated during 1992-93 is indicated below:-

Year	Production Qty. (th. tonne)	Value (Rs. crores)
1991-92	1552	92.96
1992-93 (estimated)	1699	101.48

(Source:- IBM)

Exports

As a policy measure, efforts are being made to replace the export of ores with export of value added items. Government has also been laying emphasis on beneficiation of low grade ores. The export of manganese ore therefore continues to be done on a limited basis, and for the current year 1992-93 only the following grades of manganese ore have been allowed for exports:-

(a) Medium grade manganese ore/blended ore containing 38% to 44% manganese and more than 0.22% phosphorous - 1.00 lakh Tonnes

(b) Low grade manganese ore/ blended ore containing less than 38% manganese. - 2 lakh tonnes

(c) Manganese ore fines below 12mm in size containing - 1 lakh tonnes less than 44% manganese.

Exports during last two years and April-Nov., 1992 are given below:-

Year	Actual export Qty. (in lakh t.)	Value (Rs. in crores)
1990-91	2.95	41.54
1991-92	2.60	40.96
(April-Nov., 92)	1.00	15.25

CHROMITE ORE

Reserves

According to the latest inventory the total recoverable reserves of chromite are estimated at 88 million tonnes. Orissa continues to be the leading producing state accounting for 96% of the total production followed by Karnataka which produce about 4% of the the total production. Small quantities are expected to be produced from Andhra Pradesh and Manipur.

Production

The production of chromite during 1991-92 and estimated during 1992-93 are given below:-

Year	Production Qty. (th. tonne)	Value (Rs. in crores)
1991-92	1087	198.13
1992-93	1312	239.09

(Source:- IBM)

Export

Keeping in view the limited reserves of chromite ore in the country, and Government policy to conserve high grade ores within the country, emphasis has been laid on export of beneficiated chromite concentrates. Emphasis has been also been placed on benefication and upgradation of low grade ores. In keeping with this objective, during the year 1992-93, only following grades of Chromite ore have been allowed for exports:-

(a) Low silica friable/ fine Chromite ore with Cr203 not exceeding 52% and Silica exceeding 4%. 3 lakh tonnes

(b) Chromite lumps containing Cr203 not exceeding 30% (restricted to mines in South India). 0.40 lakh tonnes

(c) In addition, no ceiling has been fixed for the export of beneficiated Chromite concentrates with feed grade less than 30%.

Exports during last two years and April-Nov., 1992 are given below:-

Year	Actual export Qty. (in lakh t.)	Value (Rs. in crores)
1990-91	2.28	43.02
1991-92	3.67	68.61
(April-Nov., 92)	2.45	55.83

8. Coking Coal

8,1 Indian coking coals have a high ash content mainly because of the sedimentary nature of their orgin. The mineable reserves of coking coal in our country have been placed by the Central Mine Planning and Design Institute at about 17,000 million tonnes. The gross reserves have been put at 23,872 million tonnes.

8.2 During 1991-92, the consumption of coking coal in SAIL steel plants (including IISCO), TISCO and VSP was as under:-

Million Tonnes

	SAIL	TISCO	VSP
Indigenous sources	9.36	1.86	0.52
Imports	4.22	0.67	0.94
Total	13.58	2.53	1.46

The estimated consumption during 1992-93 by these plants is as under:—

Million Tonnes

	SAIL	TISCO	VSP
Indigenous sources	10.20	1.86	2.20
Imports	4.35	0.69	0.90
Total	14.55	2.55	3.10

9. Non-Coking Coal

During the year 1991-92, SAIL steel plants (including IISCO) consumed 4.04 million tonnes of non-coking coal produced from domestic sources. The likely consumption in 1992-93 is 4.2 million tonnes.

During 1991-92, TISCO consumed 1.5 MT of non-coking coal. Expected consumption during 1992-93 is 1.47 million tonnes.

During 1991-92, VSP consumed 0.91 MT of non-coking coal. Expected consumption during 1992-93 is 1.25 million tonnes.

REFRACTORIES

Refractories are the primary materials used in the industrial sector in the internal lining of Industrial Furnaces. Refractories are classified, from chemical composition angle into 3 classes— Acid Refractories, Basic Refractories and Neutral Refractories.

Refractories are also used for construction of all the furnaces including coke oven battery, Blast Furnance, Steel production furnances, re-heating furnaces, electric arc furnaces etc.

Refractory industry at present is delicensed and there are about 71 units with an installed capacity of 71.2 lakh metric tonnes per annum.

The consumption of refractories per tonne of crude steel varies widely depending upon the quality of raw material, technology and operational practices. In India the

consumption of refractories varies 30-60 kgs. per tonne of crude steel as compared to 15-20 kgs. in advanced countries. However, in the last few years, there has been improvement with the result that the volume of production of refractories has not increased with the increase in steel production.

The adoption of large size blast furnaces and basic oxygen furnaces in place of open hearth furnaces, secondary refining and continuous casting etc. have not only reduced the consumption of refractories, but have also led to a major change in the demand pattern towards more specialised refractories. These trends have resulted in the capacity in the refractory industry remaining unutilised to a great extent. The domestic refractory industry is now beginning to respond to the changed situation and has taken up technological upgradation. The domestic production of various categories of refractories during the last 3 years has been as under:-

(in tonnes)

Category	1989-90	1990-91	1991-92
Fireclay	222940	226560	197142
High Alumina	62430	178270	183185
Silica	37000	46650	29000
Basic	209116	196862	211574
Special Refractories	4380	5168	10317

The industry has been able to meet the overall demand from the consumers except for some high technology items whch continue to be imported. A number of large units have entered into foreign collaborations for import of technology for manufacture of specialised refractories.

Specialised Refractories

The raw materials required for manufacture of specialised refractories are basically high quality sintered magnesia (including sea water magnesia), sintered tabular alumina and sintered mullite. The import of raw materials during 1991-92 was approximately 1,10,000 tonnes of High Purity Magnesia including Seawater Magnesite, about 5,000 tonnes of tabular/sintered alumina, about 1200 tonnes of magnesia consinters, 200 tonnes of sintered mullite, 400 tonnes of zirconia bubbles and about 1200 tonnes of High Alumina Binders. It is expected that imports during 1992-93 would be 10% more than that of 1991-92.

Efforts are being made to develop indigenous capability for manufacture of the refractory raw materials.

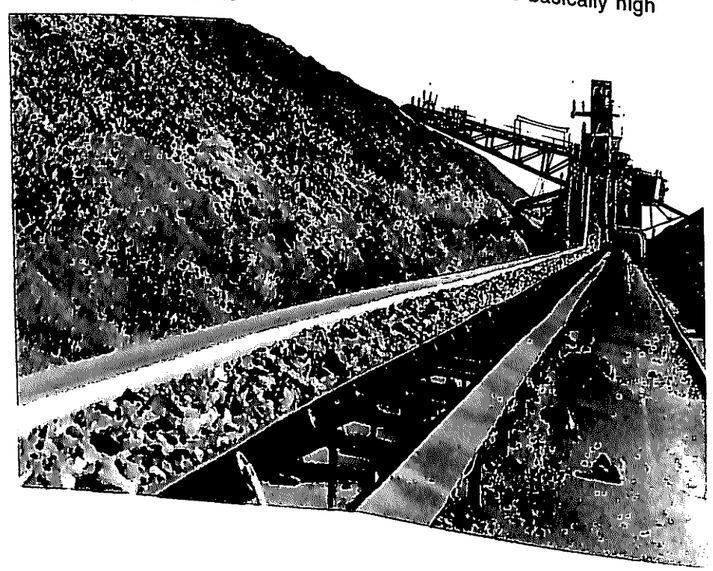
The industry is also gearing itself to export. Certain varieties of refractories like chemical bonded basic bricks, direct bonded basic bricks, slide gate plates and electrocast refractories are being exported. The value of exports during the last three years has been as follows:

(Rs. in crores)

Year	Value
1989-90	3.40
1990-91	5.78
1991-92	11.00

It is expected that exports during year 1992-93 would be over Rs. 20 crores.

Lump Ore Conveyor for Iron Ore



Distribution and Availability

Chapter-IV

The table below gives the availability of iron and steel in the domestic market during 1991-92 and estimated availability during 1992-93:—

(In '000 tonnes)

Item	Finished steel		Pig Iron	
	1991-92 (Provisional)	1992-93 (Estimated)	1991-92 (Provisional)	1992-93 (Estimated)
1. Production				
(a) Main Producers	7955	9460	1485	1692
(b) Secondary Producers	6374	6765	105	100
2. Import	1015	1100	152	150
3. Total (1+2)	15344	17325	1742	1942
4. Export	387	715	-	-
5. Inter Plant transfers	57	105	-	-
6. Net Availability (3-4-5-)	149001	16505	1742	1942

2. Pricing and Distribution of Iron and Steel

2.1 As part of the liberalisation measures, Government on 16th January, 1992, abolished the price and distribution regulation of the Joint Plant Committee (JPC) which has been in existence since 1964. The requirements of Defence, Railways, small scale industries sector, exporters of engineering goods and the North Eastern Region would, however, continue to be met on priority, at prices that may be announced by the producers from time to time. The Development Commissioner for Iron and Steel oversees compliance of this arrangement, with the assistance of the JPC.

2.2. The Development Commissioner for Iron and Steel continues to make allocations of pig iron to the designated consumers and the main producers supply the material on the basis of such allocations. In the case of steel items, allocations by the Development Commissioner for Iron and Steel are made to the State Small Scale Industries Corporations. Small Scale units which were drawing their materials directly from the main producers continue to do so. The Development Commissioner also issues Release Orders for supplies to exporters of engineering goods, and makes annual supply plans for the North Eastern Region. The requirements of Defence and Railways are met by the main producers directly in terms of the past procedures.

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

2.4 The levies on account of the Steel Development Fund (SDF), Engineering Goods Export Assistance Fund (EGEAF) and the JPC cess are added by the main producers (excluding IISCO) to their ex-works prices and remitted to the JPC. The SDF levy is payable on steel materials, ranging from Rs. 350.00 to Rs. 500.00 per tonne on different categories. The EGEAF levy is Rs. 113.00 per tonne on pig iron and Rs. 300.00 per tonne on steel items.

2.5 In replacement of the Freight Equalisation Scheme, the main producers i.e. SAIL, VSP and TISCO are charging either the actual freight upto stockyard or freight element as existed prior to deregulation (now Rs. 1080/- per tonne in case of steel and Rs.730/- per tonne in case of pig iron), whichever is lower. In doing so, the freight disadvantage to the states/areas located nearer the steel plants of the main producers has been removed. Simultaneously, the advantage of lower freight under the Freight Equalisation Scheme to the distant states/areas has been protected. The extra cost on this account is borne by the main producers.

2.6 Open market prices of certain important categories of iron and steel continue to be monitored in the Ministry through Development Comissioner for Iron and Steel.

3. Distribution Network

The main producers have been selling their products through a network of Departmental Stockyards, Consignment Agencies, Extension Counters and Conversion Agents, the details of which are as under:—

	Stockyard	Consignment Agency	Extension Counter	Conversion Agent
SAIL	42	10	4	98
VSP	3	15	-	25 + 15*
IISCO	2	6	-	27
TISCO	11	26	-	69

*Under finalisation.

4. Import and Export of Iron and Steel

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

4.2 With the liberalisation of India's trade policy and commencement of the export-import policy for 5 years (from 1/4/92 to 31/3/97), the policy for import and export of iron & steel materials has also undergone sweeping changes. Imports of iron and steel materials and ferrous scrap have since been decanalished. Import of all items of iron & steel is freely allowed. The Development Commissioner for Iron & Steel is no longer required to clear requests for imports from indigenous angle.

4.3 The advance licensing scheme for import of duty free raw materials, components, intermediates and consumables etc. for purpose of export promotion continues. The advance licensing scheme has been made more flexiable particularly with the introduction of value based advance licence.

4.4 None of the iron and steel items or their raw materials are any longer prohibited for exports, but export of ferrous scrap, pig iron and certain minerals/ores is subject to licensing. Exports of iron ore, chrome ore, manganese ore and concentrates and pellets of iron ore are made through designated canalising agencies.

4.5 Efforts are made by the DCI&S and this Ministry to ensure adequate supplies of raw materials to meet requirements of engineering exporters from domestic production.

4.6 Exports of iron & steel by main producers increased to 3.87 lakh tonnes during the year 1991-92. Exports mainly consist of plates from Bhilai Steel Plant, wire rods & structurals from TISCO and wire rods from RINL. The export of iron and steel in 1992-93 is expected to be 7.15 lakh tonnes.

Functions of the Office of the Development Commissoner for Iron and Steel: The office of Development Commisoner for Iron & Steel (DCI&S) as well as its Regional Offices continued to perform their advisory developmental and regulatory functions during the year.

With 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 Ministry of steel;

(b) Monitoring of regional price and supply trends and suggesting to the Ministry the 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 newly designated priority sector such as Defence, Railways, State Small industries Corporations, Enginneering Goods exporters and the North-Eastern States;

(f) Allocation of materials to the State Small Scale Industries Corporations;

(g) Allocations of materials to remote areas like North Eastern States, Andaman & Nicobar Islands, Lakshadweep Islands;

(h) Assistance to Engineering Goods Export units through priority allocations and monitoring thereof;

(i) Operation of the Engineering Goods Export Assistance Fund and the Steel Development Fund.

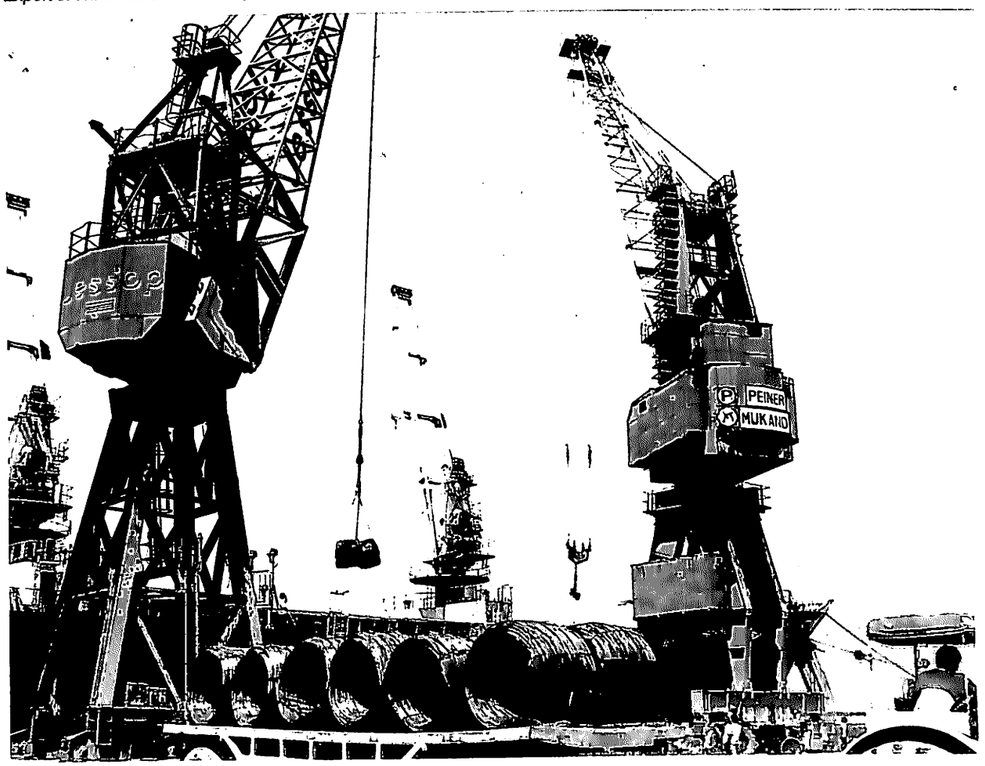
(j) Rendering assistance to the EAF Units and the secondary sector, by way of capacity assessment, assistance in procurement of indigenous/ imported raw materials and import substitution measures, aiming at the overall development of the sector;

(k) Interface between the Government and different consumer groups and to facilitate consumer-producer interaction;

(l) Coordination for movement of raw materials to steel plants;

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

Export of Wire Rod Coils at Vizag Port



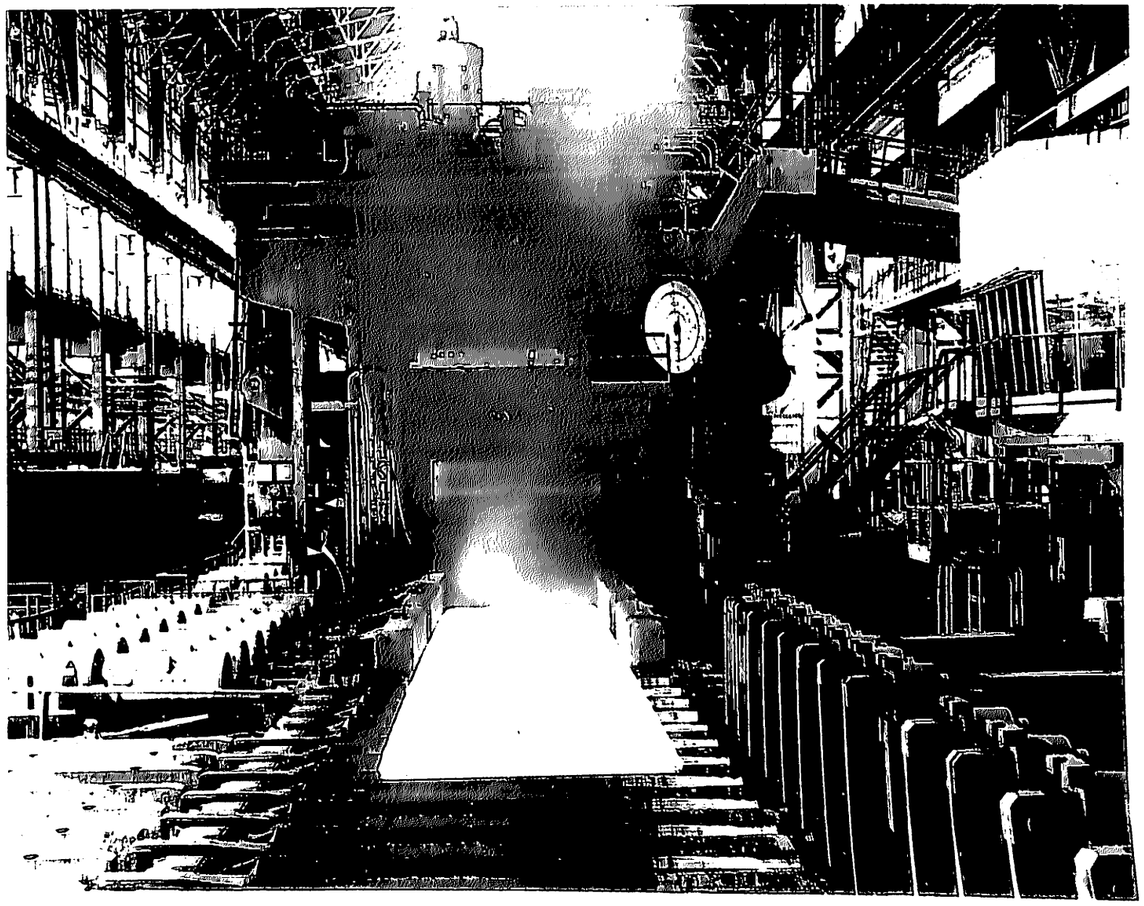
Public Sector

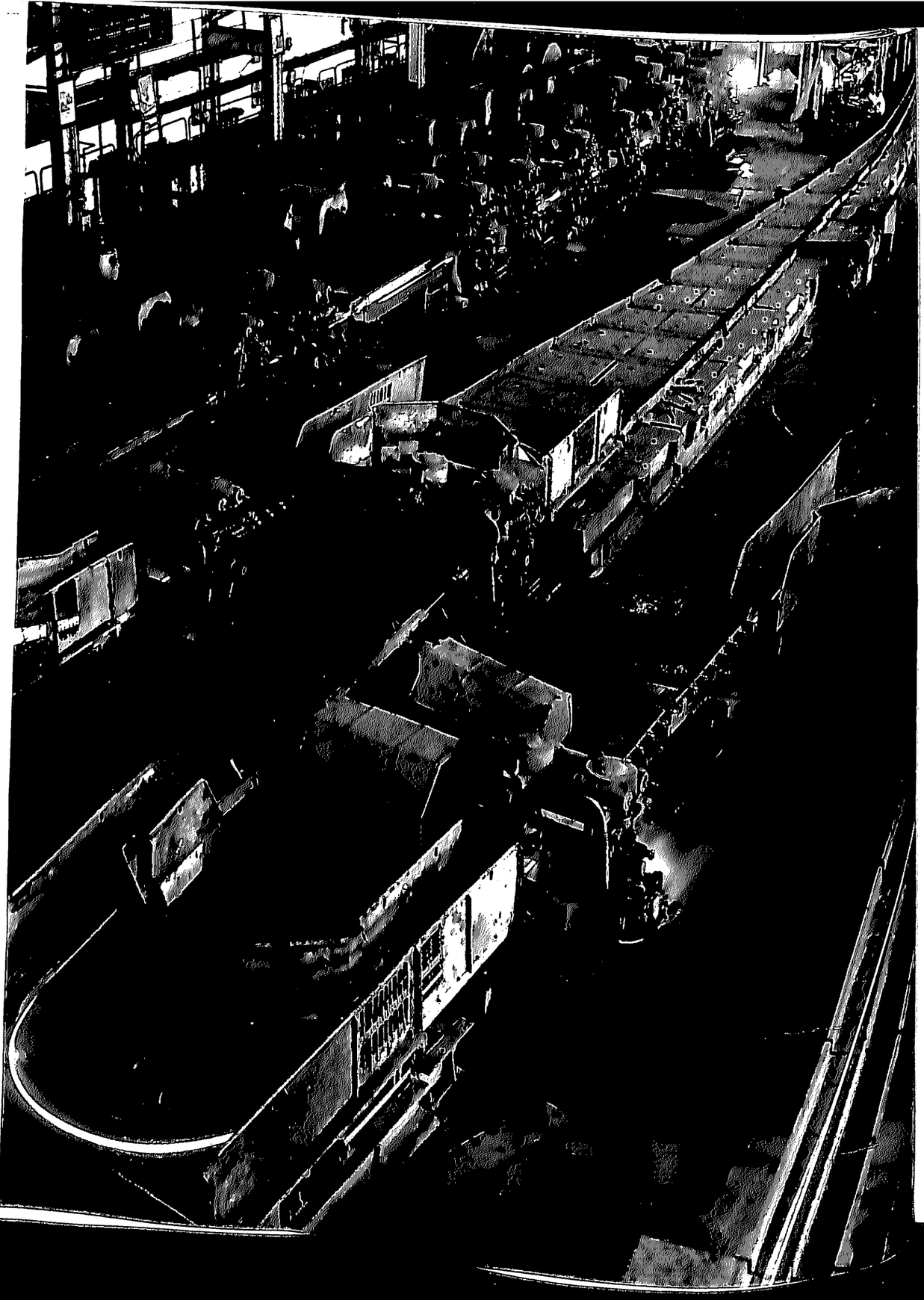
Chapter-V

The Public Sector has been assigned a very important role in the economic development of the ocuntry. It was conceived by the planners to attain the commanding heights of Indian economy and this has been amply proved in its size and strength in the steel sector. Over the years, the public sector has increased its areas of activity and today encompasses virtually all segments of steel industry in the country.

Under the New Industrial Policy announced by Government in July, 1991, steel industry has been removed from the purview of the compulsory licensing and private sector is now free to set up steel plants, subject to certain locational restrictions. As a part of further liberalisation measure, Government have abolished the price and distribution regulation, subject to certain safeguards to the certain priority sectors. Still the public sector steel plants will continue to play a leading role in the steel sector.

Plate Mill at Bhilai





1. Steel Authority of India Limited

1. General

Steel Authority of India Limited (SAIL) is a company registered under the Comapies 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 Company Limited, a wholly owned subsidiary of SAIL. The SAIL has also four special and alloy steels and ferro-alloys units at Durgapur (West Bengal), Salem (Tamilnadu), Chandrapur (Maharashtra) and Bhadravati (Karnataka). The plants at Chandrapur and Bhadravati belong to the Maharashtra Elektrosmelt Limited and Visvesvaraya Iron & Steel Limited respectively which are also subsidiaries of SAIL. Besides, SAIL has three central units located at Ranchi, the Research and Development Centre for Iron and Steel (RDCIS), the Centre for Engineering and Technology (CET) and the Managment Training Institute (MTI). The IISCO-Ujjain Pipe and Foundry Company Limited, a subsidiary of IISCO, produce cast Iron Spun Pipes at its works at Ujjain (Madhya Pradesh). The Marketing of products of SAIL plants is done through the Central Marketing Organisation (CMO), Calcutta which has a country-wide distribution network.

2. SAIL (Excluding Subsidiaries)

2.1 Finance

The authorised capital of SAIL is Rs. 5,000 crores. The paid up capital of the company was Rs. 3981.51 crores as on 31st March, 1992 excluding Rs. 4.38 crores as share money pending allotment.

The company received fresh loan of Rs. 583.48 crores from Steel Development Fund. During the year the Comapny repaid loans to the Government and to Steel Development Fund to the tune of Rs. 246.73 crores. The outstanding loans at the end of the year 1991-92 stood at Rs. 406.86 crores from Government of India and Rs. 3263.89 crores from the Steel Development Fund as against Rs. 478.28 crores and Rs. 2855.71 crores respectively as on 31st March, 1991.

The cash expenditure of Rs. 2009.11 crores (inclusive of interest) on various capital schemes during the year was financed from internal resources, drawal from Steel Development Fund and other borrowings.

Under the Public Deposit Scheme of the Company, the net deposits (i.e. net of repayments and renewals) stood at Rs. 1013.47 crores as on 31st March, 1992.

2.2 Turnover and Profit

The Company recorded its highest ever turnover of Rs. 9359.89 crores during1991-92 registering an increase of 14 per cent over the previous year. The profit before tax for the year was Rs. 367.30 crores after providing interest and depreciation of Rs. 1136.12 crores.

2.3 Capital Expenditure

The overall expenditure on various capital schemes during 1991-92 at Rs. 2009.11 crores was the highest ever. A sum of Rs. 99.08 crores was spent on continuing schemes, Rs. 1349.74 crores on modernisation and other new schemes, Rs. 528.32 on additions and modifications and replacment schemes and Rs. 31.97 crores on township, research and development and feasibility studies.

3. Production Performance

The four integrated steel plants of SAIL at Bhilai, Duragpur, Rourkela and Bokaro recorded best ever production of 9.8 million tonnes of Hot Metal, 9.3 million tonnes of crude steel and 7.6 million tonnes of saleable steel during 1991-92 showing a growth of 7 per cent, 10 per cent and 9 per cent respectively over previous year. The target fulfilment was 100 per cent in Hot Metal, 97 per cent in Crude Steel and 101 per cent in Saleable Steel.

The Alloy Steels Plant at Durgapur achieved a growth of 10 per cent in saleable steel production. The continuous cast production at Alloy Steels Plant improved by 56 per cent during the year. Production of Salem was registered as per market demand.

There has been significant improvment in the product-mix during the year with emphasis on value added products. Production of cold rolled products (CR Coils/ Sheets, GP/GC, CRNO/CRGO Electrical Sheets and Tin Plants) rose by 25 per cent during the year. The plates production was higher by 11 per cent during the year over previous year. The synergy amongst SAIL plants was further enhanced with 14 per cent higher inter-plant transfer of rollable steel.

3.1 Energy Conservation

Improvement in techno-economic performance continued in all SAIL plants in 1991-92. Energy consumption per tonne of crude steel declined for the fifth successive year and has shown an improvement of 3.2 per cent over the previous year.

3.2 Equipment Performance

The Maintenance of assets continued to receive close attention by elaborate planning and execution of capital repairs and preventive maintenance programmes resulting in satisfactory equipment availability and also production of quality special grade products.

3.3 Import Substitution

Inspite of liberalisation in Trade Policy, emphasis continued to be laid in the area of Import Substitution. As a result of coordinated efforts made by Growth Division, it was possible to indigenise 722 numbers of items valued at Rs. 25 crores.

3.4 Ancilliary Industry

The development of small scale ancilliary units received due encouragment. Sustained efforts made in this area increased the value of pruchases of stores & spares items from these units during 1991-92 to Rs. 123 crores as compared to Rs. 106 crores during the previous year.

3.5 Captive Mines

The production of raw materials from captive mines was 21.43 million tonnes during 1991-92 and the purchased material was to the tune of 4.65 million tonnes during the year. The total receipt of material at the different plants was 23.86 million tonnes excluding coal.

3.6 Captive Power Generation

The Captive Power Generation during 1991-92 was 4 per cent higher than that during the previous year. Drawal of power from utilities grids dropped to 37 per cent of total power consumption.

3.7 Enviornment Management

In view of the need to protect the environment and maintain ecology, the Company continued to devote attention to Environment Management. In order to create awareness on pollution control and environment improvement in plants and mines, a Parayavaran Award has been instituted. An action Plan for meeting country's pollution control norm by December, 1993 has been finalised. Stress has also been laid on Solid Waste Management.

A massive afforestation programme was undertaken by the Plants and Mines to improve environment.

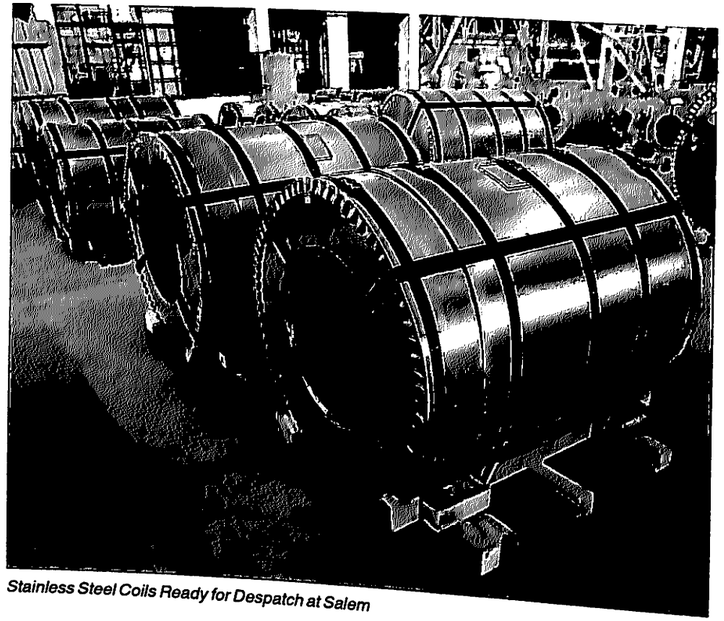
4. Sales & Marketing Performance

The Company supplied 6.8 million tonnes of mild steel in the domestic market during 1991-92. The Company improved its market share from 36 per cent to 39 per cent. A record sale of 28,700 tonnes of CRGO and CRNO Sheets was achieved during the year.

Despite adverse market conditions in the auto and the industrial sectors, there was record sale of high value items of ASP including sale of stainless steel products of 8200 tonnes.

The Company exported mild steel and stainless steel products valued at Rs. 138 crores during 1991-92 representing an increase of 10 per cent over preivous year. For the first time, a consignment of Galvanised Wires converted out of BSP wire Rods was exported to the Middle East.

Deemed Export orders and orders for engineering items totalling to over Rs. 10 crores were booked during the year. The new trade reforms and policy changes initiated by the Government during 1991-92 will help SAIL enhance its exports efforts.



Stainless Steel Coils Ready for Despatch at Salem

In the area of export of Projects and Services, the company signed an agreement with Phoenix Iron & Steel Corporation (PISCOR), Philippines for the first phase of rehabilitation of their existing steel making furnances.

5. Capital Scheme

Durgapur Steel Plant

The modernisation programme is being executed through 16 turnkey packages. One indigenous package viz., Hot Metal Ladle Repair Shop is commissioned and part facilities in five packages have been completed. The total modernisation work is likely to be completed by March, 1994 except for two Blast Furnaces.

Rourkela Steel Plant

The modernisation is being implemented in two phases. All the 9 indigenous packages of Phase-I and 5 global and 15 indigenous packages of Phase-II have been ordered and are progressing generally as per schedule. The total modernisation programme is likely to be completed by December, 1995 as per the approved schedule.

Bokaro Steel Plant

The proposal of modernisation of Bokaro Steel Plant is under active consideration of the Government.

6. Corporate Planning

A major highlight of the year 1991-92 was the publication of SAIL's Corporate Plan upto 2005 AD. The document represents a blue print to take the Company forward on a motto of "Growth with Profitability" and squarely face market competition in a radically transformed economic environment anticipated in the nineties and beyond. The plan envisages an enhancement of annual saleable steel production in SAIL to 17.5 MT by 2004-05, 20 per cent of which will be targetted for export.

7. Research & Development Activities

The efforts of Research & Development Centre for Iron & Steel (RDCIS) in different plants have resulted in improving quality, productivity yield and in reducing the specific energy consumption, Besides developing new technologies and products, RDCIS has also been engaged in basic research activities.

8. In-house Engineering & Technology Services

Centre for Engineering & Technology (CET) is providing Design & Engineering support to plants for modernisation, technological upgradation, AMR and debottlenecking schemes. CET is now expanding its support activities in other areas as well e.g. Raw Materials, Coke Making, Continuous casting, Rolling Mills and Pollution & Environmental Control.

CET, with its growing competence and experience, consultancy skills and back up support from the

In House Engineering & Tecnology

experienced engineers and technologists from steel plants and R&D Centre, continues to extend all help in SAIL's endeavour for improving the technological status and operating parameters of the plants and also in the efforts to export projects and services.

9. Inter Plant Standardisation (IPSS)

The IPSS Secretariat has finalised 13 IPSS Standards. Besides 19 Guideline documents have been published during 1991-92 to be used by different Plants/Units. 1992-93 has been declared as the implementation year for IPSS.

10. Human Resources Management

The thrust on optimum utilisation of the human resource to achieve higher productivity and imrpovement in efficiency received continued thrust during 1991-92. The measures adopted included reationalisation of manpower, stepping up of HRD activities, inculcation of productive work culture and maintenance of peaceful industrial relations.

10.1 Manpower Strength

The total manpower of the Comapny as on 31st March, 1992 was 1,90,928 comprising 18,879 executiives and 1,72,049 non-executives as against the position on 31st March, 1991 which was 1,92,364 comprising 18,911 executives and 1,73,453 non-executives.

The works manpower productivity was 85 ingot tonnes per man year registering an increase of more than 10 per cent over the last year.

10.2 Training

The company continued to put special emphsis on training and 99,265 employees were trained under various programmes as against 89,392 during the last year. In addition, about 230 employees were deputed abroad for training on latest technologies and managerial practices including the modernization schemes. SAIL also signed an agreement with M/s. Voest Alpine, Austria for training of 180 SAIL Executives, funded by World Bank. In addition, 252 SAIL Executives will be trained in Australia.

10.3 Employees Family Benefit Scheme & Welfare

In pursuance of NJCS Agreement of 5th July, 1989, a unique Welfare Scheme called "Employees Family Benefit Scheme" effective from Ist January, 1989, has been introduced. The Scheme provides for the payment of last basic pay plus DA drawn to an employee or his nominee till the normal date of superannuation of the employee, in the event of employee suffering from permanent total disablement or death while in service, provided the employee or his nominee deposits with the Company, an amount equivalent to the

Various welfare measures for the benefit of its employees like free medical services, housing, education for children, facilities of cooperative societies as well as providing avenues for socio-cultural activities have been undertaken. On this account, the Company has spent an amount of Rs. 238.77 crores during 1991-92. The Company also extended the benefits under the Medi-claim Scheme to its retired employees and their spouses as a social security measure. Around 7000 ex-empioyees have opted to utilise the benefits available under this scheme so far.

10.4 Safety

Considerable efforts were made to further strengthen the safety and occupation health. Special measures were taken in the area of safety for contractual workers. Various training programmes towards safety awareness and techniques were organised. A specific action plan was drawn which is under implementation.

10.5 Industrial Relations

A very cooperative and amicable relationship between the management and the unions prevailed during 1991-92. Through effective use of bipartite forums, a healthy and cooperative atmosphere, conducive for production and growth, was maintained.

10.6 Official Language

The Comapny continued to vigorously pursue its efforts in implementing the Official Language Policy of the Government. Various incentive schemes for promotion of "Progressive use of Hindi" in the official work resulted in a large number of employees doing a major portion of their work in Hindi. The correspondence course for imparting training in Hindi started by the Corporate Office attracted more than 2,000 employees this year. The Company won the First Prize for its Hindi exhibition at the All India Official Language Conference held at Gangtok in October, 1991. The Company has been selected for being awarded a Trophy by the Ministry of Steel for doing good work in Official Language Implementation.

10.7 Peripheral Development

SAIL has been playing an active role in undertaking various welfare measures like providing drinking water facilities, health care programmes, educational facilities, recreational activities, etc. During the year 1991-92, an amount of Rs. 2.45 crores has been spent on this account and it is proposed to spend an amount of Rs. 2.88 crores during the year 1992-93.

10.9 Awards

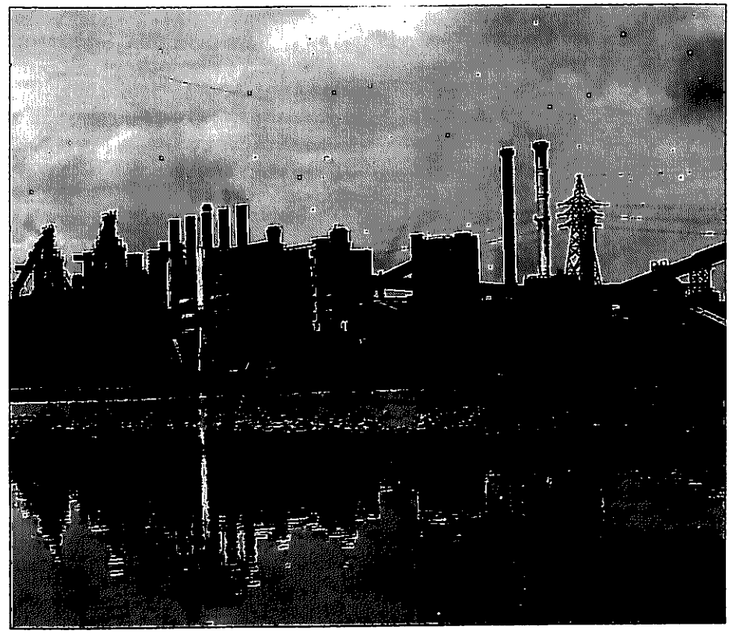
Salem Steel Plant was awarded the National Safety Award for 1988 (Runner up in Scheme-I) and the Safety Appreciation Star Award for 1988 from National Safety Council. Rourkela Steel Plant won the coveted 'Sword of Honour' Award from British Safety Council for the year 1991.

The Company bagged the National Quality Award 1991 instituted by Institute of Directors. Bhilai Steel Plant was adjudged to be the best quality steel plant by Indian Institute of Metals. SAIL plants have participated and won prizes in regional and national level competitions in the area of Quality Circles.

Subsidiaries

THE INDIAN IRON & STEEL COMPANY LIMITED

The Indian Iron & 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 Central Government and subsequently all these shares were transferred to SAIL. IISCO became a wholly owned subsidiary of SAIL on 30th March, 1979.



Pan View of IISCO

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

The Company produced 822 thousand tonnes of Hot Metal, 389 thousand tonnes of Pig Iron, 364 thousand tonnes of Crude Steel and 387 thousand tonnes of Saleable Steel during 1991-92 registering a growth of 16 per cent, 26 per cent, 13 per cent and 18 per cent respectively over the previous year.

Capital Schemes

The Company incurred expenditure of Rs. 53.86 crores on various Capital Schemes including Additions, Modifications and Replacements during the year as against Rs. 30.57 crores during the previous year. In addition, an expenditure of Rs. 6.13 crores was also incurred on enabling works under Modernisation.

Financial Performance

The turnover of the Company in 1991-92 at Rs. 708.75 crores was higher by 45 per cent over the previous year. The net loss for the year was Rs. 22.29 crores as compared to Rs. 133.55 crores during 1990-91.

The authorised share capital of the company including the preference shares is Rs. 550 crores. The paid up share capital at the year end was Rs. 386.28 crores (excluding share money pending allotment of Rs. 1.39 crores). SAIL provided Rs. 1.39 crores as equity funds and Rs. 18.11 crores as loans for Capital Expenditure and working capital needs of IISCO.

Sales & Marketing

The sales of steel during the year was at 319.6 thousand tonnes as against 313.9 thousand tonnes during the last year. The Gua Ore Mines of the Company for the first time exported 46.5 thousand tonnes of Iron Ore fines to China.

Human Resource & Management

Industrial Relations situation remained generally peaceful during the year. Emphasis continued to be laid on improvement of the quality of training, multi-skill training, modernisation training, technical literacy training etc. 2784 executives and 5245 non-executives were trained in various fields during the year.

Scheduled Caste and Scheduled Tribe employees consituted 16 per cent and 20.5 per cent respectively of the total number of employees. Intake of SC and ST candidates was 25.5 per cent and

5.9 per cent respectively of the total recuritment during the year.

The thrust on safety continued during the year through seminars, drama competitions, training programmes and display of posters etc. at conspicuous places.

The Company continued to pursue vigorously the implementation of the Offical Language Policy of the Government.

IISCO-UJJAIN PIPE & FOUNDRY COMPANY LIMITED

IISCO-Ujjain Pipe & Foundry Company Limited (IISCO-Ujjain) is a wholly owned subsidiary of the Indian Iron & Steel Company Limited, which in turn is a subsidiary of Steel Authority of India Limited. IISCO-Ujjain manufactures Cast Iron Spun Pipes in the range of 80 mm to 350 mm dia sizes in its works at Ujjain.

Production Performance

IISCO-Ujjain produced about 36 thousand tonnes of Cast Iron Spun Pipes during 1991-92. During the year stress was laid on production of pipes in smaller sizes of 80 mm and 100 mm.

Financial Performance

During the year, turnover of the Company was Rs. 30.58 crores. Loss for the year was Rs. 3.44 crores. The authorised capital is Rs. 4 crores of which paid-up capital is Rs. 3 crores. The Company incurred an expenditure of Rs. 4.98 lakhs during the year on various capital schemes.

Sales Marketing

The order booking during the year was 39,542 tonnes which was 88% of the Annual Performance Plan target. Lower order booking was due to inadequate funds available with Government Department for water supply/sanitation scheme and wide gap in prices between C.I. Spun Pipes and cheaper substitutes. Sales despatches were 33,133 tonnes as against 36,008 tonnes in 1990-91 because of non-availability of piece meal railway wagons and restrictions on load carrying capacity of trucks.

Industrial Relations

The Industrial Relations situation in the Company remained congenial and peaceful during the year.

Use of Hindi

The Company continued to make good progress in regard to use of Hindi in official work.

MAHARASHTRA ELEKTROSMELT LIMITED

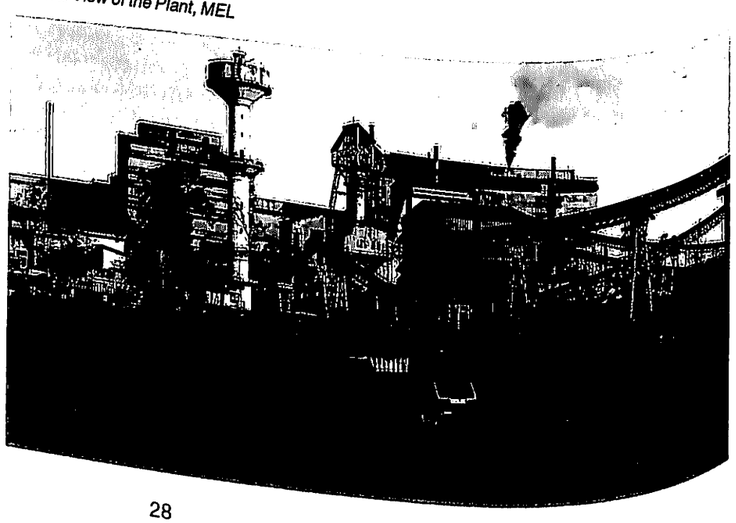
Background

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

Financial Performance

The Company achieved the highest turnover of Rs. 124.02 crores druing 1991-92 as against Rs. 89.72 crores during the year

General View of the Plant, MEL



before. It recorded the highest net profit of Rs. 7.70 crores after providing for interest and depreciation of Rs. 4.34 crores and Rs. 3.85 crores respectively. The authorised capital of MEL is Rs. 10 crores. The subscribed and paid-up capital is Rs. 5 crores. SAIL holds about 96% of the paid-up capital.

Production Performance

The production of all grades of Ferro Alloys during the year 1991-92 totalled to 80,023 tonnes. Due to capital repairs of furnace II, the production was slightly lower which was partly made up after the furnace was put into operation in January, 1992.

Research & Development

A 100 tonnes Per Day High Pressure sintering unit commissioned in July, 1991 is being stabilized. So far a production of 5770 tonnes of Manganes Ore sinter has been achieved on trial basis.

Trial production has started jointly by RDCIS and MEL with the aim of improving the operational parameters and productivity.

The 50 tonnes per day sintering plant located at MEL premises purchased during the year and put into operation from December, 1991 after thorough revamping has resulted in increased availability of Managanese Ore sinters.

Laboratory and pilot plant testing for setting up a 150 tonnes per day Manganese Ore Fines benefication plant has been completed. Depending upon the financial and commercial viability of the plant, further decisions will be taken.

The system for pre-heating Ferro Manganese charge in Submerged Arc Furnace (SAF) II by using clean gas of SAF I has been made ready. Trials will be taken on SAF II after switching over the furnance to Ferro Manganese production from Silico Manganese production in July, 1992.

Technology Absorption, Adaptation & Innovation

Capital repairs to SAF-II including roof modifications carried out has resulted in record furnace availability of 98.35 per cent.

Due to increase in water jacket casting, saleable yield of Silico Manganese has improved to 86 per cent during the year.

The R&D trials for improvement in the technology of production Medium Carbon Ferro Manganese in 1 MVA furnace through the use of pre-reduced Manganes Ore as charge material in the furnace has resulted in reduction in energy consumption, Silico Manganese consumption and time consumption.

VISVESVARAYA IRON & STEEL LIMITED

Visvesvaraya Iron & Steel Limited, situated in Bhadravati, Karnataka is a subsidiary of Steel Authority of India Limited. It is a major producer of Special & Alloy Steels, Mild Steel and Ferro Alloys.

Financial Performance

The authorised capital of the Company as on 31st March, 1992 was Rs. 100 crores of which subscribed and paid up captial was Rs. 81.92 crores. Out of the paid up capital, 60 per cent is held by SAIL and the balance 40 per cent by the Government of Karnataka.

For the third consecutive year after the take over by SAIL in August, 1989, the Company made cash profit. The Company registered yet another record sales turnover of Rs. 186.48 crores signifying an increase of 23 per cent over the previous year. The Company showed all round improvements during the year and ended with a marginal loss of Rs. 169.25 lakhs after providing for depreciation and interest., This was mainly due to steep hike in power tariff, increase in the price of fuel oil, and other imputs which had to be absorbed.

Production Performance

During the year 1991-92, production of 97288 tonnes of saleable steel inclusive of 54376 tonnes of Alloy and Special Steel registered a growth of 29.85 per cent over the previous year. The slight decline of 7.57 per cent in respect of Alloy and Special Steels was mainly due to cut imposed in their off-take by Defence and Automobile units.

However, the company could register a growth of 170.32 per cent in Mild Steel and 23.18 per cent in Ferro Silicon.

Capital Schemes

The major capital schemes completed during the year were installation of Ladle Refining Furnace, Water Cooled Panelling of Electric Arc Furnace-I and Electric Arc Furnace-II, uprating of EAF-II with 12 MVA Transformer, Water Supply complex for Steel Melting Shop and Revamping of Oxygen Plant-I. Work on installation of the 530 M Blast Furnace is in full swing. Concerting of Chimney and Stoves was completed ahead of schedule. Scheduled commissioning of the Blast Furnace is in August, 1993. A sum of Rs. 9.48 crores was spent on these schemes during the year.

Marketing

While the Company exceeded the target of Sales by 103 per cent and 102 per cent in respect of Mild Steel and Ferro Silicon, there was a marginal decline than last year in Alloy & Special Steel Products.

This was mainly due to lower off-take by the traditional customers like the Automobile industries and Defence units. Sensing this decline earlier, efforts were made to diversify into other segments of the market like the General Engineering Sector and Railways. Insptite of best efforts however, sales of Alloy & Sp;ecial Steels at 50765 tonnes was lower by about 11 per cent over last year. However the total sales turnover at Rs. 186.48 crores has been the highest achieved so far.

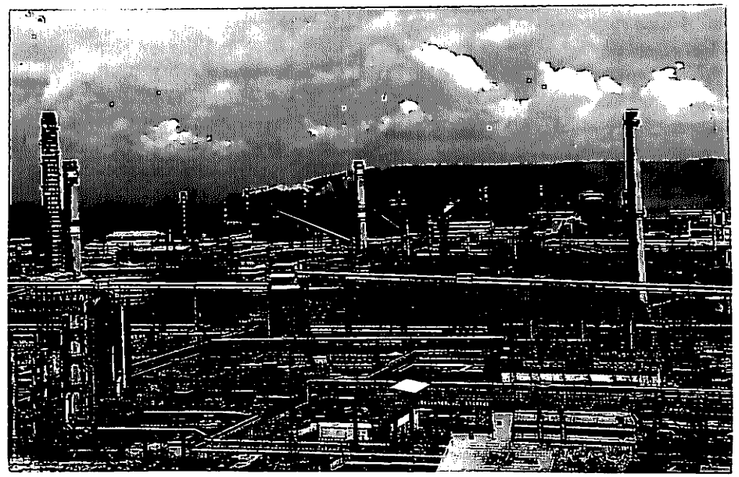
Human Resource Management Review

Total manpower strength as on 31st March, 1992 was 6925 comprising 508 executives and 6417 non-executives. Percentage of SC and ST to total employment was 12.3 per cent and 1.04 per cent respectively. Since the Company is having excess manpower, no recruitment including any Special Recruitment Drive to make up under representation of SC/ST employees could be resorted to. In order to utilise the available human resource, efforts to train the employees in several fields continued and this included 23 SC and 1 ST employee. A separate sC/ST Cell is functioning to look into any grievances of SC/ST employees and for taking care of the welfare of such employees. There has been further improvement in the work culture and the overall industrial relations situation contineud to be safisfactory.

2. Rashtriya Ispat Nigam Limited (Visakaptnam Steel Plant)

1.0 BACKGROUND

The setting up of an Integrated Steel Plant at Visakhapatnam in Andhra Pradesh with an annual capacity of 3.4 million tonnes crude steel was approved by Government of India in June, 1979. This is the first shore based Integrated Steel Plant in the country and also the first in the southern part of the country. Government of erst-while USSR had agreed to provide financial assistance to the tune of Roubles 390 million.



Panoramic View of Visakhapatnam Steel Plant

2.0 INCORPORATION OF A NEW COMPANY

Originally, the project was to be implemented by Steel Authority of India Ltd. (SAIL). In February, 1982, however, a new company under the name and style of Rashtriya Ispat Nigam Limited was incorporated in the Public Sector and entrusted with the responsibility of establishing the Steel Plant at Visakhapatnam.

3.0 PROJECT PROFILE

Visakhapatnam Steel Plant (VSP), is the best laidout steel work of the country with a potential for substantial expansion as well as provision for a captive harbour.

The plant has been built to exacting international standards in design and engineering, incorporating extensive energy saving and pollution control measures. With its strategic location and state-of-the-art technology, VSP has great potential for export of quality steel products to the international market.

The coastal location of this large green field steel plant will facilitate the import of high quality coking coal and the export of steel products and will also enable the plant to take advantage of coastal shipping for the distribution of its products to the domestic market. It was with these objectives in view that provision had been made during the site selection stage itself for a captive harbour.

The plant is designed to adopt some of the most modern tech-nologies, which include:

- 7 meter tall coke ovens
- Dry quenching of coke with auxiliary power generation facilities.
- 3200 Cu M Blast furnace
- Torpedo Ladle for Seel Melt Shop in addition to Conventional Mixer.
- Cast house slag granulation for Blast Furnance.
- 100% Continuous Casting of Liquid Steel

4.0 PROJECT COST

A detailed project report for the steel plant prepared by M/s. M.N. Dastur & Co. (P) Ltd; the principal consultants for the project, estimated a cost of Rs. 3897.28 crores (based on 4th quarter, 1981

the same time, restrict the capital investment. The capaicty of crude steel was reduced to 3.00 MT p.a. The revised cost estimates of the project at Rs. 6849.70 crores (based on 4th quarter, 1987 prices) were approved by Government in June, 1988. The cost of the project has further increased. The VSP management has placed the cost at Rs. 8529.13 crores (based on 2nd quarter, 1991 prices), which is under consideration of the Government. The capital expenditure upto 31st October, 1992 was Rs. 7423 crores.

5.0 COMMISSIONING

Most units under Stage I with a capacity of 1.5 MT of crude steel namely Coke Ovens and By-product Plant (Battery complex), Sinter Plant, Blast Furnace-I, Steel Melt Shop with one Converter and two CCMs, Billet Mill and Wire Rod Mill had gone on stream between September, 1989 to November, 1990 within a span of 15 months. Continuous Casting Machine No. 1 and Converter-2 were commissioned on 28th January, 1991 and 4th March, 1991 respectively.

Bar Mill and Coke Oven Battery No. 2 Complex, the last two units of Stage-I were put into operation in October, 1991.

Commissioning of Stage-II Units was commenced with the inauguration of Continuous Casting Machine No. 4 by Hon'ble Union Minister of Steel & Mines on 30th September, 1991. Other units were completed and commissioned in quick succession.

28th March, 1992 was landmark in the history of Visakhapatnam Steel Plant as the following three units were completed and became operational:—

— Lighting up of Coke Oven Battery-3

— Medium Merchant and Structural Mill was commission.

— Blast Furnace-2 was commissioned.

Coke was pushed from Battery-3 on 31st July, 1992 marking the completion of Stage-2 Units of VSP. The entire Stage-2 Units were, thus, commissioned within a span of 9 months and ahead of the target date of August 15, 1992. The VSP was dedicated to the nation by Hon'ble Prime Minister on August 1, 1992.

6.0 FINANCIAL PERFORMANCE

The gross turnover for the year 1992-93 is budgeted at Rs. 1884 crores against a turnover of Rs. 772 crores for 1991-92. The gross turnover during the year upto October, 1992 was Rs. 632 crores.

For the year 1992-93, the company has been budgeted to achieve a positive gross margin of Rs. 92 crores. The financial perfomance till end of October indicates a positive gross margin of Rs. 22.68 crores as against the budget estimate of Rs. 15.81 crores.

7.0 PRODUCTION

The production performance for the year 1991-92 and 1992-93 (April-October) is given below:-

(Figures in Tonnes)

PRODUCT	1991-92 ACTUALS	ANNUAL TARGET	1992-93 APRIL - OCTOBER		
			TARGET	ACTUAL	% ACHIEVEMENT
Hot Metal	1246064	2600000	1365000	1074080	79
Liquid Steel	587162	1800000	915000	537139	59
Saleable Steel	516640	1520000	780000	445687	57
Pig Iron for Sale	639321	850000	470000	517341	110

Growth in production as compared to the same period during 1991-92 is 80% for Hot Metal, 101% for Liquid Steel and 109% for Saleable Steel.

8.0 TECHNO-ECONOMIC PERFORMANCE

In the techno-economic performance, Viskahapatnam Steel Plant has shown improvements in most of the Pararmeters as compared to the previous year, as per the details given below:—

	1991-92	1992-93 (upto Oct.)
Yield of Met Coke (%)	62.85	66.85
BF Coke Rate (Kg/T hm)	596.23	584.74
Specific Energy Consumption (G Cal/T Is)	12.33	10.96

9.0 CAPTIVE POWER GENERATION

The captive power generation of Visakhapatnam Steel Plant has been satisfactory with an average plant load factor of 60%.

10.0 RAW MATERIALS

Visakhapatnam Steel Plant is linked to Bailadilla for iron ores. On account of the export commitments and also restraints in Railway movements, a part of VSP's requirement has been met from Donimalai for certain period. Requirement of SMS grade limestone is being met partly from indigenous sources and partly through imports. Supplies of other raw materials like boiler coal and medium coking coal have been adequate to meet the requirement.

11.0 MARKETING

Visakhpatname Steel Plant has its own marketing set up to sell its products. Currently, 18 outlets are in operation at Agra, Ahmedabad, Bangalore, Bombay, Calcutta, Chandigarh, Cochin, Coimbatore, Delhi, Faridabad, Ghaziabad, Hyderabad, Indore, Kanpur, Madras, Patna, Pune and Visakhapatnam. At Bombay, Madras and Hyderabad, VSP has set up its own stockyards and at 15 other places Consignment Agency arrangements are functioning.

12.0 EXPORTS

Besides, competing in the indigenous market, Visakhapatnam Steel Plant has made concerted efforts to enter export market. The quality of Visakhapatnam Steel Project products has been appreciated by the customers. During 1992-93 about 75,718 T of wire rods and billets, valued at Rs. 55.31 crores were exported till end November, 1992. Visakhapatnam Steel Plant has planned to export about 2,00,000 T of wire rods, billets and structurals during the remaining period of the year under report. The foriegn exchange earning by VSP during the year will be of order of Rs. 200 crores approximately.

13.0 ENERGY CONSERVATION

Energy management is a major thrust area in Visakhapatnam Steel Plant. The consumption level for 1991-92 was 12.33 Cal/Tcs. Visakhapatnam Steel Plant has adopted a number of energy conservaton measures as a result of which the energy consumption has been brought down to 10.98 G Cal/Tcs during the period from April to October, 1992. Visakhapatnam Steel Plant has a target to bring down the energy consumption to 9.20 G Cal/Tcs by the end of the year 1992-93.

14.0 SAFETY

The comprehensive policy on "Occupation Safety and Health" was evolved by the Management of Visakhapatnam Steel Plant in April, 1990 to ensure the safety and health of its employees.

In the very first year of operation (1990), Visakhapatnam Steel Plant bagged the prestigious 'Steel Minister's Trophy for the Best Safety Performance amongst all the integrated steel plants in India. Visakhapatnam Steel Plant was awarded the 'Ispat Suraksha Puraskar' for the highest reduction (59%) in the weighted accident rate per 1000 employees during the year under report.

15.0 ENVIRONMENTAL MANAGEMENT

Visakhapatnam Steel Plant has undertaken extensive pollution control measures and used latest technologies such as dry quenching of coke, smokeless charging of coal, converter gas recovery, sludge drying etc.

Similarly, water pollution control measures have been taken at Visakhapatnam Steel Plant. The treatment methods adopted at Visakhapatnam Steel Plant for removal of pollutants are Chemical, Physical and Biological depending on the type of pollutant.

16.0 R&D ACTIVITIES

Research and Development activities have been initiated during the year 1992-93.

The major thrust of R & D activities currently is to increase productivity at Sinter Plant, Steel Melting Shop. These activities are being implemented with the help of the R&D Centre at Ranchi and also foreign specialists.

17.0 INFRA STRUCTURAL FACILITIES

(A) Power

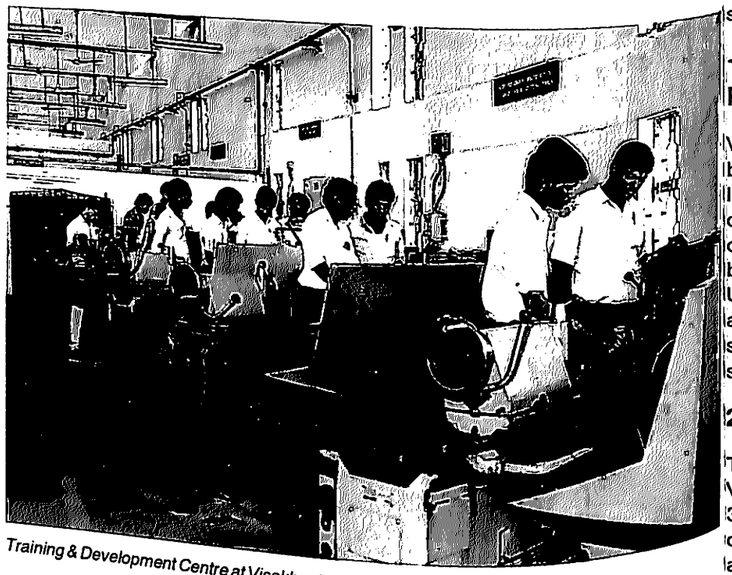
The total power requirement at 3 million stage is 288 MW. The Plant has an installed capacity of 180 MW. The contract with APSEB provides for a maximum drawal of 150 MVA. Visakhapatnam Steel Plant has initiated steps for provision of additional capacity for power generation in order to meet the power requirement at 3 Million tonne capacity without interruption.

(B) Water:

Visakhapatnam Steel Plant has been receiving water from Yeleru Reservoir with effect from 9.7.1991.

18.0 HUMAN RESOURCE DEVELOPMENT (HRD)

Human Resource Development continues to receive high priority. An apex level committee on HRD was constituted with the Chairman-cum-Managing Director as its Chairman. The HRD policy and



Training & Development Centre at Visakhaptnam

Thrust Areas for the company were finalised by Apex Committee and have been adopted by the management during the year.

(A) Training

During the year under report, the focus has shifted to training at the shop floor by increasing the involvement of line managers in designing and administering training. Training has been geared so as to focus on specific thrust areas.

(B) Management Development

Apart from continuing cadre-based Management Development programmes, special programmes on Cost Control, Export & Shipping and Value Engineering have been organised. A special feature of

HRD initiative this year has been the launching of a series of workshops entitled 'Strategic Thinking for Future'. These workshops have been designed not only to inform and enhance the levels of managerial comprehension but also generate sound ideas and directions for Corporate Planning in the company.

(C) Human Resource Information System

Computerisation in the Personnel & HRD has made significant headway. Personnel data based has been upgraded and monthly information profile on Human Resource data has been improved. Computerisation of 20 more 'fields' of Human Resource Information has been taken up. A plan to computerise most sectional/zonal work in employee services has also been finalised.

19.0 INDUSTRIAL RELATIONS

Visakhapatnam Steel Plant has been able to estaboish by and large a cordial industrial relations climate during the year, 1992. A climate of good understanding between the Management and the Unions was gradually achieved and most of the issues could be solved through mutual discussions.

20.0 MANPOWER

The total Works Manpower in Viskahapatnam Steel Plant as on 31.10.92 was 13,715. This comprises of 1,386 executives and 12,329 non-executives. In addition another 3,683 were on the rolls to perform various functions like Construction, Design & Engineering, Mining and other staff functions. There were as many as 6,013 Displaced Perons working in Visakhapatnam Steel Plant.

21.0 ANCILLARY DEVELOPMENT

Thrust on Ancillary development continued during the year (1992-93). Letters of Intent were issued to 18 new parties. So far, 70 local entrepreneurs have been issued letters of intent for the Ancillary units out of which 24 are upstream and 46 are down stream units. 11 units have already come into production stage and 5 more units are in the advanced stages of commissioning. The investment by these industries is estimated to be of the order of Rs. 100 crores creating employment for a fairly large number of persons.

Visakhapatnam Steel Plant placed orders worth approximately Rs. 3.31 crores on the Ancillaries and local industries during the first half of 1992-93 which is 45% of the total orders placed on Small Scale Industries throughout the country.

22.0 PERIPHERAL DEVELOPMENT

As a part of its peripheral development activity, Visakhapatnam Steel Plant is constructing community centres in the rehabilitation colonies and participating in literacy, family welfare and vaccination programmes in and around the steel plant. Further, special programmes for water supply through borewells, immunisation, provision of sewing machines and rickshaws to the needy are some of the other initiatives taken by VSP for benefit of human welfare all round.

Mr. P.V.Narasimha Rao, Hon'ble Prime Minister of India dedicating the Vizag Steel Plant to the Nation on 1.8.92

3. Kudremukh Iron Ore Company Ltd

1. GENERAL

1.1 The Kudremukh Iron Ore Company Limited (KIOCL), a wholly owned Government of India Undertaking and 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.

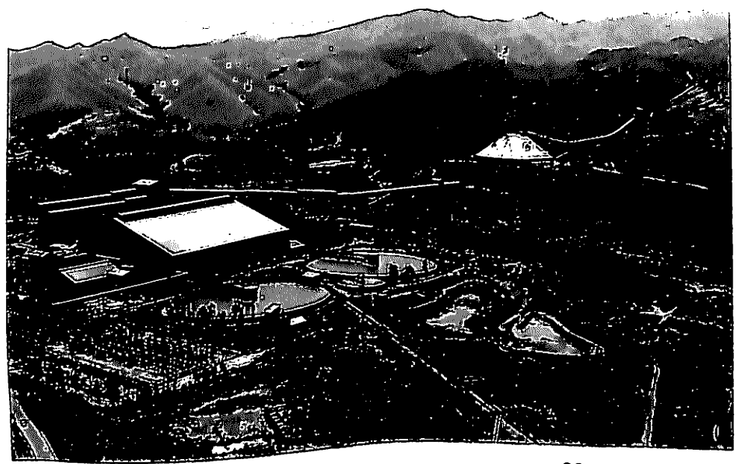
1.2 While the project was commissioned on schedule, consequent upon the political developments in Iran, they did not lift any quantity of Concentrate. As a diversification measure, the Government approved the construction of a 3 million tonnes per year capacity pellet plant in Mangalore in May, 1985. The plant went into commercial production in 1987 and is now exporting both blast furnance and DR grade pellets to many countries including Japan, Hungary, Turkey, Australia, Indonesia, Taiwan etc.

2. PRODUCTION

2.1 In 1992-93, KIOCL has plans to produce 6.2 million tonnes of Iron Ore Concentrates and 2.15 million tonnes or Iron Ore pellets. Even as production in the first quarter of the year was more or less as per the target, during the month of July, 1992, Kudremukh Project area received heavy rainfall which resulted in land-slides causing damage to the diversion channel of the Lakhya Dam, a reservoir for storing tailings generated during the production operations. Consequently, the plant had to be shut down for over a month resulting in stoppage of production.

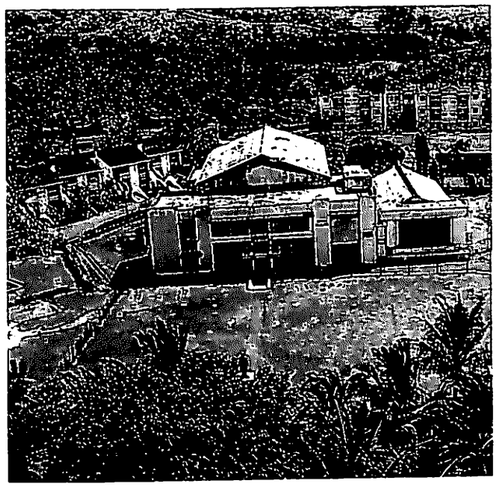
2.2 In addition, power supply restrictions/interruptions by Karnataka State Electricity Board, un-anticipated break-down of equipment and also lower off-take by existing customers resulted in lower production. During the period April to December 1992, as against the target of 4.525 million tonnes of concentrate and 1.550 million tonnes of pellets, the actual production was 3.345 million tonnes of iron ore concentrate and 0.905 million tonnes of iron ore pellests. KIOCL is now implementing a strategy for augmenting its production during the remaining months of the current year and also intensifying its marketing efforts with a view to make up the short-falls in production /export performance during the current year.

A View of Kudremukh Concentrator with Conveyor System in the Background



3. EXPORTS

3.1 During the year 1991-92, the total shipments of Concentrate and pellets crossed the 6.0 million tonnes mark for the first time in the history of the Company, the actual being 6.068 million tonnes. KIOCL's exports during the year 1991-92 touched an all time high of Rs. 392.81 crores. This is 72% more as compared to the previous year 1990-91.



Aerial View of Mangalore Township

3.2 The export earnings during the last five years from 1987-88 and upto December, 1992, are detailed below:—

(Rs. in lakhs)

Year	Concentrate	Pellets	Total	% increase over previous year
1	2	3	4	5
1991-92	18882	20399	39281	71.55
1990-91	11257	11641	22898	31.30
1989-90	7685	9755	17440	49.84
1988-89	5337	6302	11639	49.95
1987-88	5164	2598	7762	25.27
1992-93 (Upto Dec. 1992)	11780	8603	20383	-

4. The authorised and paid-up share capital of KIOCL as on 31.12.92 were Rs. 675 crores and Rs. 634.51 Crores, respectively.

5. FINANCIAL PERFORMANCE

An overview of the financial performance of KIOCL during the year 1992-93 upto December, 1992 together with the actuals for the previous three years, is indicated below:—

(Rs. in lakhs)

Particulars	1992-93 (upto Dec' 1992)	1991-92	1990-91	1989-90
1	2	3	4	5
Total value of sales.	20383	39281	22898	17440
Gross Margin.	7898	14659	8903	5524
Total profit on account of operations of the year.	5682	14027	6305	2495
Inventories (excluding finished stock).	9843	9415	8275	7281

6. MANPOWER POSITION

As on December 31, 1992 the total number of employees in KIOCL were as follows:—

Group	Total No. of employees including SC, ST as on 30th Nov., 1992	SC position	ST position
1	2	3	4
'A"	451	34	12
'B'	191	12	2
'C'	1590	208	24
'D'	208	45	27
'D' (Sweeper)	44	38	4
Total	2484	337	69

7. WORKERS' PARTICIPATION IN MANAGEMENT

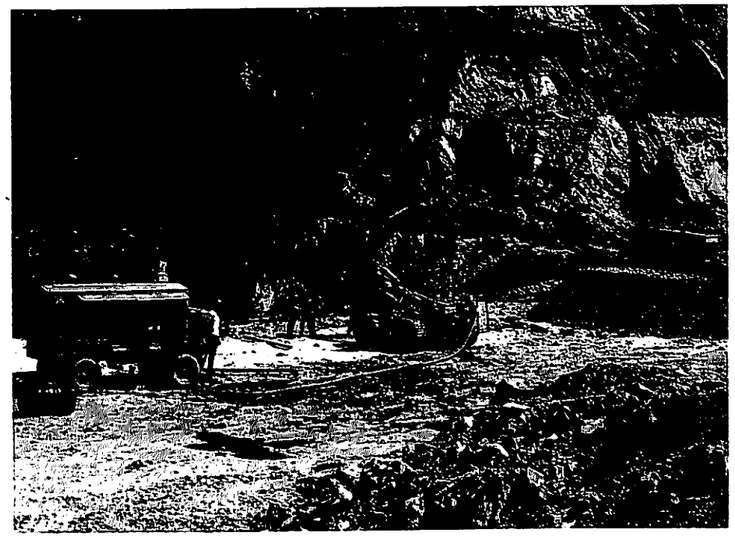
KIOCL has set up 10 shop level councils and 2 joint councils at the apex level. The councils meet periodically to discuss measures for improving production and productivity. Besides this, KIOCL

has constitutied Works Committees at its Kudremukh and Mangalore establishments comprising representatives of both workmen and management. These Committees deal with matters of general interest and have been functioning effectively.

8. SAFETY MEASURES

A Safety Department functions independently in the Company. In addition, there is a Pit Safety Committee which includes representatives of the workers. This Committee meets regularly to discuss safety measures. As a matter of practice, safety rules have been compiled for each work area, considering all safety aspects. All employees have been provided with these booklets. The company actively participates in the Safety Week celebrations organised by the Mines Safety Association.

4. Manganese Ore (India) Limited



A View of Opencast Mine

1. 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. Ltd. (CPMO) and the remaining 51% in equal proportion by Government of India and State Governments of Madhya Pradesh and Maharashtra. Subsequently, in 1977, the shares held by CPMO in MOIL were acquired by Government of India and MOIL became a wholly owned Government Company with effect from October, 1977. As on 31.3.1992, the Govt. of India had 81.31% shares in MOIL with State Govts of Maharshtra & Madhya Pradesh having 9.79% and 8.90% respectively.

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

(a) High Grade Ores for production of Ferro Manganese;

(b) Blast furnace grade ore required for production of Hot Metal; and

(c) Dioxide Ore which goes into the production of Dry Battery Cells.

MOIL has set up a plant, based on indigenous technology, to manufacture Electrolytic Maganese Dioxide. This product is also used for the manufacture of dry battery Cells.

3. FINANCE

The authorised capital of the Company is Rs. 30.00 crores and the paid up capital was Rs. 15.225 crores as on 31st Oct, 1992.

4. PERFORMANCE

4.1 Operating and Financial Results

The physical and financial performance of the company during 1991-92 and 1992-93 is given below:-

	1991-92 (Actuals)	1992-93 (April-Feb.93 Actuals)
1. *Production (lakh tonnes)	5.656	6.054
2. Turnover (Rs. crores)	70.75	66.88
3. Profit before Tax (Reserves)	18.68	18.98

(*) Includes 113 & 115 tonnes of EmD for 1991-92 & 1992-93 respectively.

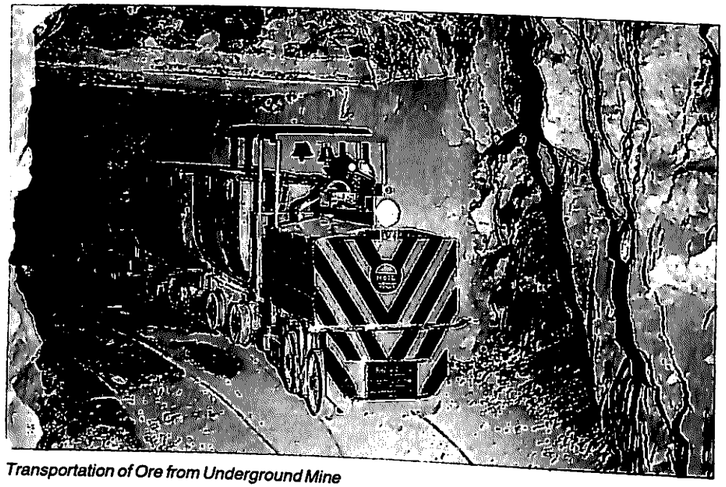
Turnover and Profit during 1991-92 were highest ever achieved by the Company since inception.

4.2 PRODUCTIVITY

The productivity (output per manshift in tonnes) reached an all time high of 0.261 during 1991-92. The productivity achieved during 1990-91 was 0.240.

4. CONSERVATION OF ENERGY

Consistent with the National Policy to conserve energy and also to contain cost of production, the



Transportation of Ore from Underground Mine

company has embarked upon an economy drive in this sphere, and the consumption of power which stood at 14.56 KWH per tonne of out-put in 1990-91 has been further brought down to 14.49 KWH per tonne in 1991-92.

4.4 REPAYMENT OF GOVERNMENT LOANS

The company repaid to Government of India Rs. 62.32 lakhs towards plan loans and Rs. 133.89 lakhs as interest (including Rs. 55.22 lakhs towards arrears) as per approved repayment schedules for 1991-92. In 1992-93, the company proposes to repay plan loans to the tune of Rs. 62.32 lakhs and also pay a sum of Rs. 121 lakhs as interest (including arrears of Rs. 55 lakhs), as per approved schedule.

5. MAJOR SCHEMES UNDER IMPLEMENTATION

5.1 The position in respect of major capital schemes is given below:

— Preparatory work relating to Deepening of - Holmes Shaft Phase II at Balaghat Mine and sinking of a Vertical Shaft at Beldongri Mine is in progress.

— Work relating to Sinking of Underground in cline at Gumgaon Mine is in progress and expected to be completed by end of 1992-93.

— Deepening of Underground Incline at Chikla Mine is in progress and expected to be completed by end of 1992-93.

— The production & quality of Electrolytic Manganese Dioxide from the 700 TPA Plant set up at Dongri Buzurg Mine are being stabilised.

6. R & D

6.1 Some of the important areas where R & D studies have been taken up by the Company include:-

i) Beneficiation of medium and low grade ores as well as medium grade Dioxide ores to battery grade.
ii) Use of cable bolting and steel roof supports in underground mines.
iii) Improvment in mining methods.
iv) Development of processes for other Manganese based compounds.
v) Diamond drilling to locate new manganese bearing areas and to prove further reserves in existing areas.
vi) Optimisation of process parameters for Electrolytic Manganese Dioxide Plant.

6.2 The company is undertaking exploration by diamond drilling, trenching, pitting, underground drivage etc for locating new manganese ore bearing areas and proving manganese ore deposits in and around its leasehold areas. Premining support by cable bolting and use of steel supports in place of timber are being carried out in underground working on experimental basis. Efforts are also being made to develop processes set up manganese based industries. In this direction, the Company has already set up a Plant to manufacture Electrolytic Manganese Dioxide, used as depolariser in dry battery industries.

6.3 The company is also trying to develop beneficiation processes to upgrade medium and low grade manganese ores to high grade.

6.4 The R & D efforts of the company in improving mining methods has helped reduction in use of timber and power consumption per unit of output, improved strata control in underground workings and consequent improvement in safety standards in mining. These efforts have also helped in the adaptation and assimilation of High Intensity Magnetic Separation process in the Upgradation of medium grade Dioxide ores to battery grade.

7. 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 workings. Deeper underground workings require extra attention to be paid to various aspects such as, support system, ventilation & efficient filling of the voids arising out of extraction of ore. Continuous emphasis is laid on training of employees, and mine workings are regularly inspected by members of Pit Safety Committees, Workmen Inspectors, Safety Officers and Chief (Safety). Safety Weeks are observed and exhibitions are held to inculcate safety habits to ensure safe working. Safety Committee meetings are regularly held during which any unsafe act committed/ observed are discussed to avoid recurrence.

8. WORKERS PARTICIPATION IN MANAGEMENT

The company has set up a mechanism for the association of workers representatives right from the grass root level to the Apex Council which functions at the Corporate Level, with workers and management representatives under the Chairmanship of Chairman-cum-Managing Director to review and find solutions to major problems. There is a 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 the employees.

9. ENVIRONMENTAL PROTECTION

The company has taken steps with regard to protection of environment. Planting of trees in large numbers on the leasehold areas of the company has been continued, besides undertaking environmental studies covering different aspects such as impact of manganese on ecology, air and water pollution etc. Large scale plantation of trees at the company's mines has been programmed to be undertaken as an integral part of 8th Plan.

10. PROGRESSIVE USE OF HINDI

10.1 MOIL is one of the Public sector companies which has encouraged the use of Hindi at all levels. Various competitions are organised during 'Hindi Week' and the winners are suitably rewarded. Facilities for learning Hindi have been made available to employees who are not proficient in the language.

10.2 As a recognition of good work done by MOIL in promoting use of Hindi, MOIL was awarded the "Rajbhasha Chal Vaijayanti" trophy for the best performance in the usage of Hindi for the years 1989-90 and 1990-91 by the Ministry of Steel, Government of India.

11. SOCIAL COMMITMENT

MOIL has adopted a tribal village-Gondi-close to Ukwa Mine in Madhya Pradesh, and has introduced a wide range of development activities there, such as repairs of roads, construction of houses for homeless tribals, construction of school building to impart education to tribal children etc. as part of their ongoing efforts to promote social welfare.

12. PERSONNEL

The composition of the work force of the company as on 31st October, 1992 was as under:-

Group	SC	ST	Others	Total
A	16	6	189	211
B	12	5	159	176
C	383	494	1255	2132
D	1331	2099	3517	6947
TOTAL:	1742	2604	5120	9466

Out of the total number of 9466 employees, 1896 are women.

5. Bharat Refractories Limited

1.0 BRIEF HISTORY OF THE COMPANY

1.1 Bharat Refractories Limited was registered as a Company on July 22, 1974 as subsidiary of Bokaro Steel Limited with only one unit located at Bhandaridah. With a view to ensuring consistent availability of critical items of refractories to the Steel Plants, Bharat Refractories Limited was restructured with effect from May 1, 1978. As result of the restructuring of the Public Sector Iron & Steel Industry, Ranchi Road Refractories Plant at Ramgarh along with its captive sillimanite mines in Maghalaya and Bhilai Refractories Plant in Madhya Pradesh were brought under the control of Bharat Refractories Limited (BRL). India Firebricks & Insulation Company Limited (IFICO) which was a subsidiary of SAIL was made a subsidiary of BRL with effect from 1.5.1978.

2.0 CAPITAL STRUCTURE

2.1 The authorised share capital of the Company is Rs. 5000 lakhs against which the paid up capital as on 31st March, 1992 was Rs. 4297.95 lakhs. The total outstanding loans together with interest accrued thereon as on 31.3.1992 amounted to Rs. 9909.00 lakhs.

3.0 PRODUCTION PERFORMANCE

3.1 The production performance of the different units of the Company as well as subsidiary company, IFICO Limited during 1991-92 and 1992-93 (upto October, 1992) was as follows:-

Quantity in MT
Value Rs. in lakhs

Name of Unit	1991-92		1992-93 (upto Oct. '92)			
			Target		Actual	
	Qty.	Velue	Qty.	Value	Qty.	Value
Bhandaridah Ref. Plant (BhRP)	23786	1410.42	14735	859.24	13909	1105.31
Ranchi Road Ref. Plant (RRRP)	7696	1507.69	5257	1093.40	4333	1181.76
Bhilai Ref. Plant (BRP)	28236	2926.05	26250	3624.88	19007	1951.92
Total of BRL:	59718	5844.16	46242	5577.52	37249	4238.99
India Firebricks & Insu. Co. Limited (IFICO)	26169	2072.62	18190	2318.40	15129	1537.88

3.3 During the year, the Company achieved the highest ever production of 59718 tonnes valued at Rs. 5844.16 lakhs, the previous best record being 58383 tonnes valued at Rs 3358.03 lakhs attained during 1987-88. During 1991-92, the company registered a growth of 16% in physical terms and 32.81% in terms of value over 1990-91.

The production of subsidiary company, IFICO Ltd, during 1991-92 registered an improvement of 16.5% over the same during the previous year. The production of high valued products was on lower side due to non-availability of critical inputs owing to various import restrictions during the financial year 1991-92.

4.0 SALES TURNOVER

4.1 During 1991-92, the Company sold 58476 tonnes valued at Rs. 5900.36 lakhs as against 51923 tonnes valued at Rs. 4393.94 lakhs sold during 1990-91. Thus, the sale during 1991-92 increased by 13% in physical terms and 34% in terms of value over that during 1990-91.

4.2 During 1991-92, the subsidiary company, IFICO Limited sold 25733 tonnes valued at Rs. 2154.22 lakhs as against 21601 tonne valued at Rs. 1871.99 lakhs during 1990-91, and registered a growth of 19% in physical terms and 15% in terms of value over 1990-91.

5.0 FINANCIAL PERFORMANCE

5.0 During 1991-92, BRL earned a positive gross margin of Rs. 155.00 lakhs as against the positive gross margin of Rs. 9.33 lakh achieved during 1990-91. After providing for interest of Rs. 686.82 lakhs, the Company suffered a cash loss of Rs. 531.82 lakhs. After providing for depreciation of Rs. 362.04 lakhs, the Company incurred a net loss of Rs. 893.86 lakh during 1991-92 as against Rs. 965.84 lakhs during 1990-91.

5.2 During 1991-92, the subsidiary company, IFICO Ltd incurred a negative gross margin of Rs. 40.19 lakhs as against the negative gross margin of Rs. 10.24 lakhs during 1990-91. After providing for interest of Rs. 145.52 lakhs and depreciation of Rs. 65.00 lakhs respectively, IFICO suffered a net loss of Rs. 250.71 lakhs as against the net loss of Rs. 79.89 lakhs suffered during 1990-91.

5.3 During the first seven months of the current financial year i.e,. April to October, 1992, the Company earned a gross margin of Rs. 246.35 lakh as against the budgeted gross margin of Rs. 393.72 lakh. After providing for interest and depreciation amounting to Rs. 384.37 lakh and Rs. 237.09 lakh respectively, the Company incurred a net loss of Rs. 375.11 lakhs.

5.4 During 1992-93 (Upto October, 1992), the subsidiary company, IFICO Ltd. earned a gross margin amounting Rs. 86.40 lakh. After providing for interest and appreciation amounting to Rs. 96.67 lakh and Rs. 46.06 lakhs respectively, the subsidiary company incurred a net loss of Rs. 56.33 lakhs.

6.0 Research and Developments

6.1 R&D laboratories of the company and its subsidiary have been recognised by the Department of Scientific Research, Ministry of Science and Technology. These laboratories have the facilities for testing quality control and technological improvement. A number of products have been developed as a result of in-house R&D efforts.

7.0 FOREIGN COLLABORATION

7.1 Under collaboration with Kawasaki Refractories Co. Limited (KRC), the subsidiary of Kawasaki Steel Ltd., Japan, the Company was licensed to produce five different types of sophisticated refractories namely (i) Magnesia-Carbon Bricks for Converters & EAF (ii) Refractories for Sliding Gate Systems of teeming of steel, (iii) Gunning Repair Materials, (iv) Cast Mixes for Steel Ladle and (v) Spinel and Magnesia-Spinel Bricks. Adopting the technology made available by KRC, the Company introduced in India specialised products like Alumina-Carbon Sliding Gate Plates, Zircon-based chemically bonded refractories and Low Cement castables.

7.2 The Company is also having a technical know-how agreement with Shinagawa Refractories Co. Limited (SRC), Japan which is a subsidiary of NKK, a major Japanese Steel Poroducer for the production of coke-oven silica bricks.

7.3 The Company entered into a new agreement with SRC Limited, Japan for the latest technology for manufacturing a range of sophisticated refractories for meeting the need for several strigent applications in iron and steel making. The items that are intended to be manufactured in the near future based on SRC's technology would include Tap Holo Mud for blast furnace, Gunning and Coating Materials, Zirconia Open Nozzles and Alumina-Graphite sub-merged nozzles, Shroud and Monoblock Stopper for applications in continuous casting of Steel. Apart from building up capability for meeting the emerging requirement, the effort will lead to considerable substitution of import.

8.0 INDUSTRIAL RELATIONS

8.1 The industrial relations in the company and subsidiary are generally satisfactory.

9.0 MANPOWER

9.1-3161 employees were on the rolls of BRL as on 31st March, 1992, out of which 374 employees belong to SC and 459 employees belong to ST communities. Besides, 62 employees belonging to ex-servicemen category, 18 physically handicapped and 124 women were employed in the Comapny as on 31.3.1992.

9.2 In the subsidiary company, IFICO Ltd., 1083 employees were on the rolls of the Company as on 31st March, 1992, out of which 45 employees belong to SC and 148 employees belong to ST

communities . Besides, 12 employees belonging to physically handicapped category, 16 employees belonging to ex-servicemen and 41 women were employed in the IFICO Limited as on 31.3.1992.

10.0 SAFETY MEASURES

10.1 Safety measures are being implemented in all the units as per provisions of the Factories Act, 1948 and are periodically reviewed by the Safety Committees appointed in different units and subsidiary of the Company.

11.0 CONTRACT LABOUR

11.1 Contract labourers are engaged occasionally on non-perennial jobs only. They are being paid minimum statutory wages. In addition, they are extended other benefits like, Provident Fund, Medical facilities, Leave, etc.

12.0 IMPLEMENTATION OF OFFICIAL LANGUAGE

12.1 The Company has been vigorously pursuing implementaiton of the official language policy of the Government. Various schemes have been adopted to motivate employees to use Hindi progressively in their official work. Cash awards and commendation certificates were awarded to deserving employees.

13.0 MEASURES TAKEN FOR IMPROVEMENT

BRL/IFICO face strong competition from private sector companies. However, they have taken a lead in changing product mix to meet the requirement of steel sector. They have taken up production of higher value added and specialised type of refractories as per requirement of steel plant. Excess capacity in the refractory industry is another problem being faced by the company. Erratic power supply and unremunerative price fixed by the SAIL plants are other problems being faced by the company.

13.1 Efforts have been made by the company for its revival for which a revival plan has been prepared and is under consideration of the Government. Since the Company has been incurring losses, a reference has been made to BIFR for its revival.

6. National Mineral Development Corporation Limited

1. GENERAL

Incorporated on November 15, 1958, the National Mineral Development Corporation Limited (NMDC) is a wholly owned 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 and diamonds. NMDC operates the largest mechanised iron ore mines in the country at Bailadila (Madhya Pradesh) and Donimalai (Karnataka). It also operates a Diamond Mine situated at Panna (Madhya Pradesh).

2. IRON ORE

2.1 Production

In 1991-92, NMDC produced 12.1 million tonnes of iron ore. During the period April 1992 to December 1992, 8.2 million tonnes of iron ore has been produced.

2.2. Exports

Exports of iron ore produced by NMDC is canalised through the Minerals and Metals Trading Corporation (MMTC). Most ot the iron ore is exported to Japan and South Korea. In 1991-92, NMDC exported 7.9 million tonnes of iron ore (inclusive of 0.66 lakh tonnes of calibrated iron ore directly by NMDC) valued at Rs. 446.40 crores approximately. Exports of iron ore between April 1992 and December 1992 were 4.7 million tonnes.

2.3 Domestic Sales

With the commissioning of Visakhaptnam Steel Plant (VSP) and the development of the indigenous sponge iron industry, NMDC is poised to enter the domestic market in a major way. VSP's entire iron ore requirements are linked to iron ore from Bailadila, while the calibrated ore from certain deposits in Bailadila is considered to be a suitable feed for gas based sponge iron units.

In 1991-92, NMDC's sales of iron ore to domestic units were around 3.4 million tonnes. Between April 1992 and December 1992, sale of iron ore to domestic consumers was 3.5 million tonnes.

3. DIAMONDS

In 1991-92, 17741 carats of diamonds were produced. Between April 1992 and December 1992, the production was 12766 carats.

4. FINANCE

The authorised share capital of the company is Rs. 250 crores. The paid up equity share capital as on 31.3.1992 was Rs. 132.16 crores. Government of India loans outstanding as on 31.3.92 were Rs. 29.71 crores and Rs. 28.24 crores as on 30.9.92.

5. OPERATING RESULTS

In 1991-92, the company recorded a profit of Rs. 145.21 crores (before tax). The company declared a dividend of 20% totalling Rs. 26.43 crores. Rs. 90 crores was transferred to general reserve. The profit till December, 1992 is Rs. 83.21crores (provisional).

6. MANPOWER POSITION

As on September 30, 1992 the manpower position in different units of the company is as follows:—

Group	Total No. of Regular Employees as on 30.9.92	No. of S/C Employees out of Col.2	No. of S/T Employees out of Col. 2	No. of Women Employees out of Col.2
(1)	(2)	(3)	(4)	(5)
A	699	34	6	12
B	1064	78	28	55
C	3218	477	603	136
D (Excl. Sweepers)	1779	405	424	170
D (Sweepers)	137	93	6	50
TOTAL	6897	1087	1067	423

7. WORKERS' PARTICIPATION IN MANAGEMENT

Workers' participation in Managment is primarily through the mechanism of Joint Councils at the Shop, Plant and Apex Levels. Meetings are held periodically and issues are settled through Joint Negotiations.

Workers' participation has also been effective in various forums like Works Committee, Plant Safety Committees, Provident Fund Trust, Canteen Management Committee, Project Management Councils, etc.

8. RAJ BHASHA

NMDC has been selected to receive the RAJBHASHA SHIELD for the year 1990-91 in recognition of its excellent performance in the use of Hindi amongst the Offices/ Undertakings under the Ministry of Steel.

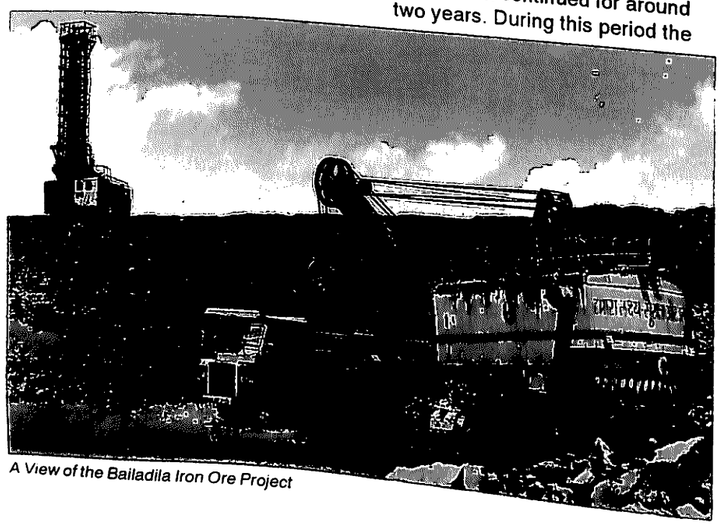
9. MEMORANDUM OF UNDERSTANDING

As in the previous year, during 1992-93 also, NMDC has entered into a Memorandum of Understading with Government of India, under which it has committed to produce 110 lakh tonnes of iron ore, 17500 carats of diamonds and to earn a net profit (before tax) of Rs. 37.98 crores.

10. 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.

MPL commenced its operation in 1979 and it continued for around two years. During this period the company exported around 1.5 million tonnes of pellets to the Japanese Steel Mills (JSM) under a long-term contract signed by the foreign buyers. In 1981, MPL's plant had to be closed down as the manufacture of pellets became economically unviable due to high price of furnace oil, shortage of power and steep decline in the price of pellets in the international market. After remaining closed for almost a decade, MPL restarted its operation in September, 1991. The pellets produced by the company are now being supplied to domestic users. During 1992-93, it is planned to produce 0.837 million tonnes of pellets. It is anticipated that the company will have a small cash surplus during 1992-93. The loss after depreciation is likely to be around Rs. 3.3 crores in 1992-93 as compared to Rs. 9.61 crores in 1991-92.



A View of the Bailadila Iron Ore Project

11. J&K MINERAL DEVELOPMENT CORPORATION LIMITED

J&K Mineral Development Corporation Limited (J&KMDC) is a subsidiary company of NMDC incorporated on 19.5.1989 for development of various minerals 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 first project being undertaken by J&KMDC is establishment of a 30,000 tonnes dead burnt magnesite (DBM) plant at Panthal. The above project is expected to cost about Rs. 60 crores and is scheduled to be completed by June, 1995.

7. Metal Scrap Trade Corporation Ltd.

1. INTRODUCTION

Metal Scrap Trade Corporation Ltd. (MSTC) was incorporated under the Companies Act, 1956 on 9th September, 1964 and was the canalising agency for import of carbon steel melting scrap and also sponge iron/hot briquetted iron and re-rollable scrap till Feb., 1992. It was also the canalising agency for old ships for breaking, import of which was decanalised and put under OGL w.e.f August, 1991. The Corporation's status is now the same as other private importers of scrap. The company also undertakes disposal of ferrous and miscellaneous scrap arisings from integrated steel plants under SAIL and disposal of scrap surplus stores from other public sector undertaking s and Govt. Departments.

2. ACTIVITIES

The company has two operational divisions, i.e. Foreign Trade and Domestic Trade.

(a) Foreign Trade

This Division till recently undertook canalised import of carbon steel melting scrap, sponge iron, hot briquetted iron and rerollable srcap. After decanalisation, this Division arranges imports of scrap as per the needs of actual users.

(b) Domestic Trade

This Division is responsible for disposal of ferrous and miscellaneous scrap from SAIL steel plants as well as disposal of scrap and surplus stores from other public sector undertakings and Departments.

The Corporation also has a Management Services Divison which provides the operational divisions regular feed back on market research and is entrusted with the task of Corporate Planning and System Design.

3. OBJECTIVES

(a) Short-term Objectives

i) To undertake import of scrap/ substitutes at competitive price and to distribute them efficiently and equitably to the users.

ii) To plan and organise marketing of scrap and secondary arisings, unserviceable stores etc. of all Government departments and organisations both in the public sector and private sectors.

iii) To work in unison with the subsidiary Company, Ferro Scrap Nigam Limited (FSNL) for marketing the surplus scrap arisings of the integrated Steel Plants in the Public Sector.

iv) To undertake the above activities so as to ensure a fair return on capital

v) To ensure customer satisfaction by providing prompt and efficient service to customers, principals and other business associates.

(b) Long-term Objectives

i) To maximise indigenous availability of scrap and substitutes like Direct Reduced Iron etc., in order to reduce dependence on imported scrap.

ii) To set up scrap yards in different parts of the country for procurement, processing and distribution of scrap, thereby offering improved services to customers.

4. FOREIGN TRADE

In the background of the protocol between India and Czechoslovakia, MSTC entered into a MOU with M/s. Transakta, a Government Company in Czechoslovakia for supply of Steel Melting Scrap against Rupee Payment for the years 1991-92 and 1992-93 respectively. The total volume and value fo scrap imported through Transakta against Rupee Payment after decanalisation till 31st December, 1992 was about 6.56 lakh tonnes for a value of Rs. 273 crores.

Since the decanalisation of import of scrap, the Indian Market has witnessed the entry of a large number of suppliers of scrap, MSTC however has been able to maintain a substantial presence because of its experience and reliability.

5.0 ORGANISATIONAL STRUCTURE

The Company is currently managed by a Chairman-cum-Managing Director. There are four other part-time Directors on the Board of MSTC appointed by the Ministry. The CMD is assisted by two General Managers, two Deputy General Managers, one Financial Corntoller and a Company Secretary who are In-charge of Departments like Foreign Trade and Management Services, Domestic Trade, Finance & Accounts, Personnel and Company Law matters.

The Company's Registered and Corporate Office is located at Calcutta and has four Regional Offices at Calcutta, Delhi, Bangalore and Bombay which are headed by Regional Managers reporting to CMD. Besides, the company has opend Branch offices at Madras, Vizag and Plant office at Rourkela and Durgapur Steel Plants.

All the Head of the Departments and Regional Managers are assisted by professionals in various disciplines.

6.0 FUTURE PLANNING AND ACTIVITIES

As the quantum of imports dwindled during the year 1991-92 due to restricted availability of foreign exchange, the company has taken up a Corporate Planning Study for diversification of its activities. The job of Preparing Corporate Plan was entrusted to a Consultant who has since submitted his reports which has been accepted by the Board of the Comapny. The consultant has suggested the areas/fields/ industries in which the Company should concentrate its diversification activities during short periods (1-2) years medium periods (3 to 5 years) and long periods diversification planning for the company.

6.1 MOU WITH GOVERMENT

The Company entered into Mou with the ministry for the first time in the year 1991-92 and the process of assessment of its perfermance by the ministry and Department of public Enterprenenes has been completed. The Company has been give a composite mou scale of 1.18 by the Ad.hoc Task Force which is equivalent to a near excellent rating.

7.0 FINANCIAL AND PHYSICAL PERFORMANCE

The financial and physical performance of the Company for the year 1992-93 (provisional) are given below:—

	1990-91	1991-92	1992-1993 (upto Dec. 1992 Provisional)
I. Financial Results (Rs. in crores)			
a) Turnover	475.44	130.84	273.76
b) Operating Profit (before interest depreciation and other provisions)	11.95	7.87	5.97
c) Interest & Depreciation	0.95	0.64	0.44
d) Profit before Tax	11.00	6.86	5.33

II. Physical Performance:

	1990-91	1991-92	1992-93 (upto Dec. 1992 provisional)
A. Foreign Trade:			
i) Carbon Steel Melting Scrap ('000 MT)	1435	285	656
B. Domestic Trade:			
i) Despatches of Scrap arrising from Steel Plants and Sale of ferrous and non-ferrous scrap, misc. items from other PSU/Govt. Department including auction sales for Steel Plants stores items) (Rs. in crores)	140	208	130

During the year 1991-92 the Comapny declared dividend of 40% on the paid up Capital against 20% in the earlier years

III. Employment Statistics

The employment statistics of the company including SC/ST as on Ist October, 1992 are given below:—

A. General	Executives	Non-Executives	Total
i) Head Office, Calcutta	53	109	162
ii) Regional Offices:			
a) Calcutta (ER)	9	19	28
b) New Delhi (NR)	15	12	27
c) Bombay (WR)	9	14	23
d) Bangalore (SR)	7	9	16
iii) Sub-Regional Offices:			
a) Vizag	3	2	5
b) Madras	3	2	5
c) Durgapur	4	-	4
d) Rourkela	1	-	1
	104	167	271

B. Scheduled Castes/Tribes, Ex-servicemen and Physically handicapped persons:—

Group	No.s of Employees	SC	ST	Ex.Ser.	PHC
A	104	10	1	—	—
B	21	4	—	—	1
C	113	23	6	3	2
D	33	10	2	—	—
	271	47	9	3	4

8. Ferro Scrap Nigam Limited

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 the Metal Scrap Trade Corporation (MSTC) holds 60% of the equity shares and the remaining 40% are held by M/s Harsco Insc. of USA. The Company is thus a subsidiary of MSTC.

2.0 ACTIVITIES AND OBJECTIVES

2.1 The Company undertakes the recovery and processing of scrap from slag and refuse dumps in the steel plants at Rourkela, Burnpur, Bhilai and Bokaro. It has recently started work in Visakhapatnam and Durgapur Steel Plants.

2.2 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 both in the Iron & Steel sections and also the Rolling Mills.

3.0 ORGANISATIONAL STRUCTURE

3.1 The Chief Executive Officer of the Company is the Managing Director who functions under the guidance of a part-time Chairman and a Board of Directors. The Managing Director is assisted by one General Manager and five Deputy General Managers who are incharge of activitites at the main steel plants, and Finance and Personnel functions at Corporate Office.

3.2 The Corporate Office is situated at Bhilai, and the Corporation has six fields units in the steel plants at Bhilai, Burnpur, Rourkela, Bokaro, Visakhapatnam and Durgapur.

4.0 PHYSICAL AND FINANCIAL PERFORMANCE

4.1 Physical Pertformance

The production performance of FSNL for the last two years and the projected performance for the year 1992-93 is given below:—

ITEM	1990-91	1991-92	1992-93 (Provisional)
Recovery of Scrap (Lakhs MT)	8.71	9.80	10.35
Market Value of Production (Rs. in Crores)	383.24	431.20	455.40

4.2 Financial Performance

(Unit Rs. in Lakhs)

ITEM	1990-91	1991-92	1992-93 (Provisional)
i) Total Turnover i.e. total service charges realised including misc. income etc.	3050.65	3827.74	4097.95
ii) Gross Margin before interest and depreciation	1494.51	1881.18	2094.75
iii) Interest & Deprn.	498.68	543.76	971.00
iv) Profit before tax	995.83	1337.42	1123.75

4.3 Sales Realisation

Sales Realisation per metric tonne for the last two years and estimated sales realisation per metric ton for the years 1992-93 and 1993-94 are indicated below:-

1990-91	1991-92	1992-93 (Proj.)	1993-94 (Proj.)
Rs. 345.15	Rs. 379.89	Rs. 394.97	Rs. 370.53

5.0 FUTURE PROGRAMME

In view of the large availability of scrap arisings in the various steel plants as well as the considerable book log of unprocessed slag dumps in the steel plants, the company proposes to expand the capacity in its existing units by augmenting the resources in terms of modern technology, equipment, manpower etc.

FSNL proposes to modernise its operations in the following areas:-

(a) Installation of stationary magnetic separaters for handling higher valume of slag arisings and enhancing the quality of scrap producted;

(b) Addition of Fe enhancing modules to increase the Fe content in scrap from the present level of 85% to 90% in respect of Steel Melting Shop grade scrap, to meet the technological requirements of the steel plants;

(c) Installation of capital repair/ rebuilding facilities for taking care of health of the heavy earthmoving and processing equipment like cranes, excavators, dozers, dumpers, playloders etc;

(d) Insllation of a magnet repair and manufacturing facility for taking care of the needs of the company for heavy duty magnate which are not manufactured in the country.

(e) Setting up facilities for processing of slag aggregates for alternative uses in road making, railway ballast etc;

(f) Briquetting of steel plant wastes such as fly ash etc. to channelise the wastes into productive uses.

6. DEVELOPMENTAL EFFORTS

(a) The magnetic separaters have been recovering 10 mm fines which, chemical analysis has shown, can be used in the Sintering Units of the steel plants. This will enable reduction in cost of production of sinter. Rourkela steel plant has already started using these fines.

9. Mettallurgical & Engineering Consultants (India) Ltd. (MECON)

1.0 BACKGROUND

Metallurgical & Engineering Consultants (India) Ltd. (MECON) is the premier design engineering and consultancy organisation in the country. Starting with work relating to the Iron and Steel industry, MECON has diversified its services into non-ferrous metals, power plants, chemicals, general engineering, environmental engineering, ocean engineering and defence. MECON has its head office at Ranchi, and site offices at all public sector steel plants. It has also set up engineering offices at Delhi, Bombay, Calcutta, Bangalore, Hyderabad and Madras.

1.1 MECON has, recently, stepped into the field of comprehensive development programme in Computer usage for design and engineering, for process control, software development for the engineering packages, project monitoring, cost control, management information system and also application oriented development programme in hightech areas.

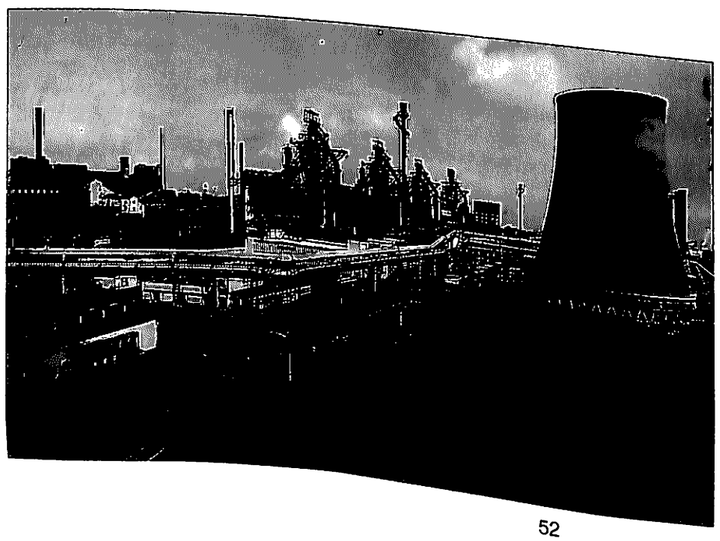
2.0 CAPTIAL STRUCTURE

The authorised capital of the company is Rs. 4 crores. The issued, subscribed and fully paid up equity share capital is Rs. 2.02 crores.

3.0 FINANCIAL PERFORMANCE

The turnover of the Company during 1991-92 was Rs. 117.96 crores against Rs. 101.72 crores during 1990-91. The profit (after tax) of the year was Rs. 3.63 crores as against Rs. 0.37 crores during 1990-91. A sum of Rs. 0.73 crores representing 36.02% of the paid up share capital has been paid to Government as dividend. The budgeted turnover for the year 1992-93 is Rs. 120.00 crores and the profit (after tax) is estimated to be Rs. 4.40 crores.

Pan View of Durgapur



The turnover achieved during April-October, 1992 was Rs. 52 crores and anticipated profit (before tax) during this period is Rs. 3.60 crores.

4.0 RANGE OF SERVICES

MECON's range of services include:-

i) Planning, analysis and preparation of reports for projects.

ii) Basic and detailed engineering of projects including infrastructural facilities.

iii) Project and Construction Management.

iv) Procurement and Contract Management.

v) Assistance in erection, commissioning and post commissioning services.

vi) Design and supply of equipment and systems for Coke Oven. Coke Dry Cooling Plant, Coal Based and other Chemical Plants, Pig Iron Plants, Blast Furnace Plant and Equipment including their modernisation/reconstruction etc.

5.0 PRESENT MAJOR ASSIGNMENTS

(A) Engineering Consultancy Services

i) Modernisation work of Durgapur Steel Plant by providing consultancy project and construction management services;

ii) Rebuilding of Coke Oven Battery at Rourkela Steel Plant;

iii) Consultancy services for ESSAR Steel for DAF and CCP packages for 1.0 million tonnes of steel plant (DR based) and also Nava Dhatu Udyog Ltd., consultancy services for iron ore crusher III (KIOCL), infill platforms (ONGC), Zircolloy Fabriation Complex (DMRL).

iv) Rendering detailed engineering and Site Supervision Services for Seamless tube plant of M/s Jindal Seamless Tube Ltd. at Nasik.

(B) Equipment and System Design

i) Modernisation of Aluminium Rolling Mill for Bharat Aluminium Company Ltd. at Korba.

ii) Upgradation of blast furnace complex for Rourkela Steel Plant.

iii) Setting up of 30,000 tonnes per year Benzol Plant at Vizag Steel Project.

iv) Manufacture, Supply and Commissioning of Brass Mill Complex for Ordnace Factory.

6.0 OVERSEAS OPERATION

MECON, in association with Pan African Consultancy Services (PACS), is rendering project management and technical services for setting up of a1.3 MT per year BF-BOF base integrated steel plant at Ajaokuta in Nigeria. This contract has now been extended for a further period of 3 years from May, 1990.

The assignment of preparing Feasibility Reports and testing of raw materials for High Alumina & Magnesite Refractory Plant at Zimbabwe has been awarded by Govt. of India to MECON under operations of the African Fund. Raw materials from Zimbabwe have been received, tested and the report is being submitted. MECON has submitted its study report of capital repairs of BF in an integrated steel plant in Algeria.

With the recent move towards open market policies being pursued by India, MECON has embarked upon the globalisation of its business operations in Europe, Middle East and Africa. It has tied up with M/s HO-ESTS (Technical Services Division of Hoogovery, Netherland) besides opening up its office in Alkamer, Netherland to exploit business opportunities in global market. Another office has been set up in Dubai (UAE) to exploit market opportunities in Middle East. Assignment from M/s SMS on preparation of computerised detailed engineering drawings and an assignment for detailed engineering & consultancy services for Sulphuric acid plant in Middle East have also materialised.

7.0 TECHNOLOGICAL DEVELOPMENT

The Company is actively engaged in in-house technology development.

Beside the MOUs with NML and RDCIS to commercialise indigenously developed technologies, the company is continuing with the basic know-how licence/ co-operation agreements with various foreign companies, some of which are mentioned below:-

a) Agreement with United Engineering Inc. USA for Rolling Mills and Auxiliary Equipment.

b) Agreement with SMS Schloemann SIEMAG, West Germany for Long Product Rolling Mills.

c) Agreement with TUV Rheinland, West Germany for Collaboration in the field of Environmental Engineering.

d) Agreement with Mannesmann Demag Huttentechnik, West Germany for new installation, modernisation, reconstruction, revamping and relining of Blast Furnace Plant.

e) Agreement with Beijing Centre for Engineering and Research Inc. of Iron and Steel Industry (CERIS), China for Pulverised Coal Injection System in Blast Furnace.

f) In an approach to maximisation of resource utilisation and gainful deployment of the same for competitive advantages, MOUs have been worked out by the Company with the downstream manufacturing organisations and also R & D establishments in both Public & Private Sectors, e.g. ERDC, ELPVO AG, HEC, Otto India (In progress) etc.

8.0 RESEARCH & DEVELOPMENT

In the light of the company's policy for giving more thrust to Research & Development activity, the Corporate Research & Development Plan for 1992-97 has been drawn up by the Company. Seven thrust areas have been identified

for taking up specified Research & Development Programmes during 1992-93:-

- —Engineering and development of new processes and technologies.
- —Development of laser based industrial equipment for measurement and control.
- —Development of advanced designs for industrial equipment and also mechanical and electrical sub-systems.
- —Non-conventional energy source and energy conservation:
- —Development of mathematical models and design software.
- —Development of laboratory and test facilities to generate design data.
- —Basic research to the above areas.

Subsequent to adoption of the new corporate Research & Development Plan, 28 projects have been selected and are presently in progress.

9.0 MANPOWER POSITION

The total number of employees in the Company as on 31st October, 1992 is 3796, out of which 238 are Scheduled Castes and 429 Scheduled Tribes.

10.0 INDUSTRIAL RELATIONS AND WORKER'S PARTICIPATION

The Company is maintaining cordial relations. Joint consultative forums continue to function in which major issues relating to employees are periodically discussed in the areas of welfare, education, health, house allotment and grievance handling.

11.0 COST REDUCTION MEASURES

The control over expenditure incurred by Head Office and various Regional/site offices is being exercised through budgetary ceiling in the form of budget allotment for each individual account heads.

In respect of supply of equipoments and components, the purchases are made strictly within the estimated cost and total cost incurred on a particular work item is being analysed periodically. The company is also effecting savings in taxes and duties through proper planning.

12.0 SOCIAL WELFARE

The company has initiated new programmes for the welfare of employees and their facilities in the areas of culture, youth welfare, sports, education, cooperative schemes etc. The company has also undertaken many activities in discharge of its obligations ot the society at large. Besides, maintenance of roads, construction of drainage etc. in the vicinity of its office complex and residential colony, necessary engineering and consultancy services are being provided for proposed Birsa Bus Terminus. Inputs and support are being provided in the peripheral areas and adopted villages in the field of adult education, family welfare and health schemes. Steps were taken to identify the drop-outs amongst the youth of the neighbouring areas who could be motivated and trained for self employment. For this purpose a centre for vocational training has been established. The company is contributing to better environment by way of plantation of trees.

13.0 MEASURES FOR IMPROVEMENT

To improve its effectiveness and to continue its growth, steps have been initiated by the company some of which are indicated below:-

i) Entering into MOU with the Government;

ii) To improve its relationship with customers and vendors, MECON has engaged external independent agency, nemely Institute of Economic and Market Research to assess customers perception about MECON;

iii) Constitution of a project team for working out a vendor development strategy and for the development of a coprehensive data base on vendors based on capability, performance and quality assurance;

iv) Globalisation through presence in international markets;

v) Propagation of total quality management philosophies and stepping up the activities related to ISO 9001 accreditation.

vi) Management by policy evolution through employees participation.

10. Sponge Iron India Limited

1.0 INTRODUCTION

1.1 The Demonstration Sponge Iron Plant of the Company with an annual capacity of 30,000 t was set up with UNDP/UNIDO assitiance to establish the techno-ecnomic feasibility of producing sponge iron, (a substitute for ferrous scrap used by steel-melting Electric Arc Furnaces) from lump iron ore and 100% non-cooking coal. The unit, designed to use coal from Singareni Collieries Company Limited (SCCL) and iron ores from Bayyaram. A.N. Puram and Velduthi Regions of Andhra Pradesh, went into regular operation in November, 1980 is also designed in such a manner that it can be operated both on production basis and for R&D work. It is based on the SL/RN Technology developed by Lurgi of Germany.

1.2 Taking note of the successful operation of the Demonstration Plant, Govt. of India sanctioned in 1982 doubling of the plant capacity from 30,000 t to 60,000 t per annum through the setting up of a second unit. This unit, which was designed and built by the Company's engineers incorporating the various modifications carried out to the Demonstration Plant for adapting the technology to Indian conditions, went into regular production from October, 1985.

1.3 The Company has also successfully designed and built a plant for briquetting of sponge iron fines (beow 6 mm size) which were not usable by Electric Arc Furnaces. The Briquetting Plant was commissioned during October, 1987 and is operating to full capacity. Since then the sponge iron briquettes have received wide acceptance in the market.

2.0 FINANCE

The authorised share capital of the Company stood at Rs. 30.00 crores on 31.3.1992 out of which paid up capital was Rs. 22.94 crores. Shares amounting to Rs. 22.11 crores are held by the Government of India, the balance of Rs. 0.83 crores being the share of the Government of Andhra Pradesh.

3.0 PRODUCTION

3.1 The Production and Financial Performance of the Comapny during the last two years together with estimates for 1992-93 is furnished in the table below:—

TABLE

	1990-91	1991-92	1992-93 (as planned)
Production (t)	47,600	48,095	51,000
Capacity utilisation (%)	79	80	85
Sales (t)	49,035	44,486	52,000
Sales Turnover (Rs. in lakhs)	1801	2081	2244
Generation of Internal Resources (Rs. in lakhs)	356	579	462
Net Profit (Rs. in lakhs)	180	477	255

3.2 As against the target of 51,000 t fixed for 1992-93 (as per Budget Estimates) a production of 28,280 t was achieved upto October, 1992 representing 55% of target. There is deterioration in the quality of coal supplied by Singareni Collieries, fixed carbon content dropping to as low as 38% against requirement of 45% (minimum). The ash content has also gone upto an average 39% as against the specified maximum limit of 25%. These two factors contributed to both higher consumption of coal and lower capacity utilisation.

The transportation of iron ore has also been very adversely affected. Accordingly, the annual production will be somewhat lower than targetted and is now expected to be around 49,000 t.

4.0 SALES AND PROFITABILITY

Against a target of 52,000 t fixed for 1992-93, despatches upto October, 1992 were 27,819 t representing 53% achievement against target. As against the despatches for the year targetted at 52,000 t it is estimated that 50,000 t would probably be achieved. This is due to depressed market conditions in the face of easy availability of cheap imported scrap because of reduction in customs duty from 35% to 10%.

The operations upto the end of October, 1992 had shown a net profit of Rs. 171 lakhs as against the targetted profit of Rs. 255 lakhs for the year. The targets are expected to be ahieved even though plant operations are not profitable at the present time.

5.0 COST REDUCTION

5.1 Through the application of improved techniques, constant efforts are being made to reduce the consumption of the principal input raw materials viz., iron ore, coal and limestone thereby reducing the cost of production. Uses are also being found for waste products like iron ore fines, char and dull coal so that additional revenues can be generated from the sale of waste products.

5.2 A separate project is being set up for effectively utilising the sensible heat in the kiln off-gases for generation of 5 mw of electric power. By doing so the operations of the plant would improve as dependance on external power would be less, thus effecting saving in cost of production.

6.0 EFFORTS MADE TOWARDS INDIGENISATION

The Engineering and Projects Division of the Company set up in 1982 has successfully completed the engineering and erection work of the Expansion Unit in 1985. By adopting some improved designs and incorporating some modifications it was possible to reduce the foreign exchange component (inclusive of duty) to Rs. 0.85 crores as against the original estimate of Rs. 2.20 crores. In the setting up of the Expansion Unit, besides developing indigenous capability for manufacturer of major equipment required for commercial sponge iron plants, the Division had also developed indigenous sources of supply for spares and consumables required for day-to-day operation of the existing plant.

The Engineering and Projects Division had also developed basic engineering data/designs for setting up large commercial sponge iron plants relevant to locally available ores and coals. The division has also developed expertise for agglomerating Sponge Iron Fines into high density briquettes which have received ready acceptance.

In addition during the year, the following items so far imported have been indigenised:—

a) Shell Air Fans

b) Coal Injector

c) Air Tubes

This has resulted in timely availability of these spares at lower cost.

7.0 MANPOWER

The total number of employees of the Company as on 31.10.1992 is furnished below indicating separately persons belonging to Scheduled Castes, Scheduled Tirbes, Ex-Servicemen, Physically Handicapped and Women.

Sl. No.	Groups	Total No. of Employees	SC	ST	Ex-Servicemen	PHC	Women
1.	Group A	107	11	—	—	—	1
2.	Group B	76	12	3	1	—	2
3.	Group C	256	42	25	4	4	19
4.	Group D (Excluding Sweepers)	141	20	27	—	6	6
5.	Group D1	10	7	1	—	—	9
	Total	590	92	56	5	10	37

8.0 EMPLOYEES' PARTICIPATION IN MANAGEMENT

Pursuant to the directives of the Government of India, a scheme for Employees, Participation in Management has been implemented in the Company. Under the scheme, one Plant Level Committee and 2 Shop Level Committees have been constituted with representatives of the Management and the Employees and regular meetings are held to discuss various problems and finding solutions intenally.

9.0 HINDI IMPLEMENTATION

During the period 179 documents were released as per Section 3 (3) of the Official Language Act 1968, out of which all the 179 were bilingual. During the period all question papers for the tests for recruitment/promotion were prepared bilingual.

During the period 13 employees passed the Prabodh, Praveen and Pragya examinations; such employees have also been sanctioned incentive increments and cash awards. Hindi Day was celebrated at the Head Olffice on 14th September, 1992, Shri T.V.R.K. Subba Rao, Director, A.P. Hindi Academy, Hyderabad was the Chief Guest.

A small library has been started during the period with newspapers, periodicals, magazines and other light reading material. Hindi Essay Competitions were also held on the occaision of Independence Day Celebrations and winners were awarded with prizes.

10.0 ANTI-POLLUTION MEASURES

The Plant has anti-pollution equipment for controlling air and water pollution to specified standards. The stack emissions and effluents are regularly analysed to ensure conformity to standards.

However, in view of the power cut imposed in the State by APSEB, operations are carried out restricting the functioning of the pollution control deivces only to the extent necessary for fulfilling the relevant environmental control standards.

11.0 WASTE LAND DEVELOPMENT

Consistent with the national policy of stepping up the rate of afforestation in the country to preserve ecological balance, Sponge Iron India Limited had undertaken, right from the construction stage itself, planting of trees in the Company's estate in a phased manner. Over 3,500 trees have so far been planted in vacant spaces and by the side of the roads in the Company's estate. A programme has been drawn up for planting a total of 10,000 trees in a phased manner.

12.0 ENGINNERING AND CONSULTANCY

12.1 Engineering

A separate Engineering and Projects Division has been operating in the Company since 1981 for undertaking Design and Engineering work for commercial Sponge Iron Plants. The Division has successfully handled the Engineering work for the Expansion Unit and Briquetting Plant. The Division has also completed the enginnering work relating to 60,000 tpa Sponge Iron Plant. An MOU has also been signed with M/s. RPG Industries for setting up two kilns of 60,000 tpa each with the engineering and know-how developed by SIIL, in the joint sector. As a result of the efforts made by this Division the foreign exchange content was brought down from Rs. 2.20 crores originally envisaged to Rs. 0.80 crore in respect of the Expansion Unit. Similarly, the foreign exchange content in respect of Briquetting Plant was also kept at the minimum by restricting the import of machinery only to the extent of Briquetting Press, dozing and feeding systems. Besides, constant efforts are being made to indigenise critical spares, thereby reducing dependance on imports and saving valuable foreign exchange.

13.0 CONSULTACNY SERVICES

13.1 Tamilandu Sponge Limited

The Company was awarded a contract for rendering Engineering and Consultancy Services for a 30,000 tpa Sponge Iron Plant to be located at Salem by Tamilnadu Sponge Limited. The value of the contract is Rs. 50 lakhs. The project envisages use of lump iron ore from Bellary-Hospet and Lignite from Neyveli. The plant has since been put into operation and commissioning trials are underway.

13.2 Engineering/ Consultancy Services for New Clients

The company has entered into engineering consultancy agreements with following clients

for setting up coal based Sponge Iron Plants based on SIIL Technology.

a) Hindustan Electro Graphites (HEGL) 2 x 30,000 tpa
b) Kumar's Metallurgical Corporation Limited (KMCL) 2 x 30,000 tpa
c) Bellary Steel & Alloys Ltd (BSAL) 2 x 30,000 tpa
d) Raipur Alloys & Steel Ltd (RSA) 1 x 30,000 tpa
e) Vandana Alloys 2 x 30,000 tps
f) Calcutta Sponge Iron 2 x 30,000 tpa

The plant of M/s. HEGL at Durg has since been commissioned and has been put into regular operation.

Both the kilns are working satisfactorily producing quality Sponge Iron suitable for steel making. One unit of M/s. Bellary Steel and Alloys Limited has since been commissioned while cold trials of the second unit are underway. In respct of M/s. Kumar's Metallurgical Corporation and M/s. Raipur Alloys the erection work of the plants is in advanced stage.

11. Neelachal Ispat Nigam Limited

In October, 1980, Government decided in principle to set up a Second steel plant in Orissa. A company called Neelachal Ispat Nigam Limited (NINL) was also formed in March, 1982 with an authorised capital of Rs. 1,000 crores. On techno-economic considerations, the site of the project which was originally proposed to be near Paradip Port, was changed to another in the Daitari region. However, the project could not be set up due to resource constraints.

12. Vijayanagar Steel Limited

In April, 1970, Government took a decision in principle to set up a steel plant in Karnataka, so as to utilise the vast deposits of iron ore available in the Bellary-Hospet area. In December, 1982, a separate company called Vijayanagar Steel Limited was incorporated for this purpose. However, the project could not be set up due to resource constraints.

13.Hindustan Steelworks Construction Ltd.

1.0 GENERAL BACKGROUND OF ACTIVITIES:

The Company was incorporated in June, 1964 for pooling the available construction expertise and know-how in the various disciplines of the construction industry and creating an organisation in the Public Sector to undertake complete construction works of modern integrated steel plants from site investigation to commissioning. The Company in its passage of over two decades has within its ambit a wide range of specialised activities in steel sector, all major capital repairing works pertaining to coke ovens batteries & blast furnaces, power sector, dam construction, bridges, coal handling plants, underground communication and transport system, industrial and township complexes etc involving high degree of planning, co-ordination and sophisticated construction techniques.

1.1 Present Activities:

HSCL is an important Member of the Consortium enganged in the implementation of DSP modernisation programme. It is undertaking major civil, structural, erection works etc., in critical areas of the programme. The company is also involved in numerous works in other Steel Plants.

1.2 Apart from various works at Steel Sector, the Company is making efforts to secure works in the Energy sector including Thermal Power, Coal Handling Plant, Nuclear Power, Hydro-electric and other works of Highways, Townships and Bridges. These efforts resulted in Company's securing order totalling Rs. 51 crores in the non-steel sector during the year 1992-93. In the steel sector, Company was awarded work totalling Rs. 59 crores till October, 1992. The orders on hand at the beginning of April, 1992 was Rs. 502 crores.

2.0 FINANCIAL RESULTS

The Authorised and Paid-up Share Capital as on 31.10.1992 was Rs. 20 crores. The total amount of loans from Government outstanding as at the end of October, 1992 was Rs. 209.95 crores (Plan Loan Rs. 63.63 crores and Non-Plan Loan Rs. 137.52 crores) and Rs. 8.80 crores drawn from National Renewal Fund as against Rs. 197.77 crores as on 31.3.1992.

2.1 The Company achieved an all time high turnover of Rs. 291.85 crores during the year 1991-92. The loss for the year for works in India worked out to Rs. 41.26 crores and on account of earlier work in Libya Rs. 28.12 crores making total loss of Rs. 69.38 crores for the year. The said loss included interest on Government loan Rs. 52.81 crores (for Indian operation Rs. 22.28 crores and for Libya Rs. 30.53 crores). Thus the loss before interest on Government loan for Indian operation was Rs. 18.98 crores. The target of turnover set for the year 1992-93 is Rs. 308 crores. During the year from April, 1992 till 30th September, 1992 the Company achieved a turnover of Rs. 105 crores as compared to the turn over of Rs. 96 crores during the corresponding period in the previous year.

3.0 MANPOWER POSITION

The Manpower position of the Company as on 1.9.1992 along with the statistics of SC/ST, Female, Ex-servicemen and Physically Handicapped employees are given below:—

Group	Total Strength	SC/ST	%	Female Employment	Ex-Service-men	Physically Handicapped employees
A	1878	98	5.2	10	5	2
B	545	62	11.4	12	3	3
C	15081	4993	33.1	698	185	36
D	1157	234	22.2	620	2	7
Total :	18661	5387	28.9	1340	195	48

As compared to the total strength of 20,270 during last year, there is a reduction of about 1609 employees in the Company which includes separation due to retirement, resignation, death, termination and Voluntary Retirement etc. The Company has been able to reduce 3505 employees so far through Voluntary Retirement Scheme as on 1.9.1992.

4.0 CONTRACT LABOUT POSITION

The jobs for which outside agencies are employed are mostly in the Civil Engineering area. In other disciplines, they have been engaged to suplement the work being done by departmental workers. The engagement of such workers has been necessary to execute the various jobs on Schedule fixed by our clients. The strength of PRWs/Contractor Workers in the Company is around 12,972 as on 1.9.1992.

5.0 SAFETY MEASURES

HSCL has formulated its own safety code and for its implementation, the following steps are taken:

a) Safety Organisations are functioning in all the major units with safety engineers reporting to respective Head of Unit.

b) Contractors/PRWs engaged at various HSCL sites are appraised of the safety measures and implmentation of safety measures are constantly monitered. 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 latest safety measures and also to review the safety requirements of various work sites in HSCL.

6.0 Workers participation in Managment

The company has joint Council at Unit level for major units at B.S. City and Bhilai and Shop Councils at Shop level for participation in economy, cost reduction, safety and quality improvement.

The company has an Apex Joint Forum which comprises of the management of HSCL and the National Level Trade Unions. From the inception of the formation of Apex Level Joint Forum Body in 1981, there have been 29 meetings till 31.10.1992.

7.0 WELFARE MEASURES:

a) Schools have been provided with assitance of the Management in the areas where SC/ST employees mostly.

b) Assistance is given for supply of drinking water.

c) Plots are allotted to workers for making hutments in the land allotted at sites of clients with free electricity, water and sanitation arrangements etc.

d) Children of SC/ST employees get due preference in the matter of schooling at Projects where short term construction work is to be undertakne.

8.0 MEASURES TOWARDS IMPROVEMENT

The viability of the company has been affected by the surplus manpower, slackness in the growth of the Steel Sector and losses incurred by the company in Libyan Works. Steps are being taken by the Govt. to improve the viability of the company. The company has introduced economy measures for reducing overhead expenditure. The company has also been implementing Voluntary Retirement Scheme, with a view to reducing surplus man power.

8.1 The financial performance of HSCL has not been found to be satisfactory. In fact, HSCL has been listed as a chronically sick Public Sector Undertaking and was included by Deptt. of Public Enterprises for Parliament debate in December, 1991. However, HSCL continues to be the only company possessing specialised equipment and skilled manpower stationed at various steel plants for undertaking various jobs. Such heavy outlay on manpower and machinery is not possible by the Private Sector.

14. Bird Group Companies

A. INTRODUCTION

Undertakings of the erstwhile Bird & Company Ltd. were taken over by the Government under the Bird & Company Ltd. (Acquisition & Transfer of Undertakings & Other Properties) Act, 1980. The following 8 companies of the Bird & Co. Ltd. came under the administrative control of the Ministry of Steel:-

(a) Eastern Investment Ltd.

(b) Orissa Minerals Development Co. Ltd.

(c) Bisra Stone Lime Co. Ltd.

(d) Karanpura Development Co. Ltd.

(e) Scott & Saxby Ltd.

(f) Kumardhubi Fireclay & Silica Works Ltd.

(g) Burrakur Coal Co. Ltd.

(h) Borrea Coal Co. Ltd.,

Of the above, Eastern Investment Ltd is an investment company formed by the amalgamation of other investment companies of Bird Group. The Burrakur Coal Co. Ltd and Borrea Coal Ltd. are non-operational.

B. PERFORMANCE OF THE COMPANIES

1. THE ORISSA MINERALS DEVELOPMENT CO. LTD. (OMDC)

OMDC is one of the oldest iron ore producing companies, incorporated in the year 1918 with a subscribed capital of Rs. 60 lakhs. The company has mining leases over 32.57 sq. kms. in Barbil, Kionjhar Dist, of Orissa for Iron Ore & Manganese ore.

2. Consequent to assistance given by Govt. after take over, the performance of the company has shown improvement. Its recent perfomance is given below:—

	Qty. in lakh tonnes Rs. in lakhs 1992-93	
	(Actual) 1991-92	Actuals April,92-Feb.93
Production	7.85	7.60
Turnover	1120.71	1270.61
Profit/Loss	6.52	78.28

The company's performance is expected to improve further next year. One of the main reasons for better performance of the company has been its efforts to meet the requirements of the sponge iron industry. Besides strengthening its own facilities, the Company has also entered into a collaboration agreement with a private sector company to set up a two million tonne capacity crushing & screening plant in the joint sector. The entire requirement of fund for this project is proposed to be raised by the new joint venture company, outside the plan expenditure of the Govt.

2. THE BISRA STONE LIME CO. LTD. (BSLC)

The company was incorporated in 1910 and has a subscribed capital of Rs 50 lakhs. It is one of the largest producers of Lime stone and Dolomite in India. The company has mining lease over 2771.62 hectares in Birmitrapur in the Distt. of Sundergarh, Orissa. Due to decline in the offtake of its products by its traditional customers, BSLC's financial position has not been satisfactory., Steps have been taken to improve its performance. Some of these are:-

(a) Improving despatches to steel plants.

(b) Rationalising Labour force through voluntary retirment scheme,

(c) Providing funds for equipment and machinery, and

(d) Providing funds for implementation of a special project for supply of dolomite to Visakhapatnam Steel Project (VSP)

As a result of the above measures, the performance of the company is showing signs of improvement. Its recent performance is as follows:-

	Qty. in lakh tonnes Rs. in lakhs	
	1991-92 (Actual)	1992-93 (Actuals) (April 92-Nov.93)
Production	8.28	8.61
Turnover	1007	12.34
Profit/Loss	(-) 953	(-) 849.36

The company has completed the Patpahar Dolomite Project which has been set up at a cost of Rs. 13.58 crores for supply of 6 lakh tonnes of dolomite per annum on a long term basis to VSP. The project is in its trial run stage.

3. THE KARANPURA DEVELOPMENT CO. LTD. (KDCL)

The company was incorporated in July, 1920 and has a subscribed capital of Rs. 20.00 lakhs with 272 shareholders. It employs presently 202 persons as departmental workforce. In addition, about 300 workers are employed through contractors. The company produces limestone and clay from its mines in Hazaribagh, Bihar.

During the year 1991-92, the company's production plan received a setback due to an accident in its mines leading to stoppage of mining activities for more than 9 months. The work could be started only in March, 92. The performance of the company during 1991-92 and during 1992-93 is given below:—

	Qty. in tonnes Rs. in lakhs	
	1991-92 (Actual)	1992-93 (Actuals) (April-Nov.92)
Production	26,460	56,370
Turnover	26.43	71.01
Profit/Loss	(-) 54.65	(-) 1.60

4. SCOTT & SAXBY LTD. (SSL)

The company is a fully owned subsidiary of the Karanpura Development Co. Ltd. It has a labour strength of 374 persons. The main activity of the company relates to sinking of deep tubewells and mineral exploration work. During 1991-92 the Company's turnover was Rs. 122.30 lakhs, though it incurred a loss of Rs. 133.96 lakhs. The budgeted turnover for the year 1992-93 was Rs. 138.00 lakhs with an expected loss of Rs. 54.40 lakhs. The company has however been facing increasing labour problems during the current year, and this is likely to affect its overall performance.

A statement showing performance of the company for the year 1991-92 and during 1992-93 is given below:-

	Qty. in lakh tonnes Rs. in lakhs	
	1991-92 (Actual)	1992-93 (Actuals) April-Nov.92
Turnover	122.30	60.58
Profit/Loss	(-) 133.96	(-) 69.82

5. THE KUMARDHUBI FIRECLAY & SILICA WORKS LTD

Kumardhubi Fireclay & Silica Works Ltd. was incorporated in 1915 and is one of the oldest refractory units in India. The Company produces Refractory Bricks, mortars and castables and supplies its products to integrated Steel Plants of SAIL, as well as to other non-steel industries like glass, cement, petro-chemicals etc. The company is located at Kumardhubi in Dhanbad Distt. of Bihar. The performance of the company during 1991-92 and from April-January, 1993 is as follows:—

	Qty. in tonnes Rs. in crores	
	1991-92 (Actual)	1992-93 (Actuals) (Till Jan. 1992)
Production	8108	1996
Profit/loss	(-) 5.96	(-) 4.98

The company performed well upto the end of 1982. The decline started thereafter, mainly because of recession in demand of refractories and TISCO, a major share holder, gradually losing interest in the company. The company did not undergo any modernisation/diversification earlier.

Because of its poor performance the company was declared sick by the BIFR in 1989, and a revival package was formulated. The revival package is presently under the consideraton of Industrial Reconstruction Bank of India.

Private Sector

CHAPTER-VI

THE TATA IRON & STEEL COMPANY LIMITED

Tata Iron & Steel Company Limitd (TISCO), the only integrated Steel Plant in the Private Sector, was founded over 80 years ago. This Steel Plant is located at Jamshedpur and has captive collieries at Sijua, Jamadoba and West Bokaro and Iron Ore Mines at Noamundi and Joda in Bihar and Orissa.

The company embarked on a 2 million tonnes (ingot steel) expansion programme which was completed in 1958. Subsequently, the first major modernisation programme was undertaken by the company in 1980 when the outdated Duplex process was replaced by a modern LD Shop along with continuous casting and other allied facilities. Immediately thereafter, the company started work on Modernisation Programme Phase II to strengthen its infrastructural facilites. The pricinpal facilities of 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 Capacity Sinter Plant, 60 MW Power Plant, etc.

TISCO is now poised to complete its Phase III Modernisation by 1994, which would increase its saleable steel production to 2.7 million tonnes per annum. The highlights of this Phase, which is currently underway, are:-

* One MTPA capacity Hot Strip Mill
* New LD Shop with secondary steel making and continuous Slab Casting facilities of 1 Mtpa Cap.
* Half Coke Oven Battery
* 500 tpd Oxygen Plant
* Calcining Plant (Three 300 tpd Vertical Shaft Kilns)
* 2 New captive power plants (97.5 MW capacity)
* Expansion and modernisation of raw material facilities, transportation system and infrastructure.

A View of TISCO Works

In addition to the above, TISCO has commissioned a modern 1 Mtpa capacity blast furnance in October, 1992.

2. PRODUCTION

Production in the first 9 months of the year was:—

(.000 tonnes)

	April-Dec '92	April-Dec '91
Hot Metal	1804	1765
Crude Steel	1839	1763
Saleable Steel	1562	1481
Semis %age	57.09%	52.82%

The production of saleable steel in April-Dec '92 has been higher by 39,000 tonnes as compared to April-Dec'91, and is expected to cross 2.10 million tonnes during the current year. Tisco is also expecting to have the highest ever production of sinter, Hot Metal, Crude Steel and Concast Billets during 1992-93.

The percentage of Semis has increased compared to the previous year, due to inadequate availability of Power from public utilities.

The production and productivity of the Blast Furnance have continued to be outstanding and it is expected that the best ever output of Hot Metal will be achieved. The Sinter Plants have contributed significantly towards this through higher production of consistently good quality sinter. Imported raw materials such as coal, lime stone, dolomite, etc., have also played a crucial role in improving production and productivity.

3. PERFORMANCE OF VARIOUS FACILITIES

a) Modernisation Phase -1

All major units installed under Phase I viz., LD Shop, Lime Calcining Plant, Tar Dolo Block Plant, Oxygen Plant and Bar Forging units have exceeded their rated capacitites.

b) Modernisation Phase - 2

The Bar & Rod Mill is greared to produce all grades and sections of products envisaged, with excellent quality, at near rated capacity. The products of the Bar & Rod Mill have been well accepted in the international market. The other facilites like Coke Oven Battery No. 7 with stamp charging facility, the new Coal Handling Plant, the Bedding & Blending Yard and Sinter Plant No. 2 commissioned in 1988-89 have fully stabilised. The improved quality of coke and sinter produced from the CO battery No. 7 and SP No. 2 respectively, has helped in reducing coke rate and increasing the productivity of Blast Furnances to a large extent.

The energy optimising furnace (EOF) of 80 tonnes capacity installed at SMS 3 has been facing teething troubles which are being sorted out.

4. ENERTY CONSERVATION

The Plant specific energy rate for the first half of the year 1992-93 was 9.393 Gcal/ton of crude steel as against 9.625 Gcal/ton of crude steel in the previous year during the corresponding period i.e., a reduction of 2.41% . The main contributing factors for the decrease in the plant specific energy rate were:-

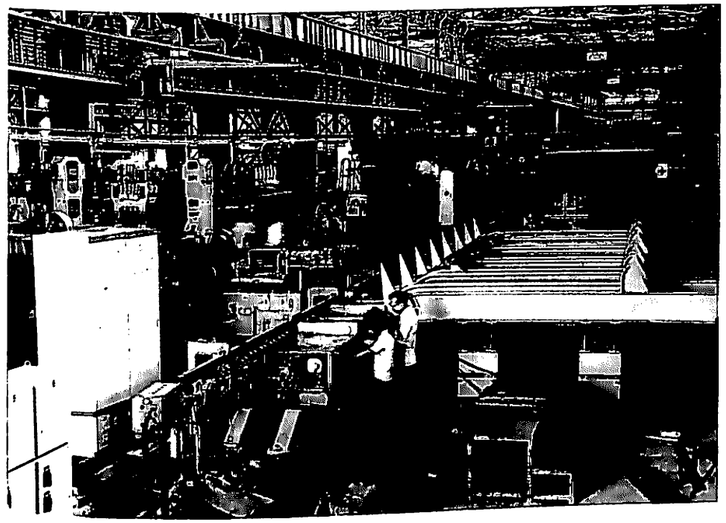
* Higher steel to Iron ratio, i.e. higher usage of Scrap at Steel Making.
* Improved energy utilisation at Sinter Making.
* Lower combined energy rate at Steel Melting Shop.
* Higher percentage of semis - an increase of 6.82%.
* Improved boiler efficiency.

However, the following factors had adverse effect on the plant specific energy rate.

* Higher in-plant power generation - 7.65% (8.35 MW) higher than in the previous year.
* Lower by-product recovery including LD Gas recovery.

5) SAFETY

During the first six months of 1992-93, in TISCO works the operation Departments have shown a



TISCO Growth Shop

reduction in the number of accidents compared to 1991-92. Besides achieving many million accident free man hours, the Works as a whole have completed 5.52 Million Accident Free Man Hours on 17th May, 1992. The data based safety management system has been introduced and is expected to be streamlined. TISCO has introduced a novel system of "Worker Safety Inspector", to be appointed by the Joint Departmental Councils to look after the promotion of safety activities and accident prevention in each department. All these Worker Safety Inspectors have been given a two week intensive training on safety and accident prevention techniques.

SECONDARY STEEL SECTOR

In the recent past, significant policy changes have been announced by the Government for liberalising and de-regulating the iron and Steel Industry. An overview of the present policy framework is given below:-

I. POLICY FRAMWORK

1. Licencing Provisions

The "Iron and Steel" industry, among others, has been removed from the list of industries reserved for the public sector and also exempted from the provision of compulsory licensing under the Industries (D&R) Act, 1951. This exemption is subject to the condition that the location is not within 25 kms from the periphery of the standard urban area limits of a city having a population of more than 10 lakhs according to the 1991 Census. This condition will not apply to industries located within the areas designated as 'industrial areas' by the State Governmsnt(s) before July 25, 1991.

For all other units to be located within restricted location, an industrial licence will be required.

The location of industrial projects will also be subject to Central or State environmental laws or regulations, including local zoning and land use laws and regulations.

2. Substantial Expansion of Existing Units

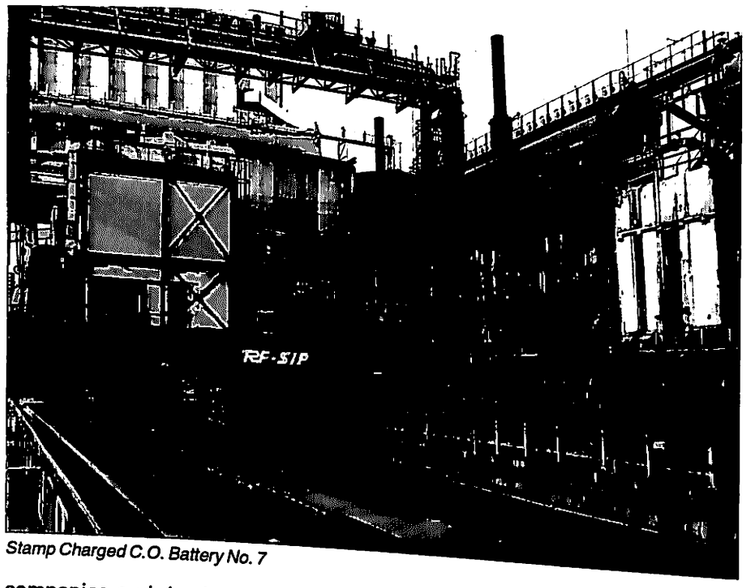
The existing licensed iron and steel units will also be exempted from the provisions of compulsory licensing provided they conform to the locational requirements.

3. Broad Banding

The existing licensed steel units will be permitted to broad band or to manufacture a new article without additional investment, if the articles are not otherwise subject to compulsory licensing.

4. MRTP Act

The MRTP Act has been amended to remove the threshold limit of assets in respect of MRTP



Stamp Charged C.O. Battery No. 7

companies and dominant undertakings. Such companies now need not obtain prior approval of Government under the amended MRTP Act for setting up new industrial undertakings or for taking up substantial expansion of existing units.

5. Foreign Investment

According to the new industrial policy, automatic approval will be given for investment upto 51% foreign equity in high priority industries provided the foreign equity covers the foreign exchange requriement for import of Capital goods. This list includes industries producing iron ore pellets, sponge iron, pig iron and steel of all categories. Ferro alloys are also included in the list of high priority industries.

6. Foreign Technology Agreements

Automatic permission will be given for foreign technology agreements in high priority industries (which include Ferro Alloys, Sponge Iron, Pellestisation , Pig Iron and steel) within certain specified parameters.

7. Engagement of Foreign Experts

No permission is necessary for hiring of foreign technicians and no applications need be made to Government for this purpose irrespective of whether the hiring of foreign technicians is under an approved collaboration agreement or not.

II. GUIDELINES FOR ENTREPRENEURS IN IRON & STEEL INDUSTRY

A set of Guidelines for Entrepreneurs in the Iron & Steel Industry' were released in October, 1992. These Guidelines provide prospective entrepreneurs comprehensive information on the policy framework, demand projections, availability of essential raw materials, infrastructural facilities, possible locations, technological capabilities existing within the country and requirement of environmental clearances for Iron & Steel projects.

These Guidelines have identified 25 possible sites in the country for setting up new iron & steel projects and coke making plants. It has been emphasised in the guidelines that this is only an indicative list. The choice of location is left to the best commercial/economic judgement of the entrepreneurs who would need to undertake detailed feasibility studies before taking a final decision.

No specific locations have been identified for setting up of Electric Arc Furnance units which have considerable flexibility of location depending upon the availability of scrap, sponge iron, electricity and market.

III. PROFILE OF SECONDARY STEEL SECTOR

Presently the secondary steel sector is producing over 3 mt. of crude steel and production of crude steel is expected to increase to over 7.75 mt. by the end of the 8th Plan Period and over 11 mt. by the turn of the century.

Product-wise details of capacity and production of the units which are reporting their production to the Office of Development Commissioner of Iron & Steel, Calcutta are given in the succeeding paragraphs:

1. Electric Arc Furnace Industry

At present 177 Electric Arc Furnance Units holding Industrial Licence with a total capacity of 7.3 million tonnes have been commissioned. In addition to this there are 5 units holding licence for a capacity of 0.22 million tonnes which are yet to be commissioned.

Production of ingots/concast billets by EAF units during the last three years and for April-Dec, 1992 is given below:-

(In .000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Mild Steel	2041.8	2363.0	1672.0	865.0
Medium/High Carbon Steel	394.0	371.6	341.2	196.9
Alloy Steel	533.6	598.8	516.1	285.0
Stainless Steel	153.5	176.0	196.7	102.3
Total Reported	3122.9	3509.4	2726.0	1429.2

The above figures do not include production of steel by casting units registered with DGTD.

2. Steel Re-rolling Industry

There are about 1012 units holding industrial licence with a total capacity of 20.85 million tonnes. Out of these, 83 units with a capacity of 3.7 million tonnes are having captive steel making facilities.

Production of the re-rolling units during the last 3 years and for April-Dec, 1992 is as follows:-

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Bars/Rods (Incl. Squares)	2085.0	2191.7	2058.6	988.7
Wire Rods	506.0	634.5	609.8	197.7
Structural	769.2	743.8	692.4	439.6
Hoops	2.1	1.2	0.6	1.7
Special Sections	130.2	111.7	100.0	53.2
Slabs/Plats	45.6	41.2	44.9	3.4
Total Reported	3538.1	3724.1	3506.3	1684.3

3. Steel Wire Drawing Industry

There are 76 units holding industrial licence with a total capacity of 0.9 million tonnes.

Production of steel wire drawing units during the last three years and for April-Dec, 1992 is as under:-

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Mild Steel	216.4	193.6	164.5	105.2
Medium/High Carbon	189.2	163.0	100.8	90.3
Alloy Steels	6.9	9.9	8.7	7.1
Stainless Steel	1.2	2.3	1.9	1.8
Total Reported	413.7	368.8	275.9	204.2

4. Cold Rolled Steel Sheets/Strips Manufacturing Industry

There are 50 units holding licence for a total capacity of 1.58 million tonnes which have commissioned their plants.

The production of units for last 3 years and for April-Dec, 1992 is as follows:—

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Mild Steel	557.2	547.5	602.5	454.5
Medium Carbon Steel	14.2	13.2	15.5	8.1
High Carbon-Steel	8.1	6.8	5.3	4.7
Alloy Steel	0.9	0.4	1.7	2.9
Stainless Steel	3.4	5.9	6.8	5.4
Total Reported	583.4	573.8	649.8	475.6

5. Hot Rolled Steel Sheets/ Strips Units

In the secondary sector there are 6 units holding industrial licence for a total capacity of 0.3 million tonnes which have commissioned their plants. 4 units holding licence for a total capacity of 0.17 million tonnes are yet to commission their plants.

The total production of hot rolled steel strips units during the last 3 years and for April-Dec, 1992 is as follows:-

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Hot Rolled Steel Sheets/Strips	29.0	45.3	75.0	54.3

6. GP/GC/Galvalume/Galfan/PVC/Vinyl Coated Sheets/Strips

9 Units holding licence for manufacturing 0.36 million tonnes of GP/GCSheets have been commissioned. In additon to this, 2 units with a total capacity of 0.1 million tonnes have set up Colour Coating lines. But they are yet to start commercial production. In addition, 5 units holding licence for manufacturing 0.18 million tonnes of GP/GC/Coated sheets are yet to be commissioned.

Production of GP/GC sheets during the last three years and for April-Dec, 1992 is as follows:

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
GP/GC Sheets/Strips	213.6	219.0	18.0	150.1

7. Tin Plate Industry

Besides Rourkela Steel Plant, 2 units in the private sector holding Industrial Licence with a capacity of 0.15 million tonnes of Electrolytic Tinplate have been commissioned.

Production of electrolytic tinplate of the two units in the private sector during the last 3 years and April-Dec, 1992 is as follows:

(In '000 tonnes)

Category	1989-90	1990-91	1991-92	April-Dec, 92
Oil Can Size	44.7	46.0	20.1	23.8
Non Oil Can Size	26.9	15.4	12.9	10.2
Total Reported	71.6	61.4	33.0	34.0

Pig Iron Industry

Pig Iron is widely used in the engineering industry for manufacture of various engineering products. The domestic production of pig iron has not kept pace with its demand. Presently, the major producers of pig iron are the integrated steel plants which, however, have to divert a part of their hot metal production for manufacture of pig iron. The shortage of pig iron has adversely affected the engineering sector. During 1992-93, against an estimated demand of approximately 21.0 lakh tonnes, the domestic production is likely to be about 17.9 lakh tonnes of which about 14.82 lakh tonnes will be contributed by the integrated steel plants.

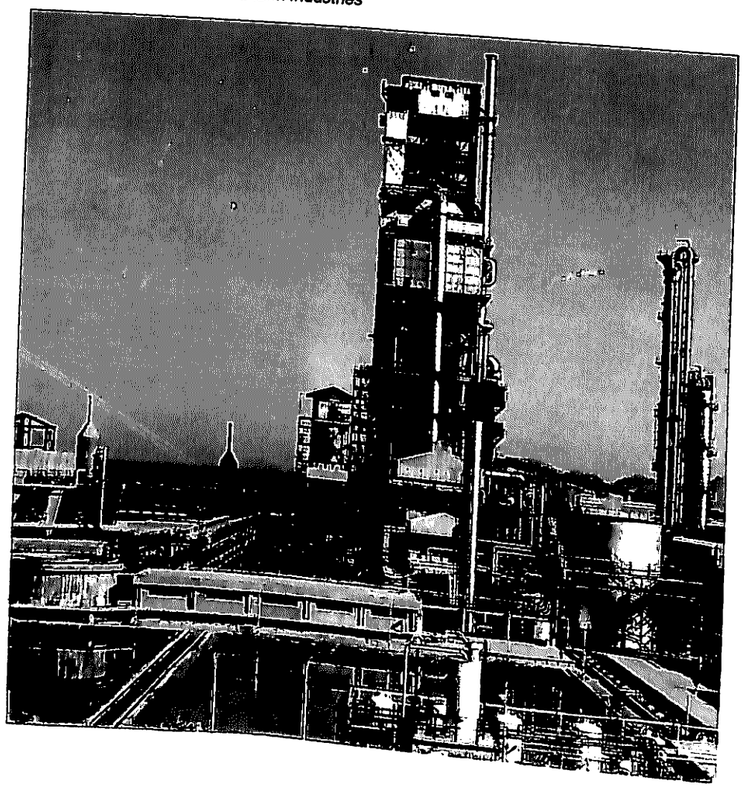
2. Because of financial considerations, it is desirable that integrated steel plants concentrate on production of finished steel rather than of pig iron. Government is therefore, keen to encourage creation of pig manufacturing facilities in the secondary sector. Considerable interest is now being shown by the private sector in this area. The financial institutions have already

sanctioned assistance for a capacity of 10.17 lakh tpa as per details given below:-

(Quantity in lakh tones/yr)

Sl. No.	Name	State	Capacity
1.	Mid-West Iron & Steel Ltd.	A.P.	0.75
2.	Sesa Goa Ltd.	GOA	0.75
3.	Nova Dhatu Udyog Ltd.	GOA	0.68
4.	Usha Ispat Ltd.	MH	1.89
5.	Tata Metalliks Ltd.	WB	0.90
6.	Jindal Strips Ltd.	MP	2.00
7.	Kirloskar Ferrous Industries	KN	1.25
8.	Satvahana Ispat Ltd.	AP	1.20
9.	Uni Metal Ispat Ltd.	KN	0.75
		Total :	10.17

HBI/Sponge Iron Plant of GRASIM Industries



In addition, some more applications are pending for approval with the financial institutions.

3. The Sesa Goa unit at Goa has already gone into production, while the units of Usha Ispat in Maharshtra & Mid West in Andhra Pradesh are scheduled to be commissioned shortly. Some other units have also initiated action for setting up their pig iron projects in different parts of the country, and are likely to go into production in the future.

4. Coke is an essential raw material required for pig iron production. Domestic shortage of coke discourages some entrepreneurs from setting up pig iron capacity. Government is therefore, keen that merchant coke oven units are also set up in the secondary sector. Under the New Industrial Policy announced in July, 1991 manufacture of coke has been delicensed, - unless certain by products are sought to be recovered. Some interest has recently been shown by the private sector for setting up merchant coke making facilities.

SPONGE IRON

Manufacture of sponge iron was taken out of the purview of the licensing provisions of the Industries (Development & Regulation) Act in 1985. While there were only two private sector units in production during 1988-89, the numbner of such units increased to six in 1990-91. The total installed capacity of sponge iron units is currently around 18.0 lakh tonnes per annum. Some more capacity is expected to become operational in the near future. The production of sponge iron from 1988-89 onwards is given below:-

(In lakh tonnes)

1988-89	1989-90	1990-91	1991-92	1992-93 (April to Dec.)
1.94	3.18	8.30	12.8	10.33

FERRO ALLOYS

Indispensable for the production of alloy and special steels the ferro alloy industry received a boost with the permitting of broadbanding in January '90. Growth of this industry received a further impetus after its delicensing under the New Industrial Policy announced in July, 1991. These decisions will lead to dispersal in manufacturing facilities, with consequent easier availability for local consumers.

Production of various ferro alloy during the last 3 years was as under:-

(in thousand tonnes)

Category	1989-90	1990-91	1991-92
Ferro Manganese	188.33	230.020	204.00
Ferro Silicon	56.88	53.50	32.26
Ferro Molybdenum	0.19	0.17	0.03
Ferro Chrome	35.53	38.43	55.48
Ferro Tungston	—	—	—
Ferro Vanadium	0.06	0.03	0.04
Ferro Titanium	0.07	0.11	0.18
Mangnesium Ferro Silicon	—	—	—
Silico Chrome	7.12	1.70	3.06
Silico Manganese	34.00	29.13	37.28
Charge Chrome	78.47	72.83	69.00
Ferro Niobium	0.03	0.08	0.05
Grand Total of Ferro Alloys 1992-93 A	400.68	426.00	401.38

Production during April - September 1992 has been 2.80 lakh tonnes.

Export of Various Ferro Alloys

Government is seeking to encourage the export of value added items like ferro alloys instead of ores. This also helps to conserve the reserves of high grade ores for use by the domestic industry. While ferro alloy exports have shown a rising trend, it has not been possible for the industry to fully exploit the export potential in view of the high domestic rates of power, and the prevailing international ferro alloy prices. Export of ferro alloys during the last three years has been as follows:-

	Qty. in tonnes	Value in Rs. in crores
1989-90	91,115	120.00
1990-91	87,069	80.67
1991-92	124,934	172.85
1992-93 (April-Sept 92)	74,598	120.85

Research & Development

CHAPTER-VII

1. R&D under Iron and Steel Mission.

1.1 The Science & Technology Advisory Committee (STAC) attached to the Ministry of Steel continued to guide the research & development activities in the Iron and Steel Sector.

1.2 Out of the 8 projects undertaken under the iron and steel mission, studies on the four projects have been completed and three projects are under completion. Study on one project has been terminated due to administrative problems. **The detailed status of the above projects as on 24.12.92 is enclosed herewith (Aunxure-I)**

2.0 Other R&D Activities

The iron and steel plants under the administrative control of Ministry of Steel continued their R&D activities during the year. The major thrust of the R&D during the year was towards the basic and applied research aimed for development of products and processes leading to improvement in productivity, quality and energy consumption optimum utilisation of raw materials and commercial expolitation of imported technology.

2.1 R&D CENTRE FOR IRON AND STEEL, SAIL, RANCH

2.1.1 Objectives/Thrust: The major thrust of the R&D at RDCI&CS revolved around continuous improvement in performance indices of the steel plants viz. improvement in productivity reduction in energy consumption & coke rate, imrprovement in quality, development of maket oriented products, development of technology and commercial expolitation of imported technologies.

2.1.2 Highlights of R&D Activities Carried Out

2.1.2.1 The Centre has been successful in developing and implementing some new technologies and processes for imrpovement of plant performance characteristics. These include the following:—

(i) System design for heat treatment and high pressure rim spray for locol wheel production at DSP.

(ii) Condition based maintenance system at BSL to forewarn catastrophic failures of components.

(iii) Technology for the production of high strength crane wheels at ASP.

2.1.2.2 To increase productivity, certain measures have been initiated. Some salient features include:—

(i) Optimisation of tuyere parameters, burden distribution, slag regime to improved blast furnace performance in DSP, BSL and BSP.

(ii) Improvment in sinter plant operation at BSL and DSP.

(iii) Use of prefabricated alumina-silicon carbide-carbon trough blocks in BP No. 1 at RSP has increased through life almost four fold.

(iv) Wide application of low moisture castables (LMC) at various units in different plants has helped in improved productivity and performance.

(v) Use of cold bonded pellets in the blast furnaces at IISCO and RSP has shown encouraging trends.

(vi) Alignment of guide car and pusher car through gamma ray interlock system in coke oven battery at DSP has enabled to control wrong pushing.

2.1.2.3 Concentrated efforts have been made towards improving yield and quality of end products for better value addition. Some major activities are:

(i) Improvement in thermal regime and quality of rolled structurals at IISCO has brought down rejection from 19.6% to 12.5%.

(ii) Yield improvement in Spade M1 plates at RSP for defence application. In 80-85 mm plates the rejection was brought down from 50% to 10%.

(iii) Pneumatic oil coating system in pickling line-1 of RSP has led to improve oil coating coupled wth lower oil consumption (0.5 l/t compared to 1 l/t earlier).

(iv) Microprocessor based pin-hole detection and rejection system has been incorporated in ESTL-11 of RSP which provides for 100% on-line inspection and automatic sorting.

2.12.1 Several new and value added products have been successfully developed and put to commercial use in various spheres of application:—

(i) IRS M-41 grade steel for Indian Railways.

(ii) Thick plates of ASTM-A537 grade steel for pressure vessels, storage tanks etc.

(iii) API X-42 ERW pipe for the oil sector.

(iv) API X-52 grade spirally welded pipes for the oil sector.

(v) BPO-30 grade sheet steel for anti tank missile components.

(vi) ME 10 steel for cartridge cases for artillery guns.

2.1.2.5 Special emphasis has been laid towards measures related to reduce energy inputs in steel plants. The following are the important activities in this field:—

(i) Variable speed blowers in the soaking pits of BSP has resulted in an energy saving by 52%.

(ii) Double layer skid insulation blocks in the reheating furnaces in the HSM of BSL has accounted for 20% reduction in specific heat consumption.

(iii) Reheating furnace control system developed for RSP has resulted in considerable reduction in fuel consumption.

(iv) Design and development of suitable burners of ladll heating system.

2.1.2.1 The Centre has been actively engaged and has been assisting SAIL plants in the important sphere of Environment and Waste management. In this field a Quality Assurance programme including air, water and noise monitoring has been drawn up besides embarking on pollution monitoring and introducing techniques for pollution abatement. Some highlights of the work carried out include:—

(i) Ambient air qualtiy monitoring and particulate emmission studies at RSP, ASP, Gua Mines.

(ii) Assessment of noise pollution at IISCO.

(iii) B-T-X monitoring in air.

(iv) Reduction in cyanide level in effluents from BOD plant at DSP.

(v) Studies on SO_2 and acid mist emmission from acid plant of IISCO.

(vi) Fogging water system for dust suppression at DSP.

(vii) Utilisation of fly ash in building materials and as a soil conditioner.

2.1.3 Total cost incurred in R&D vis-a-vis Turn over

Year	Expenditure on R&D activities (Rs. in crores)	R&D expenditure as % of SAIL's turnover
1990-91	39.51	0.48
1991-92	38.98	0.42
1992-93 (Estimated)	20.0	0.20

**The above measure along with other steps resulted in reduction in specific energy consumption from 9.28 G. Cal in 1990-91 to 8.98 G. Cal per tonne of crude steel in respect of four integrated steel plants of SAIL.*

ANNEXURE I

NATIONAL MISISON FOR IRON & STEEL
STATUS OF APPROVED PROJECTS AS ON 24.12.1992

		REMARKS
A. PROJECT COMPLETED		
1.	Beneficiation fo finely crushed coal by heavy medium cyclone-cum-oil agglomeration technique Phase-I (CFRI)	Completed in Feb. 1991
2.	Process Development for conversion of non-coking coal/lignites/washery middlings to a coking agent by solvent refined coal (SRC) technology (CFRI)	Phase I of project completed in Jan, 1991.
3.	Silicon Reduction studies in Blast Furnace (IIT, Kanpur)	Completed in Sept. 1992.
4.	Experimental and anaytical studies on Formability of LPGgrade Steel fatigue and impact behaviour of mild and mirco-alloyed steels (IIT Madras).	Completed in December, 1991
5.	Some Fundamental studies of Continuous Casting of Steel (IIT, Kanpur)	completed in December, 1992
6.	Development of Mathematical model for Continuous casting of thin steel strips (IIT, Kanpur).	completed in December, 1992.
7.	Studies on Fluid Flow and Heat Transfer in Continuous Casting Mould (IISc, Bangalore)	completed in December, 1992.
B. PROJECT TERMINATED		
	Development of Rapid Soldification Technology to produce Microcrystalline steels and Iron-base metallic glasses (BHU)	Project terminated due to administrative problems.

2.2 TATA IRON & STEEL COMPANY LIMITED (TISCO)

2.2.1 OBJECTIVES/THRUST: The R&D at TISCO covered specific areas of establishing process parameters and specification for optimum utilisation of raw materials & development of new grade of special steel as well as physical & mathematical modelling for establishing optimum operational parameters.

2.2.2. HIGHLIGHTS OF R&D ACTIVITIES: Some of the specific achievements of R&D during the year are:

- Cost reduction through replacement of Dolomite by dunite in Sinter-making.
- Development of ball bearing wire rods and low carbon equivalent steel for high tension grades through controlled rolling;
- Selection of common imported coals for use in top charge as well as stamp charge batteries.
- Progress was made in the up-gradation of technology and innovation in the following areas:-

i) Micro-alloyed forging grade steel with guaranteed toughness and micro-cleanliness as also high tensik seamless gothics for automative rear axle.

ii) Mirco-alloyed high forming, high strength steel strips for automobile chasis.

iii) Creep-resistance steels for super-heater tubings in thermal and nuclear power plants.

iv) Development of trough-mix material for blast furnaces.

Benefits

Development of special grades of steels has improved the marketability and resulted in considerbale foreign exchange savings through import substitutiton.

2.2.3 Total Cost incurred in R&D

Year	Expenditure on R&D activities (Rs. in crores)	R&D expenditure as %age of turnover
1991-92	8.08	0.3
1992-93 (estimated)	10.0	0.33

2.3 VISAKHAPATNAM STEEL PLANT

2.3.1. OBJECTIVES/THRUST OF R&D

Visakhapatnam Steel Plant (VSP) is a new Plant and it is under the stabilisation of Processes & Parameters. The research and development wing have started during the year at VSP. The major thrust in this area at present is to increase and stabilise the productivity at sinter plant, Steel Melting Shop and Rolling Mills.

2.3.2. Highlights of R&D Activities

Some of the specific areas of R&D being carried out at VSP are:—

— Study of different lining patterns of the tundish to improve lining life and performance.

— Reduction of generation of lime fives in calcined lime production.

— Improvement in the heat size in SMS.

— Study of briquetting behaviour of lime fines with an aim to make it usable in converter.

— Study of the behaviour of runner mass at Blast Furnance in order to improve its life.

— Improvment of the working of MBC plant.

2.3.3. Total cost incurred in R&D

Year	Expenditure on R&D (Rs. in crores)	R&D expenditure as %age of turnover
1991-92	NA	NA
1992-93 (estimated)	5.0	0.26

2.4 KUDREMUKH IRON ORE COMPANY LIMITED

2.4.1. Thrust of R&D

The major thrust of research and development in KIOCL were on improvment in productivity & quality of iron ore concentrates and pellets as well as optimum utilization of raw material & consumables.

2.4.2 Highlights of R&D activities

Broadly, the various areas of Research & Development are:—

i) Mineralogical studies of iron ore to gauge the extent of grinding required for liberalisation of valuable minerals. These studies are in progress.

ii) Adoption of opti-blast technology to study the extent of benefits that could be derived with respect to explosive consumption and mine productivity.

iii) Adoption of floatation system to improve the quality of iron ore concentrates. Studies on column floatation as an alternative to conventional flotation have also been taken up.

iv) Application of high gradient/ wet high intensity magnetic separation method as an alternative to flotation system for improvement in quality of iron ore concentrates.

v) Adoption of floatex velocity classifier to classify the non-magnetic concentrates and to obtain finished concentrates in coarse fraction.

vi) Adoption of tertiary magnetic separator to reduce the silica content in the magnetic concentrates and thereby improve the overall quality of the final concentrates. Optimisation of this system is in progress.

vii) Laboratory scale benefication test for recovery of iron content from the tailings.

viii) Laboratory scale test on heating of iron ore slurry before silteration to achieve optimum baling properties in the pellet plant by reduction of moisture in the filter cake.

ix) Laboratory and plant scale test to use coal and coke as additive in pelletising so as to improve the property and reduce energy/fuel consumption.

x) Laboratory and plant trials for use of dolomite in pellet making aiming at improving the metallurgical property of the pellet.

xi) Laboratory scale trials for use of organic binders in pelletising with a view to contain addition of extra silica in the pellets from the conventional additives.

2.4.3 TOTAL COST INCURRED IN R&D

Year	Expenditure in R&D activities	R&D expenditure as % of turnover
1991-92	23 lakhs	0.06%
1992-93 (Apr-Sept. '92)	25 lakhs	0.21

2.5 BHARAT REFRACTORIES LIMITED (BRL)

2.5.1 Objectives/Thrust

The thrust of Research & development at M/s. BRL were aimed towards improvement in quality of refractory products, development of new products and technology absorption & up-gradation.

2.5.2 Highlights of R&D Activities:

Some of the important areas where research & development have been carried out by the Company with the results thereof are:—

— Development of indigenous tap whole mass as a import substitution item for the steel plants;

— Development of launder ramming mass for open hearth furnance of steel plants.

— Development of mud gun mass/trough mix for blast furnance at BSL, DSP & VSP.

— Technology up-gradation for production and commercialisation for different refractory products.

2.5.3 Items Developed under Foreign Collaboration

Apart from in-house R&D, technology upgradation expedited through foreign collaboration for the production and commercialisation of:

— L.D Gunning Mass;

— Mag-Carbon bricks for L.D. Converter & electric arc furnace;

— Slide Gate Refractories; and

— Zircon bass Low Cement Castables.

2.5.4 Items Developed through Collaboration with RDCIS, SAIL

— Repair Material for open hearth roof & bottom;

— Repair Material for Hot Metal Mixer;

— Special super duty ramming mass for sealing gap between the barrel and bottom lining of converter,. which performed well and found comparable with imported material for which some trial order obtained from Bokaro Steel Plant.

2.5.5. Total cost incurred in R & D

Year	Expenditure on R&D activities (Rs. in lakhs)	R&D expenditure as % of SAIL's turnover
1990-91	44.63	0.88
1991-92	37.09	0.54
1992-93 (Estimated)	15.00	0.20

2.6. MANGANESE ORE INDIA LIMITED

2.6.1. Objectives/Thrust

The Comanpy carried out research & development in almost all spheres of its activites to improve production productivity, safety and for diversification in related areas.

2.6.2. Highlights of R&D Activities

Some of the important areas of R&D studies undertaken by the Company are:—

— Study of Geo-technical & Geo-mechanical parameters of the Ore body & hanging wall in collaboration with CMPDI, Dhanbad for development of advanced mining methods and cave ability of underground workings to improve upon the rate of mining and to find out possibility of eliminating back filling of mined out areas. This method, if found feasible, will help the company to improve productivity and safety.

— Pre-mining support by cable bolting in stoping areas & development of cable bolting matching indigenously.

— Exploration by diamond drilling for proving of manganese ore reserves at deeper level and for locating new reserves. During 1991-92, 2847 meters of diamond drill has been carried out & additional reserves of 788000 tonnes of manganese ore has been proved.

— Beneficiation studies at R&D laboratory of NMDC & IBM Nagpur for development of suitable processes for upgrading low/medium grade ore.

2.7 SPONGE IRON INDIA LIMITED

2.7.1 Objectives/Thurst

The thrust of research and development efforts of M/s. Sponge Iron India Ltd. was on energy conservation and imrprovement in quality of raw material for production of sponge iron. The stress was also paid on optimum utilisation fo raw materials mainly iron ore and coal.

2.7.2 Highlights of R&D Work

Specific R&D efforts made during the year are:—

— The Company has received a 30 KVA laboratory scale/ Submerged Arc Furnace under UNIDO Programme. The furnace has since been installed and a wide range of smelting trials including that of range of smelting trials including that of pre-reduced ilmenite ores has been undertaken. Based on these studies larger scale demonstration trials are programmed in the 7 MVA SAF which is presently under implementation.

— Further trials on VRDR Process developed by NML, using SIIL raw materials are proposed. NRDC is co-ordinating with NML for finalising the further test programme for which the terms of reference have already been indicated by SIIL.

2.8 NATIONAL MINERAL DEVELOPMENT CORPORATION

2.8.1 Objectives/Thrust of R&D

The major thrust of NMDC in the research and development during the year was towards utilisation of waste-materials and development of high tech products.

2.8.2 Highlights R&D Work

The Organisation has been successful in developing the following new products/technology:-

— Setting up of a demonstration plant for processing blue dust for production of ferric oxide concentrate, a feed material for ferrite industries. A total of 650 tonnes during 1991-92 and about 550 tonnes during April-September, 1992 has been produced.

— Developmental studies on production of super grade ferric oxide for soft ferrites.

— Production of premium grade iron powder for powder metallurgical parts both for domestic use and exports. Setting up of a pilot plant of 700 tonnes/month capacity in joint venture with DMRL Midhani is under consideration.

— Developmental studies on production of pigment grade ferric oxide from blue dust. Setting up of a pilot plant with a capacityof 500 Kgs per month is being considered.

— Developmental studies on production of ultra pure ferric oxide from blue dust through hydro metallurgical route for use in production of some ferrite components and in telecommunication industry.

— Studies for Technology development for production of DBM from Panthal Magnesite, J&K, through two stage process comprising of pre-calcination followed by briquetting and sintering.

— Utilisation of Kimberlite waste in agricultural applications.

— Studies on recoveries of diamonds and micro-diamonds from kimberlite rocks as a part of expansion programme of Diamond Mining Project, Panna.

— Studies on recoveries of graphite and tungsten bearing minerals from graphitic tungsten ore from tapaskonda investigation.

— Studies on recoveries of heavy minerals like illeminite, rutile, zircon from beach sand of Bhimunipatnam.

— Evolution studies on metallurigcal properties of calibrated lump ores of Bailadila sector.

— Studies on flow characteristics of iron ore fines for design of 5.5 km long slurry pipeline for tailing disposal.

— Flowability tests on iron ore from Bailadila-10, 11A & 11B for design of bulk handling systems.

— Physical, chemical & metallurgical studies on iron ore samples from Barajamda sector for determining the suitability of ore for conventional iron & steel plants and DR grade plants etc.

2.8.3 Total Cost Incurred In R&D

Year	Expenditure on R&D activities (Rs. in lakhs)	R&D expenditure as % of SAIL's turnover
1991-92	244.37	1%
1992-93 (April-Sept.92)	99.70	—

Management Information System For Ministry of Steel

CHAPTER-VIII

A computer based Integrated Management Information System (MIS) has been developed in the Ministry of Steel with the assistance of the National Informatics Centre (NIC) in the areas of Administration, Public Sector Undertakings, Personnel Management, Projects, Secondary Producers and Finance Accounts & Budget.

The computer centre in the Ministry of Steel, which has been established as a central facility is equipped with One Super-At (386 based) compatible with 8 MB main memory, 300 MB hard disk alongwith 16 dumb terminals, 5 no. of IBM PC XTs/PC Ats and NICNET connection through Modem.

The super-AT is connected to NIC Super Computer & Electronic Mail Package available on the Super-Computer. Terminals of the Super-AT in the networking environment have been given to senior officials of the Ministry including certain key sections in the Ministry. These terminals facilitate interactive usage with the Management Information System developed for this Ministry as well as routine function such as Word Processing, data entry etc.

An attempt has also been made to implement the new MIS for MOU-signing PSEs comes under the purview of Ministry of Steel in which the data/information flow between PSEs & administrative Ministries/Departments will be through NICNET only.

Training programmes are periodically conducted by NIC for various levels of state in the Ministry to get them acquainted with the usage of computers in the area like word processing, data entry operations, data processing techniques.

Organisational Structure

CHAPTER-IX

9.1 In keeping with the new economic policy and consequent on the recent liberalisation measures adopted by the Government, such as delicencing of iron and steel industry as also decontrol of the pricing and distribution of iron and steel, the organisational structure of the Ministry as well as that of the office of DCI&S has been rationalised, to reflect its present functions and responsibilites.

9.2 The organisational structure of the Ministry of Steel is portrayed in the Chart at Annexure-I. To guide, command, control and facilitate the operations of the Ministry, the levels of supervision are established and suitable patterns for administrative control are formed.

9.3 The total sanctioned strength of the secretariat of the Ministry as on 31.12.1992 is 270. The classifiations/category-wise details are at Annexure-II. An officer of the level of Director has been designated to function as Director (Public & Staff Grievances). The details of the work allocated to the Ministry are given item-wise in Annexure III. There are 18 public sector undertakings under the administrative control of the Ministry. The details are at Annexure-IV.

9.4 The Ministry has an attached office, viz. the Office of the Development Commissoner for Iron and Steel (DCI&S) at Calcutta. The organisational chart of the Office of the DCI&S is at Annexure-V.

STATEMENT SHOWING THE NUMBER OF EMPLOYEES, NUMBER OF SC/ST/PH/EX-SERVICEMEN MEN AND WOMEN AS ON 31-12-92 IN RESPECT OF THE MINISTRY OF STEEL (SECTT.)

ANNEXURE - II

Classification of post	No. of employees in position	Men	Women	SC	ST	Physically Handicapped	Ex-servicemen
Group 'A'	26	24	02	03	—	—	—
Group 'B'	75	67	08	10	02	—	—
Group 'C'	96	63	33	20	06	02	01
Group 'D'	73	70	03	21	10	01	01
	270	224	46	54	18	03	02

Annexure-III

ITEMS OF WORK ALLOCATED TO THE MINISTRY OF STEEL

1. Steel plants in the public and private sectors, the rerolling industry and ferro-alloys, including all future development.
2. Development of Iron ore mines in the public sector.
3. Development of other ore mines and mineral processing for the Steel plants.
4. Production, distribution, prices, imports and exports of iron and steel and ferro-alloys.
5. Planning, Development and control of the assisitance to all iron and steel industries.
6. Production, supply, pricing and distribution of iron ore, maganese ore, limestone, sillimanite, kyanite and other minerals and alloys used in steel industry including magnesite and refractories but excluding mining leases or matters connected therewith.
7. The Steel Authority of India Limited and its subsidiaries.
8. Matters relating to the following undertakings namely:-
   i) The Bolani Ores (India) Limited.
   ii) The Manganese Ore (India) Limited
   iii) The Metal Scrap Trade Corporation and its subsidiary.
9. Other Public Sector Enterprises or undertakings falling under the subject included in this list except such as are specifically alloted to any other Department.
10. All attached or subordinate offices or other organisations concerned with any of the subjects specified in this list.

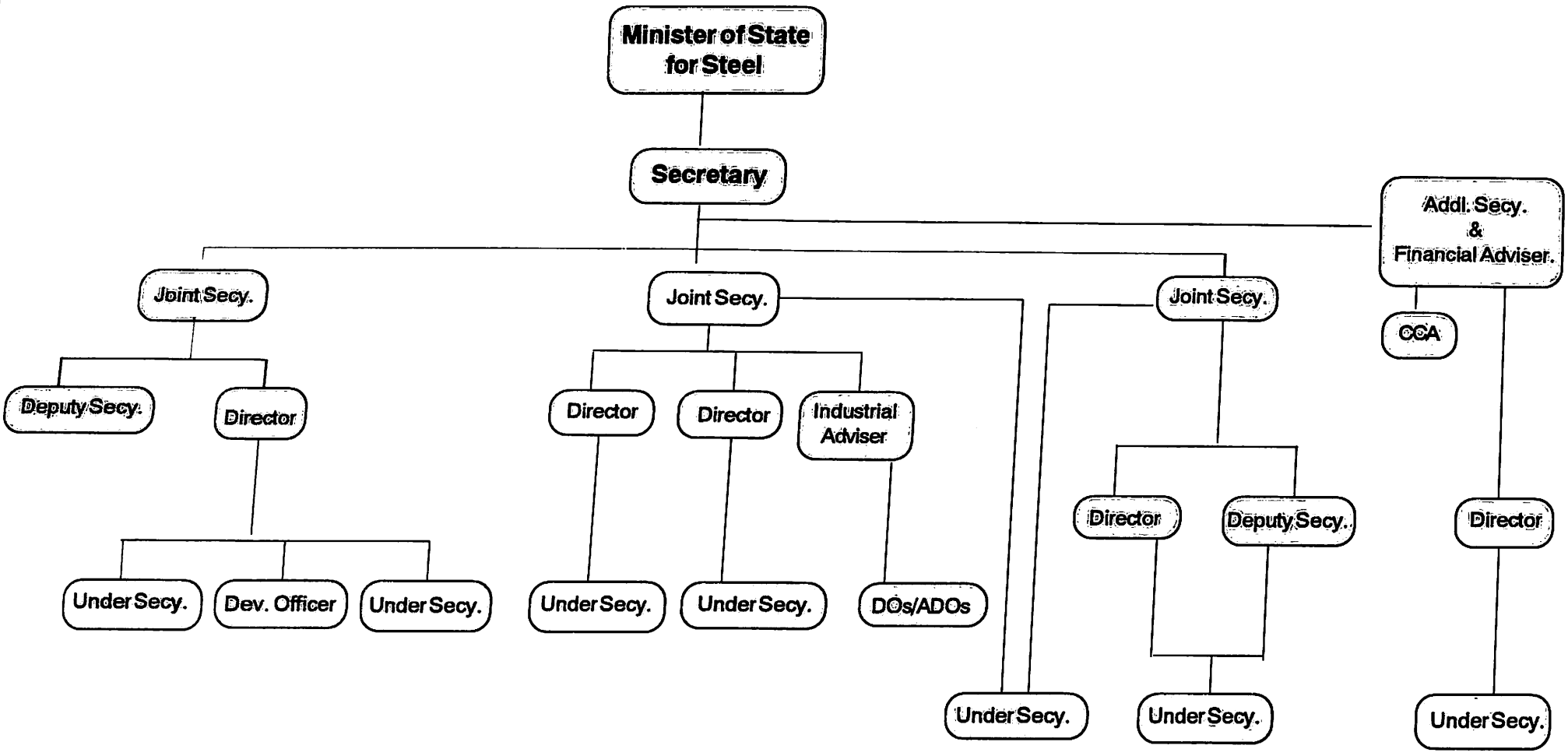
Annexure IV

List of Public Sector Undertaking under the Ministry of Steel

1. Steel Authority of India Limited, Ispat Bhawan, Lodhi Road, New Delhi-110003.
2. Rashtriya Ispat Nigam Limited, Project Office 'A' Block, Visakhapatnam-751007
3. Metallurgical & Engineering Consultants (India) Limited, MECON Building, Ranchi-834002.
4. National Mineral Development Corporation Limited, Castle Hills, Masab Tank, Hyderabad-500028.
5. Bharat Refractories Limited Sector IV-3 Quarter No. 56 Bokaro Steel City-827001.
6. Kudremukh Iron Ore Co. Ltd., 11 Block Koramangala, Bangalore-560034.
7. Manganese Ore (India) Ltd., 3 Mount Road Extension, Nagpur-440001.
8. Hindustan Steel Works Construction, Ltd., No.1 Shakespeare Sarani, (8th Floor), Calcutta-700001.
9. Sponge Iron India Limited, NMDC Complex, Khanij Bhavan, 10-3-3 11/A Castle Hills, Hyderabad-500028.
10. Neelachal Ispat Nigam Limited, IPICOL HOUSE (4th Floor), Bhubaneswar-751007.
11. Metal Scrap trade Corporation 225 F, Acharya Jagdish Bose Road, Calcutta-700020
12. Vijayanagar Steel Limited, Blue Cross Chambers, III Floor 'B' Wing, Infantry Road, Bangalore-500001
13. Ferro Scrap Nigam Limited, Building No. 54 Old Admn. Office Complex, Bhilai-490001
14. India Fire Bricks and Insulation Company Limited Rly. Station Ranchi Road, P.O. Marar-820177, District, Hazaribagh, Bihar.
15. Indian Iron and Steel Company Limited, Burnpur-713325.
16. IISCO Ujjain Pipe and Foundary Ltd., Calcutta.
17. J&K Mineral Development Corporation, Sringar.
18. Visvesvaraya Iron and Steel Limited, Bhadravati.

Organisational Chart of the Ministry of Steel

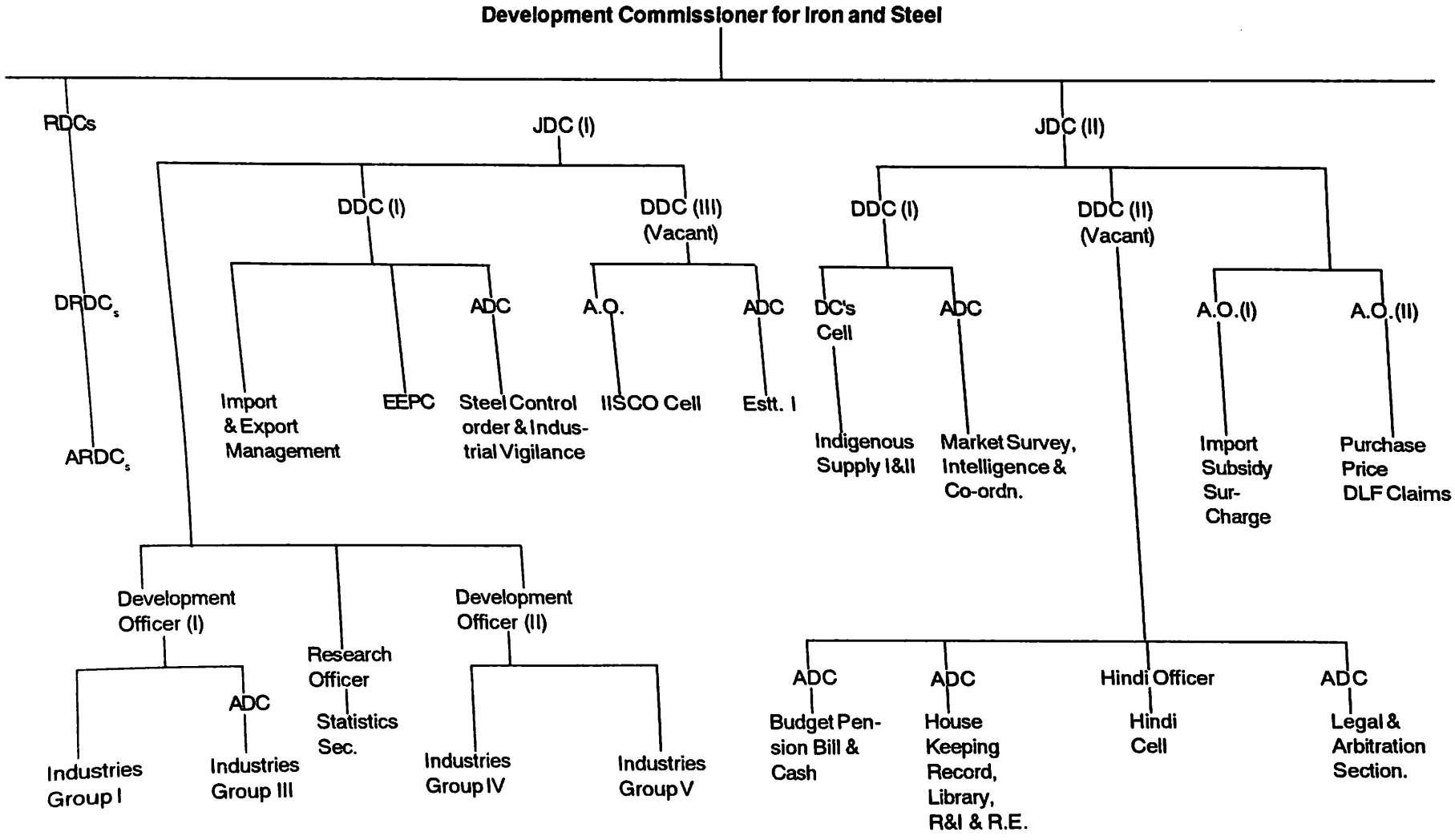
Annexure I



(In addition, there are six Desk Officers, 15 Section Officers, One Financial Analyst and one Assistant Director (Official Language) and other staff.

Annexure-V

EXISTING ORGANISATION CHART OF THE OFFICE OF THE DEVELOPMENT COMMISSIONER FOR IRON & STEEL AS ON 31.12.92



Welfare of the Weaker Sections

CHAPTER-X

An Officer of the rank of the Director has been appointed as Liaison Officer to look after the matter relating to representation of Scheduled Castes and Scheduled Tribes in the Ministry of Steel, its attached and subodinate offices and the Public Sector Undertakings under its administrative control. Periodic reviews and status reports reecived from the PSUs regarding recruitment/ promotion of SCs and STs against the vacancies reserved for them are scrutiinised in the Ministry of Steel and appropriate directions issued to the PSUs as and when necessary.

2. The actual record of performance of some fo the major PSUs in respect of representation of SCs/STs during 1992-93 is indicated below:-

(i) Steel Authority of India Limited (SAIL)

As on 31.12.1991, SC and ST employees were 12.85% and 9.18% of the total manpower respectively. Intake of SC/ST candidates was 29.15% of the total recruitment during 1991. The share of SC/ST employees in total promotions was 20.70%. In accordance with the Government instructions, special recuritment of SCs/STs was undertaken and more than 400 persons were selected by the various steel plants and other units of SAIL.

SAIL has also been pursuing a policy of peripheral development to discharge its obligations to the society at large, especially benefiting the tribal population and other weaker sections of the scoiety. SAIL has been playing an active role in undertaking various welfare measure, like providing drinking water facilities, health care programmes, educational facilities, recreational activities, etc. During 1990-91 an amount of Rs. 2.45 crores has been spent on these measures. An amount of Rs.2.88 crores has been provided for such activities during the year 1992-93.

(ii) Rashtriya Ispat Nigam Limited (RINL)-Visakhapatnam Steeel Plant

The total number of employees and the number of Scheduled Castes and Scheduled Tribes amongst them as on 30.9.1992:

Group	Total No. of employees	No. of employee SCs	STs
A	2284	260	51
B	387	47	5
C	12246	2003	556
D (excluding sweeper)	2377	397	224
D (Sweeper)	115	31	4

In RINL the overall percentage representation of SCs has exceeded the prescribed quota of 15%. As on 30.9.1992 there are 2738 (15.24%) employees belonging to Scheduled Castes against the total strength of 17,399. The number of Scheduled Tribes employees was 840 representing 4.83% of the total manpower.

WELFARE SCHEMES

(a) House Allotment

In the matter of allotment of quarters, VSP provides reservation for SC/ST employees to the extent of 10% in 'A' and 'B' types, LIG and Executive flats and 5% in respect of 'C' and 'D' types and also MIG houses.

(b) Scholarships

Since 1989-90, a special schemc for grant of scholarships for the children of Scheduled Castes and Scheduled Tribes employees has been introduced. Another scheme also exists to give scholarships to under-graduate Engineering students belonging to SC and ST categories.

(c) Educational Merit Award

An Annual Merit Award scheme has been introduced for 10th class students based on the results of the final examination in the name of Dr. B.R. Ambedkar. A merit scholarship will continue every year.

(d) Dr. B.R. Ambedker Centenery Celebrations

A major road in VSP Township has been name as 'Dr. Ambedkar Marg'. A Park in the Steel Township has been developed and named as 'Dr. Ambedkar Park'. Essay and Debate competitions were conducted among the children of the schools in the Ukkunagaram Township on subjects like role of Bharat Ratna. Dr. BR Ambedkar in the formation of Constitution of India; in the upliftment of SCs and STs in the post-Independence India etc. Painting competitions, drama festival, sports meet, etc. were organised on this occasion. A special commemorative number of the Company's house magazine, 'Darpan' has been brought out, giving wide coverage about the activities and programmes conducted during the year. On 27.9.1992, a function was held in which employees and their familes in large number participated to pay their respects to the grant son of India, Dr. BR Ambedkar.

(iii) Bharat Refractories Limited (BRL)

3161 employees were on the rolls of BRL as on 31.3.1992, out of which 374 employees belonged to Scheduled Caste and 459 employees belonging to Scheduled Tribe communities. Besides, 62 employees belonged to ex-serviceman category, 18 physically handicapped and 124 women were employed in the company as on 31.3. 1992.

In the subsidiary Company, IFICO Ltd. 1083 employees were on the rolls of the company as on 31.3.1992 out of which 45 employees belong to SC and 148 belong to ST communities. Beside, 12 employees belonging to physically handicapped category, 16 employees belonging to ex-servicemen and 41 women were employed in the IFICO Ltd. as on 31.3.1992.

(iv) National Mineral Development Corporation (NMDC)

As on 30.9.1992, the total number of employees was 6897 out of which 1087 employees belonged to SC, and 1067 belonged to ST.

The Group-wise distribution of SC/ST employees is indicated below:-

Group	Total No. of Employees as on 30.9.1992	Scheduled Castes	Scheduled Tribes
A	699	34	6
B	1064	78	28
C	3218	477	603
D (Excl. Seepers)	1779	405	424
E (Sweeper)	137	93	6
Total	6897	1087	1067

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 admisson in project schools. A school exclusively for children of tribals is being run by the Corporation at the Bailadila-5 Project. All tribals residing in the project area are offered free medical facilities at the NMDC project hospitals. Members of Schedule Tribe communicites 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 is provided at these centres. A weekly market (HAAT) is being organised in Bacheli where the Adivasis get an opportunity to sell their wares. NMDC has also been helping the villages around the Projects by providing hand pumps, diging wells for providing drinking water, mobile dispensary facilities etc.

(v) Manganes Ore India Limited (MOIL)

In so far as MOIL is concerned, the number of SC/ST personnel as on 31.12.1992 is given below, groupwise:-

Category/Group	Total No. of employees	No. of SC employees	No. of ST employees
A	212	17	5
B	172	9	5
C	2051	357	480
D	6968	1346	2095

(vi) Metallurgical & Engineering Consultant (India) Ltd. (MECON)

The number of SC/ST personnel groupwise amongst total number of employees in the service of MECON is indicated below:

Group	Total No. of employees	No. of SC employees	No. of ST employees
A	2638	101	70
B	279	20	50
C	729	92	236
D	89	07	40
D (Sweepers)	47	16	25

(vii) Kudremukh Iron Ore Company Limited (KIOCL)

The following table indicates the number of SC/ST personnel in the total number of employees int he service of KIOCL as on 31.12.1992.

Group	Total No. of employees	No. of SC	No. of ST
A	451	34	12
B	191	12	2
C	1590	208	24
D	208	45	27
D (Sweepers)	44	38	4
Total	2484	337	69

(viii) Metal Scrap Trade Corporation (MSTC)

The number of SC/ST personnel, Ex-servicemen and physically handicapped persons in the total number of employees are given in the table below:

Group	No. of employees	SC	ST	Ex-servicemen	Physically
A	104	10	1	—	-
B	21	4	—	—	1
C	113	23	6	3	2
D	33	10	2	—	1
	271	47	9	3	4

Progressive Use of Hindi

CHAPTER-XI

The Ministry continued its efforts for greater use of Hindi in official work during the year 1992-93 in keeping with the Annual Programme prepared by the Department of Official Languages (Ministry of Home Affairs) for implementation of the Official Language of Union.

1.2 The work relating to the progressive use of Hindi in the Ministry of Steel is under the administrative control of Joint Secretary and is looked after by a Deputy Secretary. Hindi Section consisting of an Assistant Director, a Senior Translator, three Junior Translators and two LDCs assist in this work. There are 45 Devnagari Typewriters including 19 bilingual electronic Typewriters. Adequate reading material in Hindi is available in the Ministry. A number of measures has been taken for the promotion of progressive use of Hindi in the Ministry and in the office of the Development Commissioner for Iron and Steel. All communications received in Hindi are being replied to in Hindi.

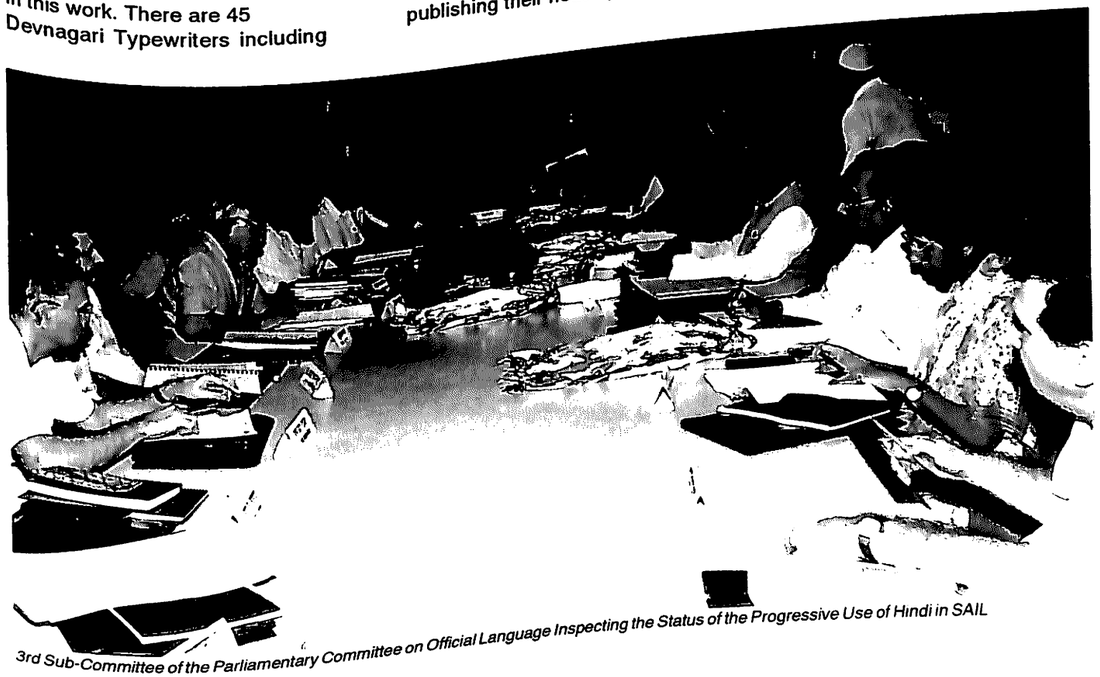
2.0 Some important items in regard to the use of Hindi in the working of the Ministry and its PSUs are indicated below:—

2.1 Almost all the Public Sector Undertakings under the administrative control of this Ministry are publishing their house journals in Hindi also. In addition, Hindi magazines and books are available in their libraries.

2.2 An Inspection Team has been constituted in the Ministry to oversee the status of implementation of the provisions of the Official Langauge Act/ Rules in its attached offices and Public Sector Undertakings under the administrative control of the Ministry. In the year under review this Inspection Team had made 16 such inspections.

2.3 Official Langauge Implementation Committee

There is an Official Language Implementation Committee under



3rd Sub-Committee of the Parliamentary Committee on Official Language Inspecting the Status of the Progressive Use of Hindi in SAIL

the Chairmanship of a Joint Secretary in the Ministry. This committee reviews the progress made in the use of Hindi in the Ministry, its attached office and Public Sector Undertakings. In each meeting of the committee respresentatives of two undertakings are also invited by turn and status of the progressive use of Hindi is reviewed.

2.4 Hindi Salahakar Samiti

In accordance with Government instructions the Ministry of Steel has a Hindi Salahakar Samiti. Besides, Members of Parliament, senior officers of the Ministry of Steel, Department of Official Language, Development Commissioner for Iron and Steel, Chairman-cum-Managing Directors of Undertakings and few eminent persons working for the propagation of Hindi are also its members.

2.5 Rajbhasha Sheild/ Trophies

In order to encourage the use of Hindi in the Office and Undertakings under the administrative control of the Ministry of Steel, a Chal Vaijayanti, a Rajbasha Shield and two Trophies have been instituted. These awards are given each year to the Office/ Undertakings whose performance in this field is rated the best. Besides, a medal is also awarded to the officer/employee of the Ministry whose work in Hindi is rated the best.

2.6 Implementation of Section 3(3) of the Official Language Act

In pursuance of Official Language Policy of Govt. 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 Regions 'A' 'B' and 'C' "Checkpoints" have been identified in the Ministry.

2.7 Incentive Scheme for Original Work in Hindi

The cash incentive Scheme for original work in Hindi introduced by the Department of Official Language is being implemented in the Ministry. Almost all Sections/ Desks of the Ministry have started writing short/routine notes in Hindi. Officers have been requested to use Hindi to the extent possible in their work so as to set an example for the staff under them. Four persons have been given cash prizes under the incentive scheme during the year.

2.8 Cash Prize Scheme for Dictation in Hindi

An incentive scheme for officers for giving dictation in Hindi is running in this Ministry. During the year, one officer has been awarded a cash prize under the scheme.

2.9 Award for Writing of Hindi Books

A scheme for awarding cash prizes for writing technical books in Hindi on the various disciplines related to the steel industry and its allied subjects is running in the Ministry. Under the scheme three prizes of Rs. 10,000/-, Rs. 7,500/- and Rs. 5,000/- are given to the first three books on merit basis.

2.10 Hindi Week

In order to create interest in the use of Hindi in official work among officers/employees of the Ministry, a "Hindi Week" was observed from 14.9.92 to 21.9.92. An appeal was issued by the Hon'ble Steel Minister exhorting staff of the Ministry and the Public Sector Undertakings to increase the use of Hindi in official work. During this week Hindi essay/Hindi typing/ Hindi Stenography competitions were conducted and prizes awarded.

2.11 Training of Staff in Hindi/Hindi Typewriting/ Hindi Stenography

A programme has been drawn up for imparting training in Hindi/Hindi typewriting/Hindi stenography to those employees for whom in-service training is obligatory. The position regarding-training in Hindi/Hindi typing/Hindi Stenography in the Ministry is as under:

Training Course	Trained
1. Hindi Typing	4
2. Hindi Stenography	18
3. Hindi Training :	
(i) Total number of employees/officers (Group A, B & C)	188
(ii) Total number of employees/officers possessing working knowledge of Hindi.	179

Officers and staff of the attached offices and Public Sector Undertakings are given training under the Hindi Teaching Scheme of the Ministry of Home Affairs, wherever such facilities exist. In other places, employees are encouraged to learn Hindi through correspondence courses conducted by the Central Hindi Directorate.

SAIL have initiated their own Hindi teaching programme through correspondence.

Progressive Use of Hindi

CHAPTER-XI

The Ministry continued its efforts for greater use of Hindi in official work during the year 1992-93 in keeping with the Annual Programme prepared by the Department of Official Languages (Ministry of Home Affairs) for implementation of the Official Language of Union.

1.2 The work relating to the progressive use of Hindi in the Ministry of Steel is under the administrative control of Joint Secretary and is looked after by a Deputy Secretary. Hindi Section consisting of an Assistant Director, a Senior Translator, three Junior Translators and two LDCs assist in this work. There are 45 Devnagari Typewriters including 19 bilingual electronic Typewriters. Adequate reading material in Hindi is available in the Ministry. A number of measures has been taken for the promotion of progressive use of Hindi in the Ministry and in the office of the Development Commissioner for Iron and Steel. All communications received in Hindi are being replied to in Hindi.

2.0 Some important items in regard to the use of Hindi in the working of the Ministry and its PSUs are indicated below:—

2.1 Almost all the Public Sector Undertakings under the administrative control of this Ministry are publishing their house journals in Hindi also. In addition, Hindi magazines and books are available in their libraries.

2.2 An Inspection Team has been constituted in the Ministry to oversee the status of implementation of the provisions of the Official Langauge Act/ Rules in its attached offices and Public Sector Undertakings under the administrative control of the Ministry. In the year under review this Inspection Team had made 16 such inspections.

2.3 Official Langauge Implementation Committee

There is an Official Language Implementation Committee under

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CHAPTER-XI

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2.3 Official Langauge Implementation Committee

There is an Official Language Implementation Committee under

3rd Sub-Committee of the Parliamentary Committee on Official Language Inspecting the Status of the Progressive Use of Hindi in SAIL

the Chairmanship of a Joint Secretary in the Ministry. This committee reviews the progress made in the use of Hindi in the Ministry, its attached office and Public Sector Undertakings. In each meeting of the committee respresentatives of two undertakings are also invited by turn and status of the progressive use of Hindi is reviewed.

2.4 Hindi Salahakar Samiti

In accordance with Government instructions the Ministry of Steel has a Hindi Salahakar Samiti. Besides, Members of Parliament, senior officers of the Ministry of Steel, Department of Official Language, Development Commissioner for Iron and Steel, Chairman-cum-Managing Directors of Undertakings and few eminent persons working for the propagation of Hindi are also its members.

2.5 Rajbhasha Sheild/ Trophies

In order to encourage the use of Hindi in the Office and Undertakings under the administrative control of the Ministry of Steel, a Chal Vaijayanti, a Rajbasha Shield and two Trophies have been instituted. These awards are given each year to the Office/ Undertakings whose performance in this field is rated the best. Besides, a medal is also awarded to the officer/employee of the Ministry whose work in Hindi is rated the best

2.6 Implementation of Section 3(3) of the Official Language Act

In pursuance of Official Language Policy of Govt. 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 Regions 'A' 'B' and 'C' "Checkpoints" have been identified in the Ministry.

2.7 Incentive Scheme for Original Work in Hindi

The cash incentive Scheme for original work in Hindi introduced by the Department of Official Language is being implemented in the Ministry. Almost all Sections/ Desks of the Ministry have started writing short/routine notes in Hindi. Officers have been requested to use Hindi to the extent possible in their work so as to set an example for the staff under them. Four persons have been given cash prizes under the incentive scheme during the year.

2.8 Cash Prize Scheme for Dictation in Hindi

An incentive scheme for officers for giving dictation in Hindi is running in this Ministry. During the year, one officer has been awarded a cash prize under the scheme.

2.9 Award for Writing of Hindi Books

A scheme for awarding cash prizes for writing technical books in Hindi on the various disciplines related to the steel industry and its allied subjects is running in the Ministry. Under the scheme three prizes of Rs. 10,000/-, Rs. 7,500/- and Rs. 5,000/- are given to the first three books on merit basis.

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Report 1990-91

Ministry of Steel

ERRATA

Page	Column	Para	Table No./Line	In place of	Read as
6	-	1.6	1	4.33	4.34
10	1	-	23	expoloration	exploration
10	2	-	8	developed	developing
18	1	4.2	10	decanalished	decanalised
18	1	4.3	8	flexiable	flexible
19	3	(k)	3	and	delete
21	1	-	4	ocuntry	country
25	3	10.3	last line	amount equivalent to the	Amount equivalent to the Provident fund and gratuity amount received.
26	1	10.6	last line	comapny	company
30	1	-	11	uprating	updating
31	-	-	Heading	Visakhaptnam	Visakhapatnam
31	-	1	-	improvement satisfactory	delete
31	1	3.0	2	work	works
31	3	4.0	6	Add -	prices which was approved by Govt. in 1982
32	1	4.0	1	before first line i.e. the same time, Add -	The project concept was revised to ensure higher utilisation of the facilities and, at
32	2	5.0	11	commission	commissioned
33	1	11.0	1	Visakhpatname	Visakhapatnam
33	2	13.0	4	12.33 Cal/	12.33 K Cal/
			2		

33	3	16.0	1 to 3	16.0 R&D.... ...the year 1992-93	delete
35	1	19.0	2	estaboisned	established
36	2	2.1	4	ocuntry	country
36	3	2.2	15	pellesta	pellets.
39	3	4.1	Table	Reserves	delete
40	3	6.2	15	processes	processes to
45	3	4	2	250	150
48	1	6.0	last line	reports	report
48	3	6.1	7	mou scale	MOU score
50	1	1.0	before first para	add	1.0 Introduction
51	2	5.0 (d)	1	Insllation	Installation
62	3	2	table	April, 92 - Nov. 93	April 92 - Feb.,93
62	3	2	table	12.34	1234
63	1	3	table	April 92 - Nov. 92 56,370 71.01 (-) 1,50	April 92 - Feb. 93 85,225 103.70 (-) 2.29
63	2	4	table	April - Nov.92	April - Feb. 93
63	2	4	table	60.58 (-) 69.82	65.82 (-) 94.73
63	3	5	table	1992	1993
73	1	-	table	of Ferro Alloys 1992-93 A	omit
81	2	-	2	At	AT
82	-	ITEMS OF WORK	10	assisitance	assistance
	-	-	16	[illegible]	T [illegible]
83	1	-	6	751007	530031(AP)
83	-	in headlines	-	Undertaking	Undertakings
83	2	-	16	trade	Trade
86	1	-	7	subcdinate	subordinate
86	2	-	1	scoicty	society
87	1	(iii)	5	belonging	belonged
87	1	(iii)	18	Beside	Besides
87	2	(iv)	19	Communicites	Communities
87	2	(v)	lastline	Manganas	Manganese
88	-	(viii)	1	Physically	Physically handicapped