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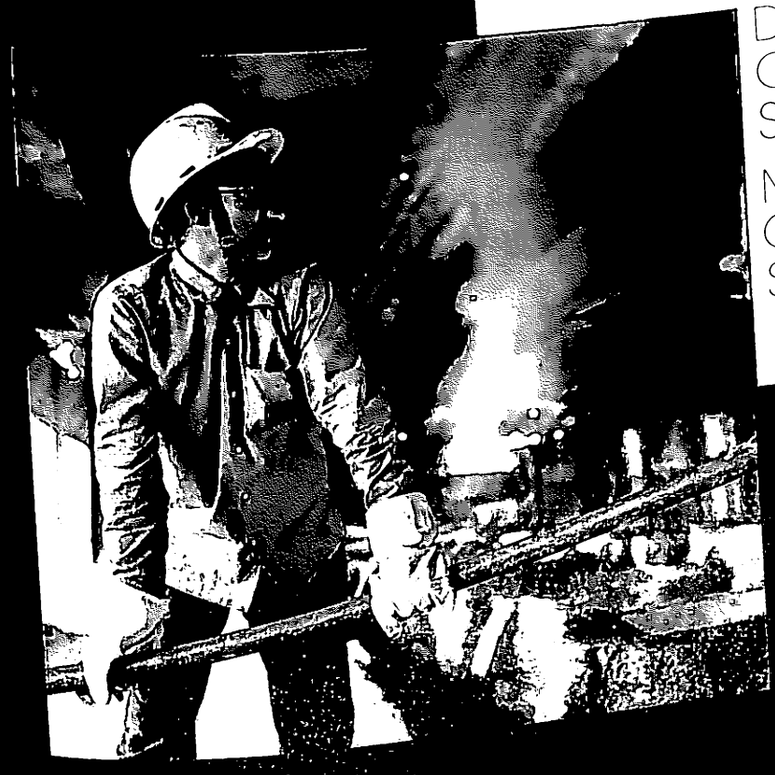
REPORT 1987-88



DEPARTMENT
OF
STEEL

MINISTRY
OF
STEEL & MINES

REPORT

1987-88

सत्यमेव जयते

GOVERNMENT OF INDIA

DEPARTMENT OF STEEL

MINISTRY OF STEEL & MINES

Inside

1. Production of Steel

The production of saleable steel in the five integrated steel plants of Steel Authority of India Ltd. (SAIL) was 4.63 million tonnes during the period April, 1987 to December, 1987 as compared to 4.31 million tonnes during the corresponding period of the year 1986-87 thereby indicating a growth rate of about 8%. SAIL has planned to produce 7.24 million tonnes of saleable steel during 1987-88 as against about 6.31 million tonnes produced in 1986-87. In addition to this, TISCO is expected to produce about 1.93 million tonnes saleable steel and another 3.00 million tonnes is expected to be produced by electric arc furnaces in the secondary sector.

2. Demand and Availability of Steel

As per estimates of the Joint Plant Committee the demand projections for the year 1987-88 for finished steel are 12.59 million tonnes and for pig iron are 1.60 million tonnes. As against these estimates it is expected that the availability of finished steel, including imports, would be 12.53 million tonnes and of pig iron 1.47 million tonnes.

3. Performance of SAIL

The overall capacity utilisation of saleable steel at SAIL's plants was 75% during the period April 1987 to January, 1988. The capacity utilisation of individual steel plants has been as under:-

Bhilai Steel Plant	77%
Durgapur Steel Plant	65%
Rourkela Steel Plant	89%
Bokaro Steel Plant	75%
IISCO	65%

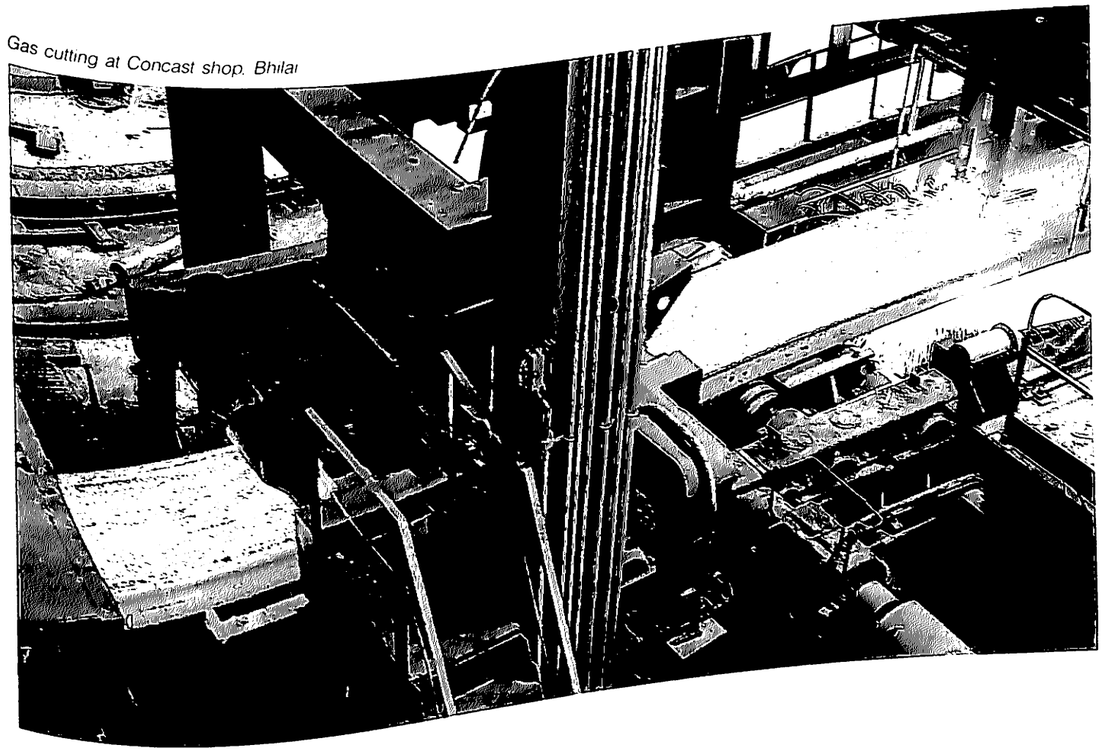
SAIL earned a profit of Rs. 52.81 crores in 1986-87 as against a profit of Rs. 159 crores in 1985-86.

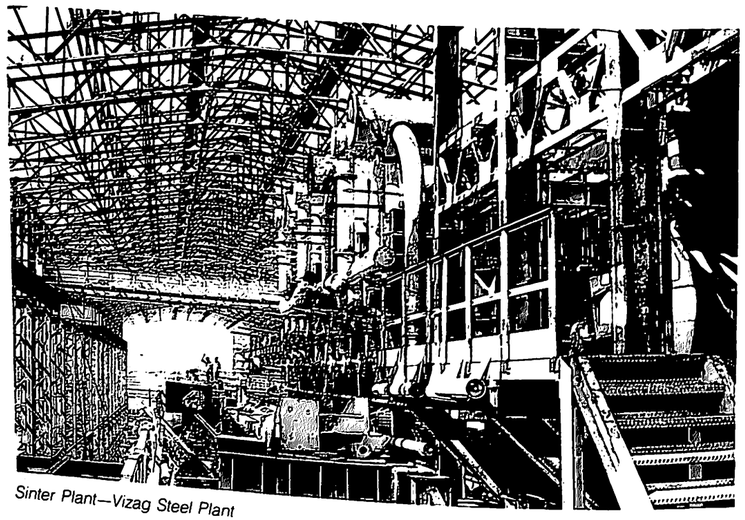
4. Construction Projects

(a) SAIL Projects:

All Phase-I units under 4 million tonne expansion of Bhilai Steel Plant have been commissioned. Out of phase-II units, blast furnace No. 7 has been commissioned

Gas cutting at Concast shop, Bhilai





Sinter Plant—Vizag Steel Plant

and the heating of coke oven battery No. 9 has started in December, 1987. In Bokaro, major schemes under 4 million tonne expansion were completed in 1986, and the Cold rolling mill-II complex is in an advanced stage of completion.

The Durgapur Steel Plant modernisation plan has been approved and Government has also given "in principle" approval for IISCO modernisation. The scheme to modernise Rourkela Steel Plant is under active consideration of the Government.

All the units of captive power plants of Bokaro, Durgapur and Rourkela are expected to be commissioned during 1988-89.

(b) Visakhapatnam Steel Project

Construction of Visakhapatnam Steel Project is progressing very well. At the end of December, 1987 the progress of work in the major areas vis-a-vis the scheduled quantity till December, 1987 was as follows:-

Sl. No.	Item	Percentage fulfilment of cummulative schedule till December, 1987
1.	Concreting	99.8%
2.	Structural Fabrication	95.7%
3.	Structural Erection	94.2%
4.	Equipment Ordering	102.9%
5.	Equipment Erection	75.7%
6.	Refractory Ordering	99.7%
7.	Refractory Erection	87.0%

Equipment erection has been the thrust activity during the year 1987-88. The overall monthly rate of equipment erection achieved in this year upto December, 1987 is 8,250 tonnes. In the month of December, 1987 the equipment erection was 10,251 tonnes.

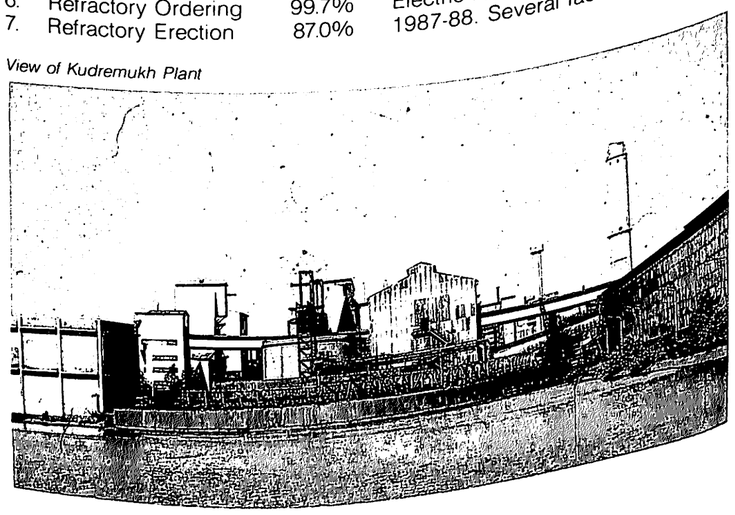
(c) Pellet Plant of Kudremukh Iron Ore Co. Limited

The Pellet Plant at Mangalore,which was set up to convert 3 million tonnes of Kudremukh iron ore concentrate per annum into pellets, has been completed. This Plant has started commercial production from April, 1987. Out of the production made during the trial runs KIOCL exported 1.55 lakh tonnes of pellets valued at Rs. 4.59 crores during 1986-87.

5. Electric Arc Furnace Industry

3.0 million tonnes of steel, accounting for nearly 30% of India's steel production, is expected to be produced through Electric Arc Furnace route during 1987-88. Several factors like;

View of Kudremukh Plant

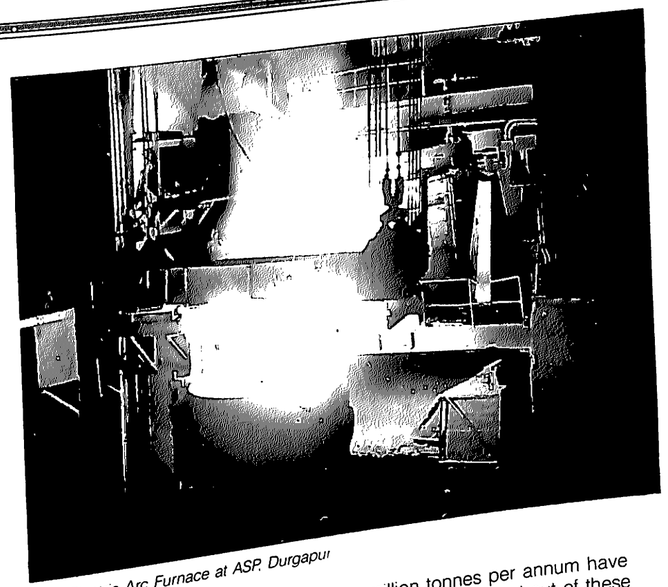


affordable and comparatively lower capital cost compared to integrated steel plants, lower gestation period, adaptability of production range due to medium capacity of the furnaces and easy integration with downstream technological developments such as continuous casting and ladle metallurgy practices; favoured the development and emergence of EAF route for production of steel. Today Mini Steel Plants are producing all grades of steels including alloy, high carbon and special steels.

The main raw material of Mini Steel Plants is steel scrap. Since the availability of the steel scrap in India is limited, Government have permitted liberal imports of melting scrap, sponge iron/HBI and heavy melting scrap. However, in order to reduce over-dependence of this industry on imported scrap, Government have permitted setting up of new units based on modern technology, which are capable of utilising sponge iron upto 70% in the feed material. Sponge Iron can be produced in India from locally available coal or gas and iron ore.

The existing units are also being encouraged to modernise by adoption of modern energy saving equipment and replacement of smaller furnaces by bigger ones. In the guidelines announced recently by the Government, provision has been kept for replacement of smaller furnaces of the capacity ranging from 5 to 10 tonnes by a single furnace of 15 to 25 tonne capacity. This is not only expected to lead to modernisation of the industry but also to increase the availability of steel.

Incentives by way of liberal grants of additional capacities, have been announced to encourage existing mini-steel



50 T Electric Arc Furnace at ASP, Durgapur

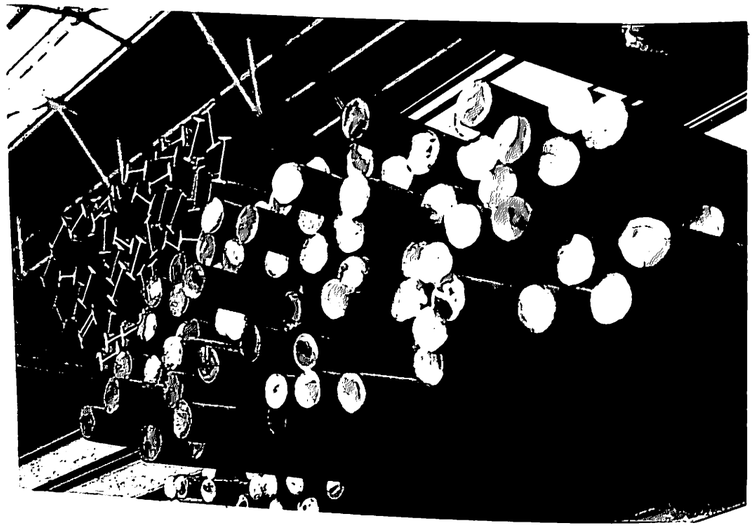
plants to undertake modernisation. Any existing mini-steel plant which after modernisation, would be able to produce sufficient liquid metal for producing at least one lakh tonnes per annum of hot rolled strips/coils would be permitted to set up facilities for the manufacture of hot rolled-steel strips/coils in the wider width (600 mm and above).

At present 196 mini-steel plants with a total capacity of about 6.6 million tonnes per annum have been licensed and out of these 163 units with a capacity of 4.64 million tonnes have already been commissioned. In addition, one unit holding a letter of intent for a capacity of 50,000 tonnes per annum has started production in Madhya Pradesh. Production of EAF units, which are reporting their production to Development Commissioner for Iron & Steel, during the last three years and April-Sept., 1987 is given below:

(In thousand tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., 1987
Mild Steel	1648.2	2173.1	2213.8	1091.0
Medium/High Carbon Steel	306.2	312.4	364.1	182.1
Alloy Steels	317.2	365.3	440.9	203.8
Stainless Steel	68.4	93.4	98.3	51.1
Total	2340.0	2944.2	3117.1	1530.0

The above does not include production of Casting Units registered with D.G.T.D.



6. Sponge Iron Units

Sponge Iron is a substitute material for scrap for making steel in electric arc furnaces. To reduce import of scrap and also to conserve our country's limited coking coal reserves (since the manufacture of sponge iron utilises non-coking coal or natural gas as a reductant) a major thrust is being given to the setting up of sponge iron plants. With a view to encouraging quicker growth, the sponge iron industry was delicensed in March, 1985,

A total capacity of over 20.0 million tonnes has so far been registered for production of sponge iron. However, at present only three units, viz. Sponge Iron India Ltd., Hyderabad (capacity 60,000 tonnes) Orissa Sponge Iron Ltd. (capacity 150,000 tonnes) and IPITATA Sponge Iron Ltd. (capacity 90,000 tonnes) have gone into actual production. Two more coal based sponge iron units viz. Bihar Sponge Iron Ltd. (capacity 1,20,000 tonnes) and Sun Flag Iron & Steel Co. Ltd (capacity 150,000 tonnes) are in an advanced stage of implementation, and are expected to commence production before the end of 1988-89. A letter of Intent has also been issued to M/S. Essar Gujarat Ltd. for production of 800,000 tonnes of sponge iron/hot briquetted iron per annum. This unit is a gas-based project and will be the first of its kind in India. It is likely to go into production by mid-1990, when there will be quantum jump in the availability of indigenously produced sponge iron.

7. Steel Consumers Council

Steel Consumers Council, set up under the Chairmanship of Steel & Mines Minister in January 1986 to provide a forum for interaction between Government and different catagories of steel consumers met for the third time at Calcutta on 2nd November, 1987.

In an earlier meeting, it was decided to hold meetings on a regional basis, for providing larger representation to consumers of all regions. This was expected to help the Deptt. in getting a better picture of regional problems on the availability and distribution of steel. Accordingly a meeting was held at Trivandrum in February, 1987 on regional basis.

These meetings brought a closer interaction among consumers, producers and Govt. and helped in assessing availability and distribution aspects of iron and steel.

8. Management Information System Developed in the Department

With a view to improve the efficiency of decision making in the Department, a scientifically developed integrated MIS has been introduced with the assistance of National Informatics Centre. The broad areas covered by this system are, administrative efficiency, Performance Monitoring of Public Sector Undertakings, steel supply, projects, finance, budgeting and accounts.

9. Protection of Environment

Metallurgical & Engineering Consultants (MECON) has a separate department for Environmental Engineering, supported by Pollution Measurement Laboratory. The Company also has a collaboration with TUV RHEINLAND, West Germany to bridge the gaps of technical know-how in the area of Environmental Protection. Every project engineerd by MECON, is thoroughly scanned by Environmental Engineering Department to ensure emission of pollutant within the national minimum standards. Environmental Impact Statement (EIS), Environmental Management Plan (EMP) etc. are prepared considering all phases of the project from concept to commissioning. Training of industrial workers and executives is also arranged to ensure proper utilisation of pollution control systems and increase awareness.

Research and Development work is being carried out for selection of new technological processes, which ensures better environmental protection. MECON is also monitoring the quality of ambient air, sampling water and noise measurement to assess the impact of industry on the environment.

Well established townships in Bhilai, Durgapur, Rourkela, Bokaro and Salem exist, where SAIL plants are located. The townships are administered by Town Administration Departments of the plants. Right from the start, importance has been given to environmental development programmes. In the Town Administration, there is a separate Horticulture Wing. The development of parks and tree plantation is given high priority by Town Administration. The Steel townships have well developed parks and roads. Every year a large number of trees are planted. All efforts are made to improve the greenery and ecology in steel townships. Residents of townships are encouraged to plant trees near their houses.

Massive afforestation programme has been undertaken by Visakhapatnam Steel Project to maintain ecological balance, improve the aesthetic value, control industrial production and to meet fuel and fodder requirements of local people.

Afforestation is given due importance by National Mineral Development Corporation and Manganese Ore (India) Limited which are engaged in the mining of iron ore and manganese ore respectively.

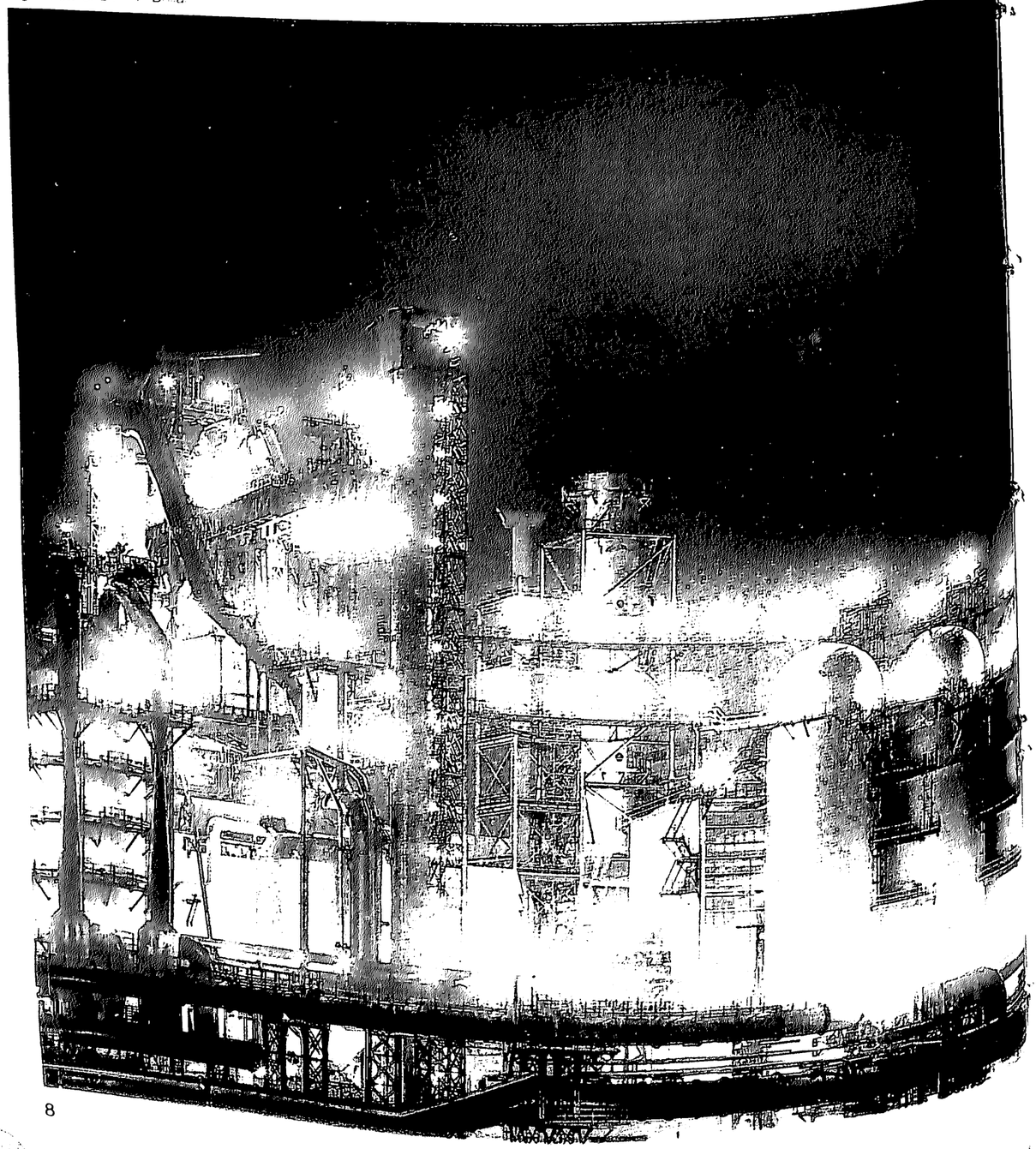
Kudremukh Iron Ore Company Limited with the assistance of the Forest Department of the Government of Karnataka planted large number of trees in its mining areas.

10. Prime Minister's 15 Point Directive about Welfare of Minorities

All public sector undertakings under the Department of Steel have been asked to give special consideration to recruitment from minority communities, whenever they make recruitment of staff, in accordance with Government directives on the subject. Suitable action is being taken by these public sector undertakings accordingly.

Afforestation—Nuresery at Ukwa Mine

Night view of BF 7 Bhilai



2. A Perspective View

Steel is one of the critical inputs required for sustaining the growth of the economy in the industrial sector. Timely and adequate availability of steel determines the level of industrial growth and also the contribution to the GNP by this sector. Steel availability is also a key factor in infrastructural development in such important areas as Railways, Tele-Communications, Power and Irrigation Projects.

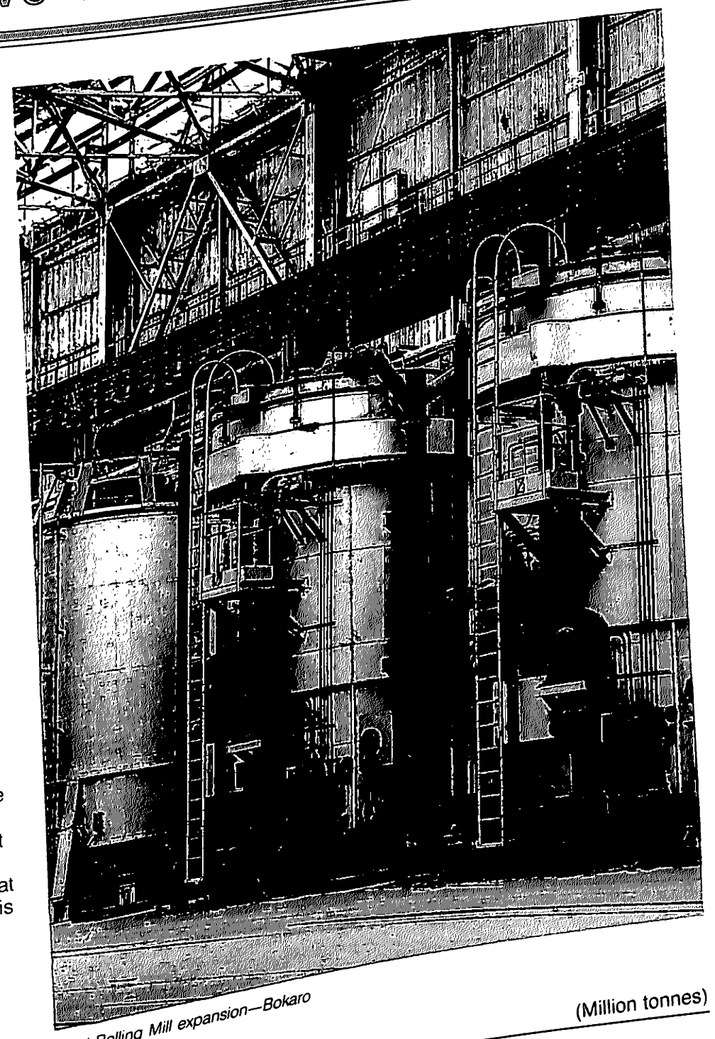
The NCAER had conducted a study on the long term planning of the steel industry in India with a view to determining the likely demand and availability of finished steel up to the year 2000 AD. The NCAER felt that the estimates made earlier by them and approved by the Department of Steel needed to be revised. The following picture emerges out of this new study:

The revised estimated availability is less than the estimated demand throughout the plan period upto 1999-2000 AD. The gap is, however, minimum at 0.32 million tonnes at the end of 8th Plan (1994-95). The shortfall at the end of 9th Plan (1999-2000) is estimated at 3.97 million tonnes. The above is based on the following assumptions.

1. NCAER Demand projection are based on 4.5% annual growth rate of G.N.P.

2. NCAER has projected the demand of Electrical Sheets and Pipes together, 2/3rd of which is taken as Electrical Sheets and 1/3rd as Pipes.

3. Availability of SAIL Plants is based on 95% capacity utilisation.



Cold Rolling Mill expansion—Bokaro

(Million tonnes)

FINISHED STEEL Terminal Year of	Demand	Availability	Gap
7th Plan (1989-90)	15.16	13.89	(-) 1.27
8th Plan (1994-95)	20.01	19.69	(-) 0.32
9th Plan (1999-2000)	26.26	22.29	(-) 3.97

Availability of Steel from VSP and secondary sector

1. Vizag availability is as per the latest estimates of the National Council for Economic and Allied Research (NCEAR). The year-wise output of bars and rods and structurals according to the latest estimates assuming 100% capacity utilisation is as in table-I

2. Availability from secondary producers is broken down into two components:-

(a) From the existing units;

(b) From the units which are likely to come up based on an assessment made by the Department of Steel on the basis of LOIs/ILs issued and the estimated production.

Table-I

(Production in '000 tonnes)

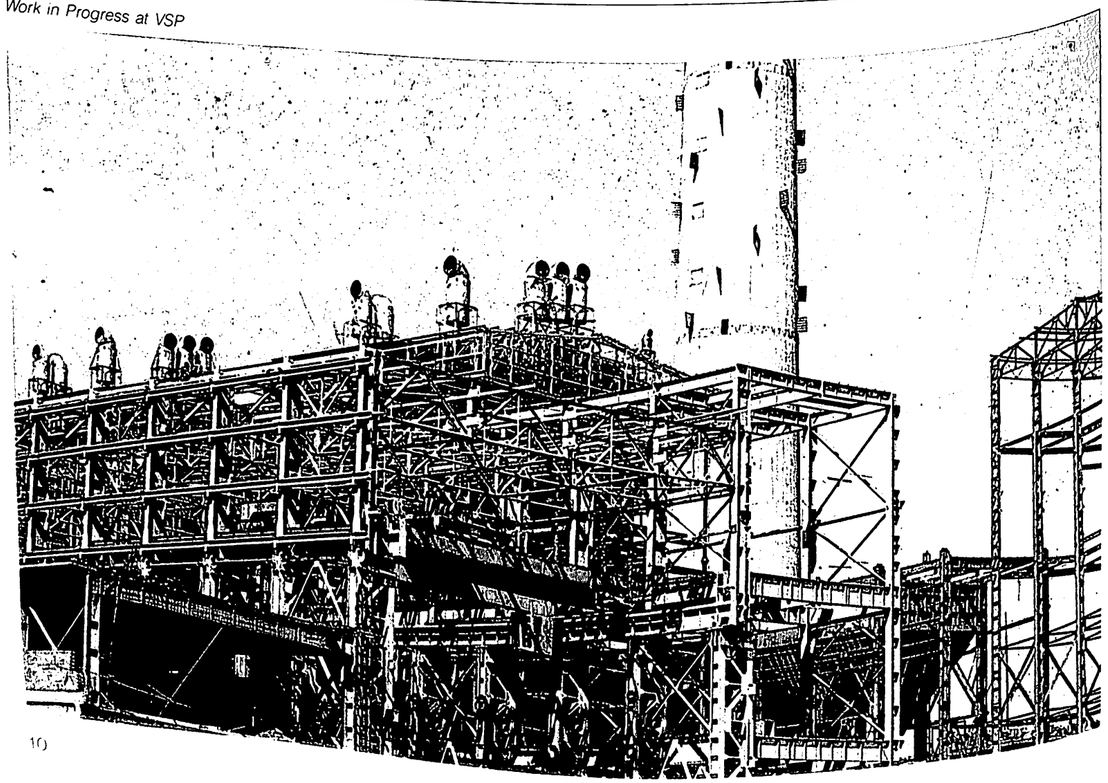
	1989-90	1990-91	1991-92	1992-93 onwards
Bars and Rods	536	1143	1183	1197
Structurals	261	548	891	972

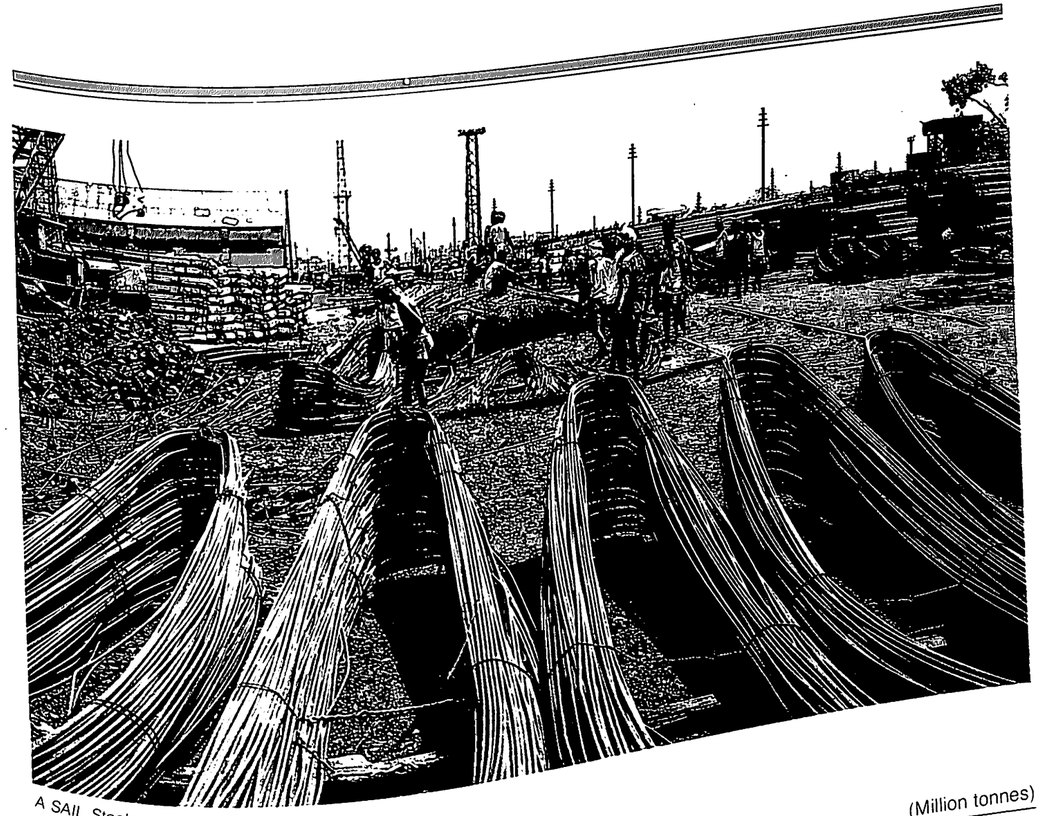
Sources of Finished Steel Availability

(Million tonnes)

	1989-90	1994-95	1999-2000
SAIL	7.387	9.141	11.380
TISCO	1.297	1.747	2.147
VIZAG	0.797	2.169	2.169
Secondary producers	5.192	7.924	7.884
Total	14.673	20.981	23.580

Work in Progress at VSP





A SAIL Stockyard

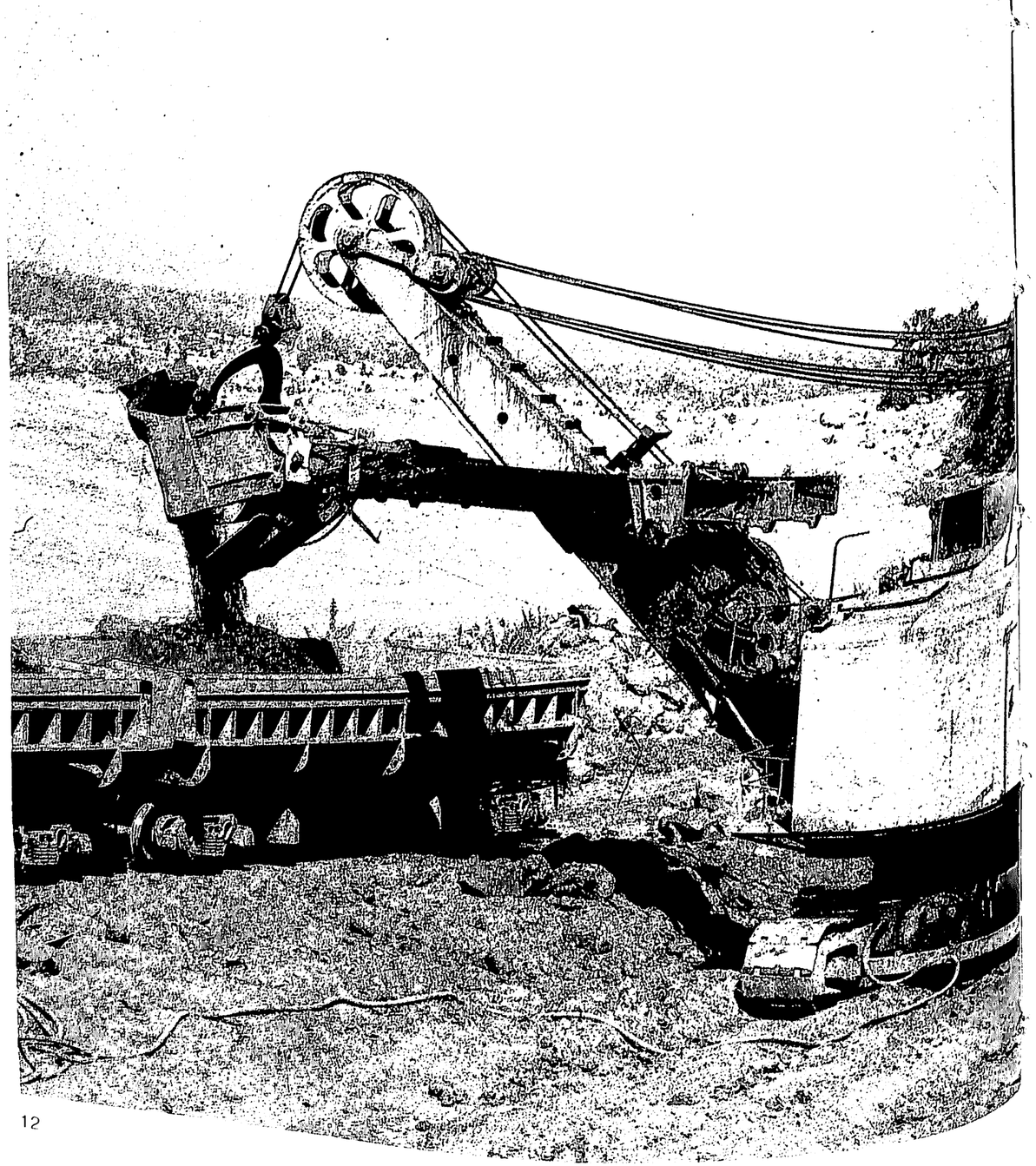
Plant-wise Availability of Finished Steel

(Million tonnes)

	1989-90	1994-95	1999-2000
BSP	2.425	2.900	2.900
DSP	0.650	0.690	0.755
RSP	1.125	1.455	2.050
BSL	2.840	3.680	3.965
IISCO	0.480	0.480	1.710
TISCO	1.297	1.747	2.147
VSP	0.797	2.169	2.169
Seconday Producers	5.192	7.924	7.884
	14.673	20.981	23.580

The Plant-wise figures of SAIL's steel plants for the year 1989-90 and 1994-95 include an extra amount of 133,000 tonnes and 64,000 tonnes on account of interplant transfer.

Rajhara Mines



3. Raw Materials

1. Iron Ore

India is well endowed with rich resources of iron ore, both in terms of quality and quantity. 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/mechanised basis in the private sector. These can be broadly grouped under three categories:-

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

(ii) Public Sector mechanised mines, owned and operated by Central and State Government undertakings for export and internal consumption of steel plants; and

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

1.1 Reserves of Iron Ore

The reserves of iron ore in the country are estimated at 17.6 billion tonnes out of which 11.5 billion tonnes are haematite and 6.1 billion tonnes magnetite distributed in 5 distinctive areas viz., Barajamda Sector in Bihar, Dalli-Rajhara in Orissa, Bailadila in Madhya Pradesh, Bellary-Hospet in Karnataka and Ratnagiri in Maharashtra and Goa.

1.2 Production and Despatches

The Production of Iron Ore (including concentrates) during the year 1987 is estimated at 52 million tonnes as against the recorded production of 50.6 million tonnes in 1986. Goa continued to be the chief iron ore producing state during the current year also, accounting for 15.7 million tonnes of the total production during 1987, followed by Madhya Pradesh at 10.0 million tonnes, Karnataka at 9.10 million tonnes, Orissa at 7.98 million tonnes, Bihar at 7.6 million tonnes; and balance of 1.6 million tonnes is from the States of Andhra Pradesh, Maharashtra and Rajasthan.

1.3 Consumption of Iron Ore at Steel Plants

During the year 1986-87, SAIL steel plants including IISCO procured 122 lakh tonnes of iron ore from their captive mines and 19 lakh tonnes from other domestic sources. Their consumption of iron ore during the year was 129 lakh tonnes.

During the year 1987-88, SAIL Steel Plants are likely to procure 134 lakh tonnes of iron ore from their captive mines and 16 lakh tonnes from other domestic sources. Their consumption during the year is likely to be 144 lakh tonnes.

Tata Iron and Steel Company Ltd. (TISCO) consumed during 1986-87, 28.9 lakh tonnes of iron ore which was procured entirely from its captive mines at Noamundi. The estimated consumption during 1987-88 is 30.8 lakh tonnes.

2. Manganese Ore

Manganese Ore reserves of the country are estimated to be 135 million tonnes; of these 18 million tonnes are measured, 31 million tonnes are indicated and 86 million tonnes are inferred. The reserves are located in nine states viz. Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orisa, Rajasthan and Goa.

Manganese is essential to the production of virtually all varieties of steel and it is also important to the production of cast iron. In addition to it's general desulphurizing, deoxidizing and conditioning effects such as inhibiting formation of grain boundary carbides, it imparts the alloying effects of strength, toughness and hardness to steel.

Manganese is used in steel industry chiefly in the form of ferro-manganese or silica-manganese.

Manganese imparts strength, hardness and stiffness to aluminium and hardness, stiffness and corrosion resistance to magnesium. The common dry-cell battery uses manganese dioxide as the depolarizer in the cell, either as battery grade natural ore, synthetic dioxide or a blend of both.

Manganese dioxide ore is used also as oxidants in the production of hydroquinone, in the leaching of uranium ores, in the electrolytic production of zinc and in various chemical processes.

Manganese Ore (Including Carbonate Ore), ferro manganese, manganese metal power and manganese chemicals are used in the manufacture of welding coatings and fluxes. Manganese Ores and/or chemicals made from them are employed to produce various colour effects in face brick and to a much less extent, to colour or decolour glass and ceramic products. They have use as paint and varnish dryers, and in the production of dyes, fungicides and pharmaceuticals also. Manganese dioxide has use as a constituent of the frits for bonding glass and procelains to metal. The manganese zinc ferrites used in magnets for electronic applications have their manganese introduced as

manganese oxides or electrolytic manganese metal powder. Manganese or manganiferrous ores may be used as a flux in the smelting of base metal ores.

Production of manganese ore during 1987 is estimated at 1.30 million tonnes as compared to the recorded production of 1.29 million tonnes in 1986. Major producing states during 1987 are Orissa, Madhya Pradesh, Maharashtra and Karnatka, accounting for 40%, 21%, 17% and 16% respectively of the total production of manganese ore during 1987.

Total despatches of manganese ore from various mines are estimated at 1.25 million tonnes in 1987 of which 1.04 million tonnes (83%) are for internal consumption and 0.21 million tonnes (17%) for exports.

2.1 Consumption of Manganese Ore at Steel Plants

During the year 1986-87, SAIL steel plants including IISCO procured 4.12 lakh tonnes of manganese ore and consumed 4.05 lakh tonnes of the ore.

During the year 1987-88, SAIL steel plants are likely to procure 4.65 lakh tonnes of manganese ore. Their consumption of the ore during the year is likely to be 4.82 lakh tonnes.

TISCO consumed 0.72 lakh tonnes of manganese during 1986-87 which was procured entirely from their captive mines. TISCO's likely consumption of the ore during 1987-88 is 0.61 lakh tonnes which would be procured entirely from their captive mines.

3. Chromite

The total reserves of chromite in the country are estimated to be 135 million tonnes, major portion being located in Sukhinda-Nausahi belt of Orissa. Other States where deposits are located are Andhra Pradesh, Bihar, Karnataka, Maharashtra, Manipur, Tamil Nadu and the Union territory of Andaman and Nicobar.

Chromite is used mainly in three sectors of production namely (i) steel industry (mettallurgical grade) (ii) refractories and (iii) chemicals. Steel industry uses chromite in the form of ferro-chrome for the the production of alloy steels. The usefulness of chromite as a refractory is on account of its high melting point (about 2110°C), moderate thermal expansion, stability of crystalline form at high temperatures and a comparatively neutral chemical behaviour.

The production of chromite during 1987 is estimated at 6,42,000 tonnes as against the recorded production of 6,34,000 tonnes in 1986. Orissa continued as the principal producer accounting for 5,86,000 tonnes (91% of the total production followed by Karnatka with 52,000 tonnes 8%). The remaining 1% is contributed by Andhra Pradesh, Maharastra and Manipur.

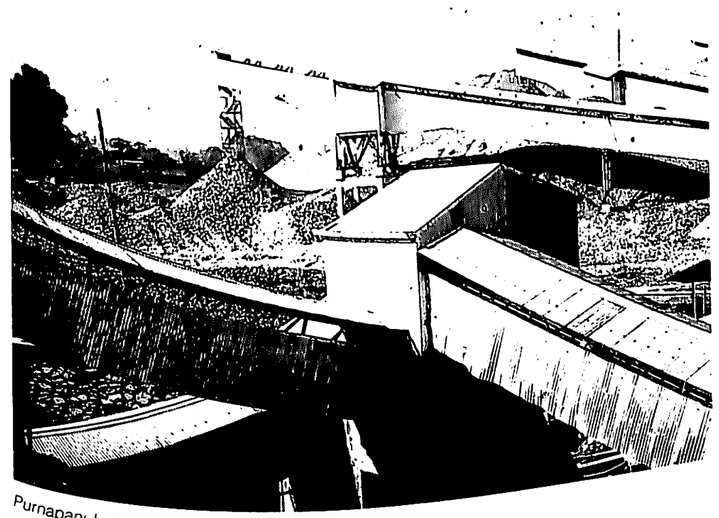
Total despatches of chromite in 1987 are estimated at 5,55,000 tonnes, of which 4,30,000 tonnes (77%) are for internal consumption and 1,25,000 tonnes (23%) for exports.

4. Ferro Alloys

Ferro Alloy addition for the purpose of deoxidation or alloying is an integral part of steel making. Traditionally, integrated steel plants producing tonnage steel basically use manganese and silicon in the form of several ferro alloys. These alloys, Ferro-Manganese, Ferro-Silicon and Ferro-Chrome are called bulk/tonnage ferrow alloys. Other ferro alloys which are more critical and strategic, such as ferro-molybdenum, ferro-tungsten, ferro-niobium, ferro-nickel are called high value ferro alloys. These minor ferro alloys are mostly being produced by the alumino-thermic and other batch processes. These elements, such as vanadium, tungsten, molybdenum, niobium, titanium are introduced into steel in the form of ferro alloys because their production is simpler and cheaper. These alloys are generally used in the production of alloy steels, special steels, special quality pig iron etc.

Actual consumption of the various ferro-alloys at SAIL steel plants including IISCO during 1986-87 and estimated consumption during 1987-88 is as follows:—

	1986-87 Tonnes	1987-88 Tonnes
Ferro-Manganese	104293	103062
Ferro-Silicon	13353	15269
Ferro-Chrome	3404	3292
Ferro-Nickel & Nicket Oxide Sintes	2540	1275
Silico-Manganese	2371	9865
Ferro-niobium	42	73
Ferro-phosphorus	46	73
Ferro-molybdenum	5.2	10.4
Ferro-tungsten	12	40
Ferro-titanium	80	107.5
Ferro-vanadium		
Other ferro-alloys	455	351.0



Purnapani Limestone Quarry

Actual consumption of the various ferro-alloys at TISCO during 1986-87 and estimated consumption during 1987-88 is as follows:—

	1986-87 (Tonnes)	1987-88 (Tonnes)
High Carbon Ferro-Manganese	18,043	18,711
Superior grade Ferro-Manganese	123	103
Ferro-Silicon	3,646	2,961
Ferro-Chrome	608	834
Silico-Manganese	12,523	13,608
Ferro-Niobium	44.5	60.6
Ferro-phosphours	342	277
Ferro-molybdenum	40	40.4
Ferro-tungsten	0.8	0.2
Ferro-titanium	160	208
Ferro-vanadium	140	134
Ferro-Nickel	18.5	—
Other ferro-alloys	0.45	0.2

TISCO procured ferro-manganese entirely from its captive source. The rest of the ferro-alloys were purchased from other domestic sources.

5. Limestone

Limestone is used as a flux in iron as well as steel making. India has a good reserve base for the blast furnace grade limestone but the reserves of low silica (less than 0.5% silica) limestone with desired thermal properties suitable for steel making are rather limited. Efforts are being made to assess the short term and long term availability of steel melting grade limestone in the country.

SAIL steel plants during 1986-87 procured 19.12 lakh tonnes of blast furnace grade and 8.31 lakh tonnes of steel melting shop grade limestone from their captive mines, 8.04 lakh tonnes of blast furnace grade ore and 4.92 lakh tonnes of SMS grade limestone from other domestic sources. 20,000 tonnes of SMS grade limestone was imported. The consumption during the year by SAIL plants was 26.44 lakh tonnes of blast furnace grade limestone and 13.71 lakh tonnes of steel melting shop grade limestone. TISCO consumed 3.00 lakh tonnes of blast furnace grade and 3.48 lakh tonnes of steel melting shop grade limestone during 1986-87. The consumption during 1987-88 is likely to be 29.16 lakh tonnes by SAIL plants and 2.18 lakh tonnes by TISCO plant of blast furnace grade and 15.59 lakh tonnes by SAIL and 2.72 lakh tonnes by TISCO of the steel melting shop grade limestone.

6. Dolomite

Dolomite finds extensive applications in metallurgical industry as a flux, as a refractory and as a source of magnesia for the production of mangesium metal. In Steel industry it is used as a flux as well as a refractory material. Total reserves of

dolomite are estimated at 4354 million tonnes.

During the year 1986-87, SAIL steel plant including IISCO procured 13.8 lakh tonnes of blast furnace grade dolomite from their captive mines and 4.86 lakh tonnes from other domestic sources. Their consumption during the year was 7.18 lakh tonnes.

During the year 1987-88, SAIL plants are likely to procure 2.51 lakh tonnes of blast furnace grade dolomite from their captive mines and 5.14 lakh tonnes from other domestic sources. Their consumption during the year is likely to be 8.51 lakh tonnes. TISCO consumed 2.78 lakh tonnes of blast furnace grade dolomite during 1986-87. It was procured entirely from its captive mines. TISCOs consumption during 1987-88 is likely to be 2.32 lakh tonnes.

During the year 1986-87, SAIL steel plants procured 2.28 lakh tonnes of steel melting shop grade of dolomite from their captive mines and 3.03 lakh tonnes from other domestic sources. Their consumption during the year was 4.68 lakh tonnes.

During the year 1987-88, SAIL plants are likely to procure 2.57 lakh tonnes of steel melting shop grade dolomite from their captive mines and 3.24 lakh tonnes from other domestic sources. Their consumption during the year is likely to be 5.62 lakh tonnes.

TISCO procured 2.16 lakh tonnes of steel melting shop grade dolomite from its captive mines during the year 1986-87. The consumption during the year was 3.48 lakh tonnes. During the year 1987-88, TISCO is likely to procure 2.78 lakh tonnes of steel melting shop grade dolomite from its captive mines for consumption during the year

7. Coking Coal

Indian coking coals have a high ash content mainly because of the sedimentary nature of their orgin Total measurable reserves of coking coal are estimated to be 6,630 million tonnes.

During the year 1986-87, SAIL steel plants including IISCO procured 2.67 lakh tonnes of coking coal from their captive mines, 96.96 lakh tonnes from other domestic sources and 21.37 lakh tonnes from abroad. Their consumption of coking coal during the year was 116.35 lakh tonnes.

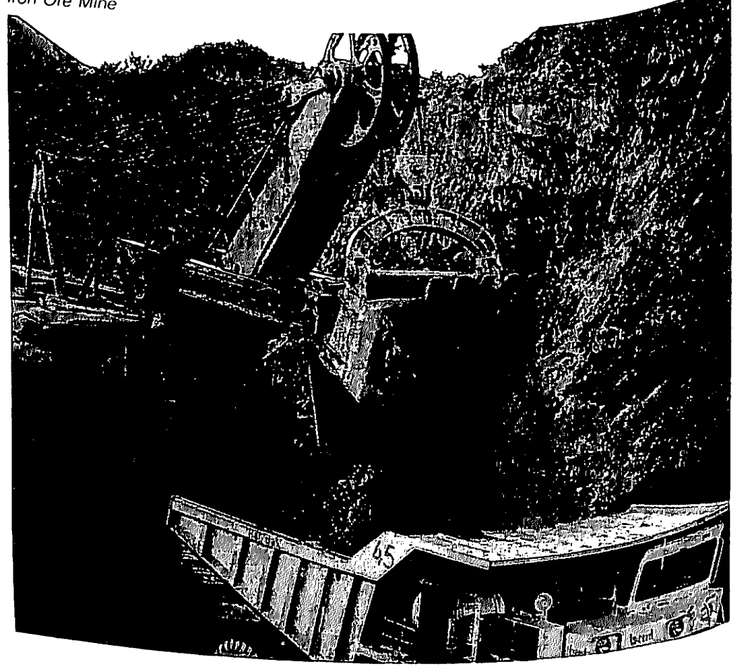
During the year 1987-88, SAIL steel plants are likely to procure 2.36 lakh tonnes of coking coal from their captive mines, 101.04 lakh tonnes from other domestic sources and 23.69 lakh tonnes from abroad. TISCO procured during 1986-87, 21.27 lakh tonnes of coking coal from its captive mines, 0 07 lakh tonnes from other domestic sources and 3.94 lakh tonnes from abroad. The consumption during the year was 24 98 lakh tonnes.

During the year 1987-88, TISCO is likely to procure 15.08 lakh tonnes of coking coal from its captive mines, 0.17 lakh tonnes from other domestic sources and 4.33 lakh tonnes from abroad. TISCOs consumption during the year is likely to be 18.88 lakh tonnes.

8. Non-Coking Coal

During the year 1986-87, SAIL steel plants including IISCO procured 0.80 lakh tonnes of non-coking coal from their captive mines and 25.34 lakh tonnes from other domestic sources. Their consumption during the year was 26.49 lakh tonnes.

Iron Ore Mine



During the year, 1987-88, SAIL steel plants are likely to procure 0.94 lakh tonnes of non-coking coal from their captive mines and 29.40 lakh tonnes from other domestic sources.

TISCO procured during 1986-87, 6.63 lakh tonnes of non-coking coal from its captive mines and 2.97 lakh tonnes from other domestic sources. The consumption during the year was 10.53 lakh tonnes.

During the year 1987-88 TISCO is likely to procure 5.35 lakh tonnes of non-coking coal from its captive mines and 2.23 lakh tonnes from other domestic sources. The consumption during the year is likely to be 8.22 lakh tonnes.

9. Refractories

The Steel industry utilizes a variety of refractories for operating its high temperature furnaces and equipments. The refractory requirements are mostly met through indigenous manufacturing units both in public and private sectors. The quantities of refractories procured during 1986-87 and likely to be consumed/procured during 1987-88 by SAIL steel plants, TISCO and Visakhapatnam Steel Project are given

SAIL—Plants' Procurements

	1986-87 Tonnes	1987-88 Tonnes
Fireclay	185028	136827
High Grog	70825	67184
High Alumina	8383	10137
Silica General Purpose	13679	13701
Silica Coke Oven	9536	5845
Basic	113666	119479
Others	82361	45349

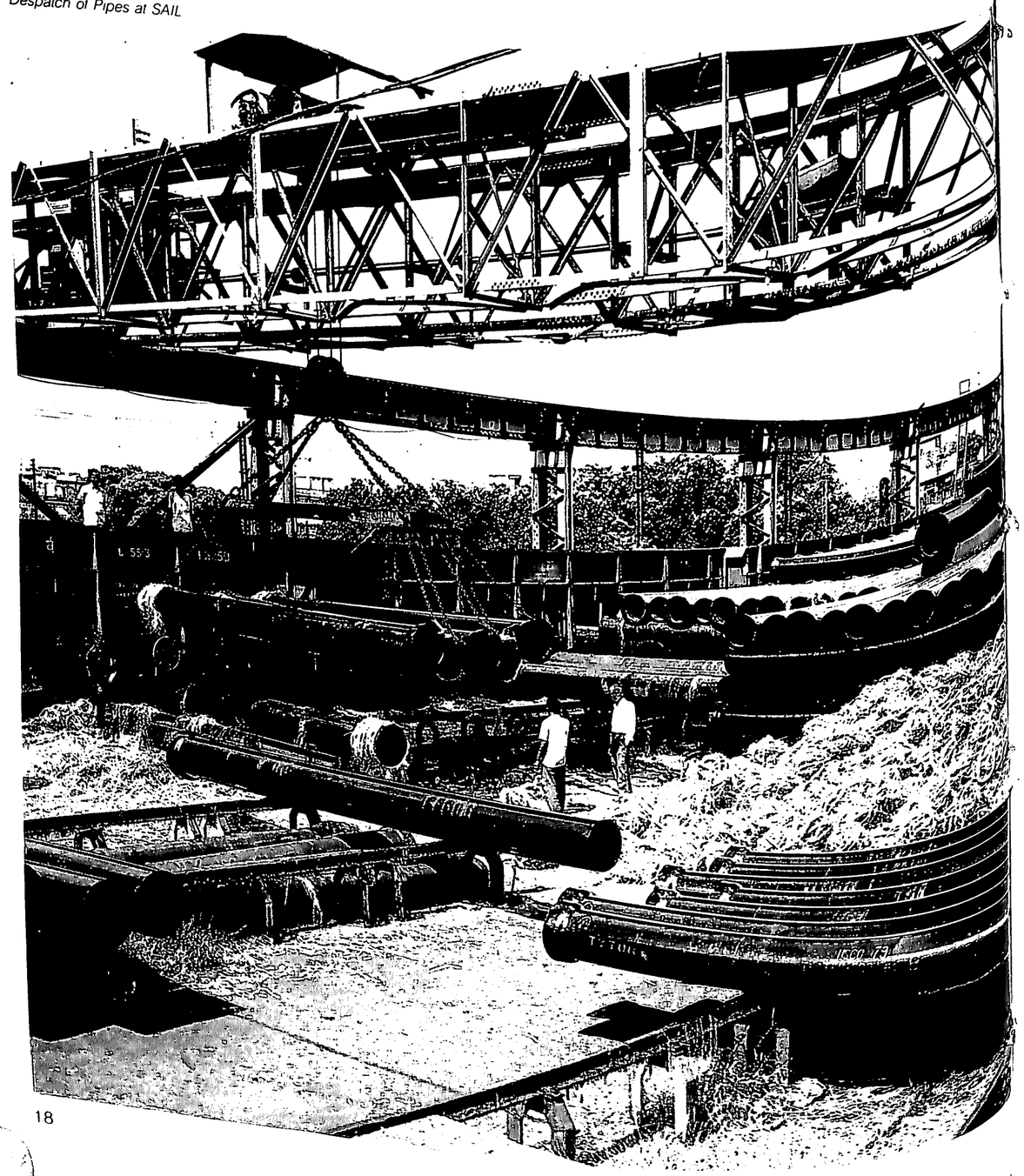
TISCO's Procurement

	1986-87 Tonnes	1987-88 Tonnes
Fire Clay	25,430	21,645
High Grog	10,875	12,010
High Alumina	10,600	10,250
Silica General Purpose	510	540
Silica Coke Ovens	15	3
Basic	27,190	26,000
Insulating	1,560	1,600
Slide Gate	220	280
Other quality refractories	198	205
Mortars, Ramming masses, Castables, Gunning materials, Fettling material and sea water magnesia	25,031	23,700

Visakhapatnam Steel Project's Procurement

	1986-87 Tonnes	1987-88 Tonnes
Fireclay Bricks		7216
(a) Purchased from domestic sources	5380	1765
(b) Imported	5698	2953
High Alumina Bricks (imported)	4683	
Silica Bricks		1483
(Imported)	4359	
Insulation and Light Weight Bricks		824
(a) Procured from domestic sources	788	846
(b) Imported	1112	2880
High Grog	—	
Carbon Blocks and Masses		89
(Imported)	394	300
Chrome Magnesite Bricks	—	200
Red Bricks	—	
Basalt Slabs (Imported)		20
(Imported)	—	

Despatch of Pipes at SAIL



4. Distribution and Availability

1. Table below gives the availability of iron and steel in the domestic market during 1986-87 and the estimated availability during 1987-88

('000 tonnes)

	Pig Iron		Finished Steel	
	1986-87 (Estimated)	1987-88	1986-87 (Estimated)	1987-88
1. Production				
a) Main Producers	1262	1330	5749	6661
b) Secondary Producers	96	100	5028	4806
2. Imported Arrivals	25	22*	1559	1594*
3. Total (1+2)	1393	1452	12336	13061
4. Exports	—	—	27	50*
5. Interplant Transfers	—	—	417	—
6. Net Availability (3-4-5)	1393	1452	11892	13011

* Indicates total estimated imports/exports.

Canalised imports of steel during April-December, 1987 has been 654.3 thousand tonnes and of pig iron 6.9 thousand tonnes.

2. Distribution of Steel

2.1 Strategy

The measures introduced in the previous years to ensure fair distribution of available materials were continued during the year.

2.2 Distribution procedure

The new guidelines of the Joint Plant Committee (JPC) for distribution of iron and steel materials become operational w.e.f. the 1st April, 1987. These guidelines are applicable to such items of iron and steel as are produced by the main steel producers in the country, i.e., Steel Authority of India Ltd. (SAIL), Indian Iron & Steel Company Ltd. (IISCO) and Tata Iron & Steel Company Ltd. (TISCO) and the prices in respect of which are fixed by the Joint Plant Committee. Under these guidelines, the consumers are classified into 4 Status Groups, viz., Status 'A', 'B', 'C' and 'D', depending upon their priority and consumption requirements. Status 'A' comprises consumers in the sectors which are of vital importance to the national economy, i.e., Defence, Railways, Irrigation & Power Projects, Coal, Oil, Engineering goods exporters, Small Scale Industries Corporations (SSICs), etc. Status 'B' comprises Central and State Government Departments, public sector undertakings/projects that are not covered under Status 'A' local bodies, etc. Status 'C' comprises large and medium scale industries and Status 'D' comprises other eligible consumers.

The guidelines adopted by the Committee in November, 1986 provided for a system of quarterly allocations to the Central Sponsoring Authorities (CSAs) of the consumers covered under Priority Status 'A' against their demand projections. These allottees were required to make further sub-allocations to the ultimate consumers/consuming units. However, in the said system, the time lag between the projection of demand by the consumers and the actual servicing of the orders by the main producers took considerable time. The long period involved in many cases led to errors in projection of actual requirements by the consuming units. The system was also found to be lacking a mechanism for enabling direct inter-action between the marketing organisations of the producers and the ultimate consumers. In order, therefore, to provide an efficient customer service and to develop direct relationship between the consumers and the producers as well as to reduce the time lag between the projections of requirements and servicing of demands, JPC reviewed the allocation system in June, 1987.

Based on the review, it was decided to do away with the system of making quarterly allocations to the priority sectors, except EEPC-units and SSICs. The revised system has been implemented from the quarter October-December, 1987. According to then revised system, the individual consuming units of the priority sectors in Status 'A' should register their demand for a quarter with the nearest Branch Sales Offices (BSOs) of the main producers at least 60 days prior to the commencement of a quarter. The producers will endeavour to supply the quantity for which the demands have been registered during the quarter itself. However, if for any reason, supplies are not effected during the quarter, the registered demand will be carried forward for two subsequent quarters.

As far as EEPC-units are concerned, release orders issued by the Office of the Development Commissioner for Iron & Steel will have to be registered with the concerned BSOs of main producers by the units 45 days prior to the start of a quarter. Supplies will be made by the producers against these registrations. Consumers other

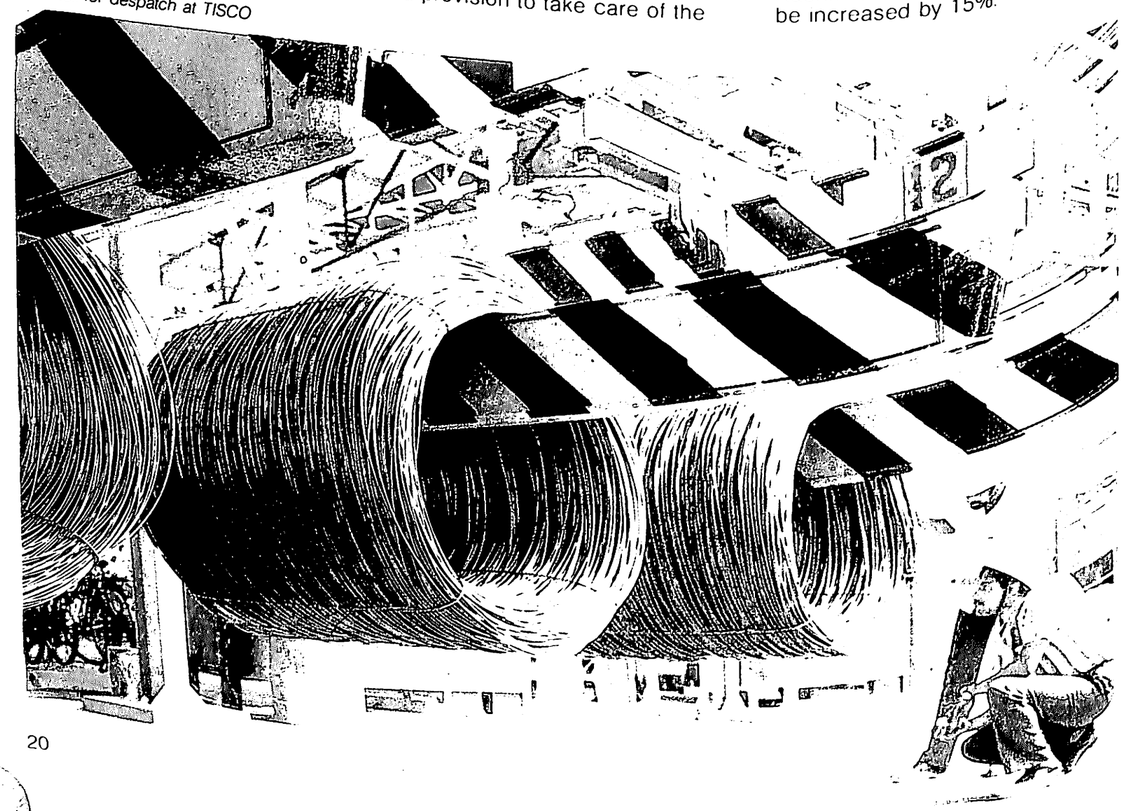
than those covered under Status 'A' have also to register their requirements with the main producers/their BSOs for supply.

Small scale units are normally to register their demand with the respective SSICs. However, small scale units with quarterly offtake of steel materials of 100 tonnes or more from the main producers in any quarter during the past 5 years will be eligible to register their demand with the respective stockyards of main producers and receive supplies directly. While calculating such offtake, materials supplied under compact group schemes, offtake of imported materials and purchase of plant disposals will not be taken into account. SSI units other than those receiving supplies under compact group release orders on account of engineering exports and eligible units with the prescribed minimum quarterly off take of 100 tonnes are to get their requirements from the concerned SSICs. All SSI units will be eligible to draw supplies of compact group items like billets, wire rods, HR Coils/Skelp, CR Coils/Sheets etc from the main producers in terms of the guidelines.

Supply of compact group items to individual functioning units will be made as per the unit's entitlements arrived at on the basis of the best of the last 3 years offtake from the main producers. In the guidelines, there is a provision to take care of the requirements of new/sick units, units with negligible offtake units with additional capacity creation. The entitlements of such units will be determined by the technical representatives of the main producers.

The entitlements of units situated in centrally declared backward areas, in districts where the main producers' steel plants are located, North-Eastern sector and Jammu & Kashmir, will be increased by 10%. In case the district where the producers' steel plant is located is also a centrally declared backward district of North-Eastern sector or Jammu & Kashmir, its total entitlements will be increased by 15%.

Wire Roll for despatch at TISCO



2.3 Distribution of pig iron

Pig iron will be supplied to the following sectors proportionately on the basis of annual allocation made by the DC, I&S.

1. Defence;
2. Steel Plants;
3. EEPC;
4. Railways;
5. SSICs;
6. Other Priority Sectors/Govt. Deptts.

The Spun Pipe Manufacturers and DGTD units will receive the materials from the stockyards of Main Producers on the basis of the past offtake.

However, in case of SSI units, Pig Iron will not be supplied directly from the stockyards of Main Producers.

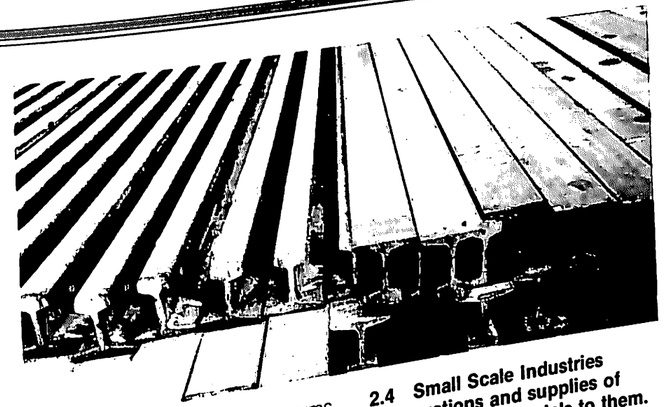
Supplies to them will be made either from the State SSICs concerned or through the registered Associations/Co-operatives of consumers already sponsored by the Directors of Industries of States/U.Ts concerned, in the case of direct despatches, viz.

i) Factories Association, Batala (Punjab)
ii) Foundrymen's Association, Batala (Punjab)
iii) Batala Industrial Estates Factories Association, Batala (Punjab)
iv) New Industries Association, Batala (Punjab)
v) Batala Manufacturers' Association, Batala (Punjab)
vi) Amritsar Foundry & Engineers Association, Amritsar (Punjab)
vii) Agra Iron Founder's Association, Agra (U.P.)
viii) Indian Foundry Association, Calcutta (W.B.)

In the matter of supplies of pig iron, no SSI unit will be placed at an advantage in quantitative terms by being a member of an Association/Consumer's Cooperative. The level of supplies to the Associations/Cooperatives and the SSICs in those states where both the channels operate, will be at the same level as in the year 1985-86.

The main producers will henceforth refer to the DC, I&S for consideration, proposals for routing supplies of materials to SSI units through new Associations/Cooperatives of consumers and also the proposals of routing additional pig iron through the existing Associations.

After effecting supplies of pig iron as per the guidelines outlined, the balance available materials will be distributed by the Main Producers to other consumers.



2.4 Small Scale Industries Corporations and supplies of iron and steel materials to them.

Allocations of iron and steel to SSI Corporations are made by the Development Commissioner for Iron & Steel. Allocations of steel made by the Office of the Development Commissioner for Iron & Steel itself will be treated as the registered demand of the Corporations. However, the Corporations are free to register their demand for other categories and additional tonnages of the allocated categories. Supplies against such additional demands will not qualify for any rebate.

The table below indicates the allocations and off-take/supplies of iron and steel to SSICs in 1986-87 and 1987-88 (up to December, 1987).

(Quantity in '000 tonnes)

Year	Allocation		Offtake/supplies	
	Pig Iron	Steel	Pig Iron	Steel
1.	2.	3.	4.	5.
1986-87	472	432	305*	241
1987-88 (April-Dec., 1987)	405	270	191**	163**

* Excludes 260,597 tonnes supplied direct to SSI units.
** Excludes 142,070 tonnes supplied durect to SSI units.
*** Excludes offers for 57,794 tonnes cancelled by SSI cooperations.

2.5 Distribution by other steel producers

Distribution of products of mini steel plants, re-rollers, secondary producers and alloy steel producers are done by the producers themselves through their sales network.

2.6 Rebates for supplies of iron and steel

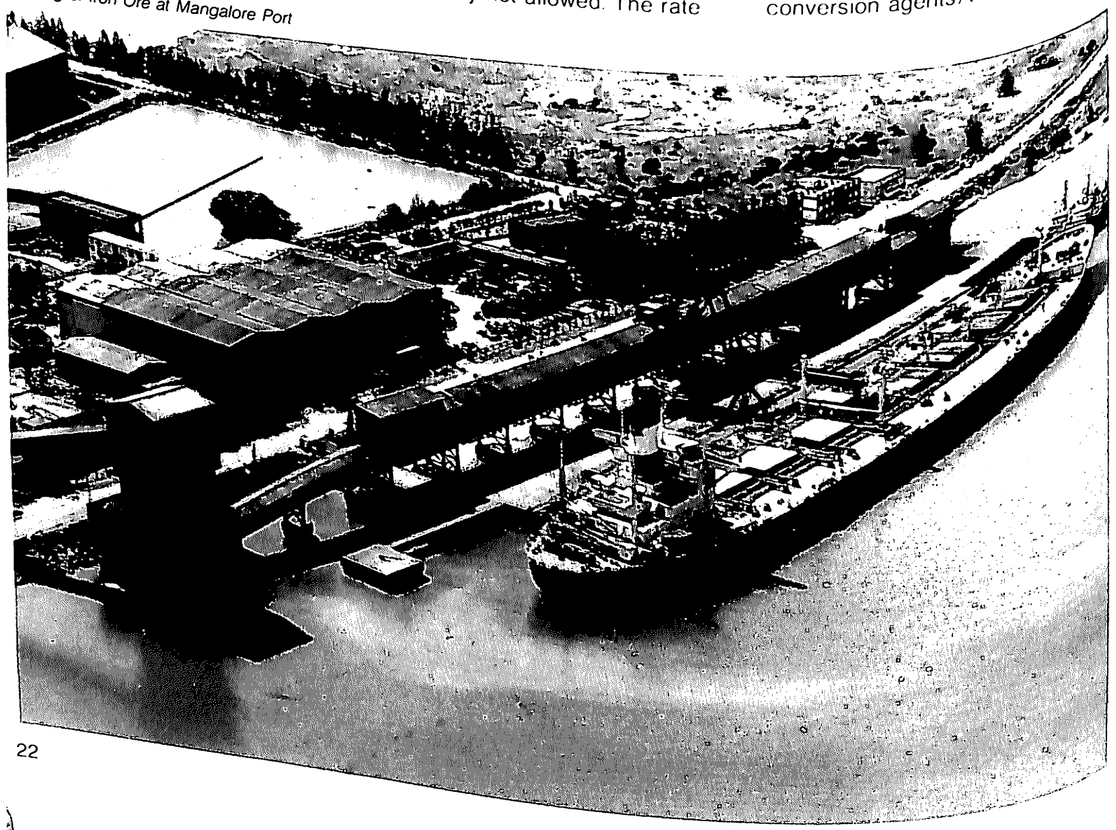
Distribution of Iron and Steel material to SSI Units is routed through the respective State Small Scale Industries Corporations since 1972. A scheme of rebates to SSI Corporations was introduced in 1978-79 and rebates ranging from Rs. 310/- to Rs. 440/- per tonne on steel items and Rs 100/- per tonne on pig iron (for supplies from main producers' stockyards only and import) are currently being allowed to SSI Corporations to meet their handling and other expenses so that the SSI Units at the remotest corner of the country get supplies at prices comparable to the stockyard prices of main producers.

During the year 1987-88 the allocations of iron and steel to SSI Corporations has been a little less It has, therefore, been decided to allow usual rebates to SSI Corporations on supplies against allocations from DC (IS) reserve quota also during 1987-88, which is normally not allowed. The rate of rebate per tonne allowed to the State SSI Corporations also ranged from Rs 310 to Rs. 440 per tonne As in the past a rebate of Rs 100 per tonne is also allowed on the sales of pig iron to these Corporations from the main producers' stockyard and on the imported pig iron

2.7 Distribution Network

SAIL including IISCO have a network of 42 Departmental stockyards, 15 consignment agency yards and 96 other conversion agencies/twisting yards throughout the country. TISCO has 11 stockyards, 18 consignment agents and 93 conversion agents/twisting agents.

Loading of Iron Ore at Mangalore Port



During the year under review IISCO has closed one stockyard. SAIL has opened one more consignment agency at Goa and 8 more conversion agencies/twisting yards TISCO closed one consignment agency and three conversion/twisting agents.

Considering the special problems in meeting the requirements of consumers in the North-Eastern Region, mainly arising out of transport bettlenecks and logistics, special efforts are being made to ensure that adequate quantities are moved to that region by regular coordination between the producers and the railways. The producers are also reimbursed the actual cost of transportation by alternate routes by road/river by the JPC.

3. Pricing of Steel

There is no control, statutory or otherwise, on the prices of iron and steel. These are determined and announced from time to time by the JPC, a body constituted by the Government under the Iron and Steel (Control) Order, 1956. The Committee is headed by the Development Commissioner for Iron and Steel, and the main producers of iron and steel, namely Steel Authority of India Limited, Tata Iron and Steel Company Limited, Indian Iron & Steel Company Limited and the Ministry of Railways are represented on it as members. The prices announced by this Committee are applicable only to the major items of iron and steel produced by the integrated steel plants. Rerollers, mini steel plants, alloy steel producers etc., fix their own prices for their products.

Since 21st February, 1985 when steel prices were increased input costs of the main producers had gone up considerably as a result of duties and tariffs on power by State Governments, increase in railway freight, increase in price of furnace oil, petro-fuels and increase in coal prices and cess on coal. The producers had been making all out efforts to absorb these increases in costs through better productivity, better capacity utilisation and improvement in techno-economic norms etc. but inspite of the same it has not been possible for them to continue sale of the iron and steel materials at the price fixed on 21st February, 1985. The Joint Plant Committee has, therefore, increased the prices of iron and steel materials with effect from the mid-night of 23rd/24th December, 1987. While the actual increase on different items of steel varies from 4% to 21%, the average increase in the price of steel and pig iron announced by the JPC amounts to about 15.6%. While increasing the prices an effort has also been made by the JPC to reduce the impact of the price increase on those consumers of steel who can less easily afford higher prices. Keeping in view the requirements of the Weaker Sections of the Society, the increase in prices of certain types of materials like GP/GC sheets, etc, mostly used for construction purposes by them have been restricted to the barest minimum level.

Iron and Steel materials are supplied by the main producers at a uniform price throughout the country, be they directly from the steel plants or through stockyards. For this purpose, a freight equalisation fund is operated and maintained by the JPC. Presently, the freight equalisation element for steel is Rs. 695/- per tonne and for pig iron it is Rs. 470/- per tonne.

Government have also reviewed its earlier decision about phasing of out freight equalisation scheme in respect of Iron and Steel in the light of the representations received from various State Governments and have decided to refer the matter to the National Development Council.

Open market prices vis-a-vis stockyard prices of certain important categories of steel are also monitored in the Department, through periodical reports obtained from various regional Development Commissioners for Iron and Steel. Corrective action is taken whenever necessary.

4. Import-Export

The general Policy procedure for import of iron and steel, ferro alloys and ferrous scrap is decided by the Ministry of Commerce like other non-ferrous items. The 3 year Import Policy announced in April, 1985 continued to be in operation for 1987-88. During the year there was no major change in the Import Policy for iron and steel.

MMTC continued to be the canalising agency for import of iron and steel. During the period direct imports were also allowed under supplementary licensing, REP and flexibility provisions in the Import Policy. The DCI&S continued to be the designated authority for clearing requests for imports from indigenous angle irrespective of the fact that the import is under canalised procedure or under supplementary licensing.

A close watch is maintained on import and domestic availability of iron and steel to ensure that the industrial requirements are met to the maximum extent possible and industrial activity does not get adversely affected. Imbalance in availability is promptly corrected by imports. Consistent efforts are

made to meet the requirements of Engineering Exporters from domestic production to the maximum extent possible. Here again due to inadequate domestic availablity, engineering exporters are required to take other facilities under the import licensing like duty free Advance Import and duty free REP etc.

Due to domestic demand exports have been confined mainly of surplus plates from Bhilai Steel Plant. However, the requirements of the neighbouring countries like Nepal and Bhutan are met to the maximum extent possible. Data on imports and exports of iron and steel form a part of the compilation and publication of Foreign Trade Statistics by the Director General of Commercial Intelligence and Statistics, Calcutta (DGCI&S). Data for the years after 1984-85 have not been published yet.

According to DGCI&S import of saleable pig iron and steel during 1984-85 was 1.64 million tonnes valued at Rs. 677.6 crores. Exports of saleable steel was 0.10 million tonnes valued at Rs. 2.71 crores.

Provisional data on imports during 1985-86 according to DGCI&S was 2.10 million tonnes valued at Rs. 984.91 crores. Estimated import of saleable iron and steel during 1986-87 through major ports was about 2.06 million tonnes valued at Rs. 898.7 crores. Canalised import of iron and steel during April-November, 1987 was 0.59 million tonnes valued at Rs 310.9 crores. Exports of iron and steel according to SAIL during 1985-86 and 1986-87 was 15,000 tonnes valued at Rs. 3.26 crores and 27,000 tonnes valued at Rs. 8.95 crores respectively.

5. Functions of Development Commissioner for Iron & Steel

The Iron & Steel Control Organisation was initially set up to perform the regulatory functions envisaged in the Iron & Steel (Control) Order, 1956. Over the years the responsibilities of this Organisation kept on changing. Easy availability of iron and steel material in the country have resulted in the removal of regulatory control over the distribution of iron and steel to a large extent and on the other hand the increase of secondary producers necessitated providing assistance to develop steel industry. The Iron Steel Control Organisation has accordingly been re-named as the Office of the Development Commissioner for Iron & Steel with effect from 1.5.1987. This Organisation, however, continues to perform the regulatory functions relating to mis-use of iron and steel.

In performing the regulatory and control functions assigned to him the Development Commissioner for Iron and Steel and the six Regional Development Commissioners continue to carry out inspections to check misutilisation of iron and steel. A statement showing the number of inspections carried out and punitive action taken by the Development Commissioner for Iron and Steel during 1986-87 and 1987-88 (April-November, 1987) is given below.-

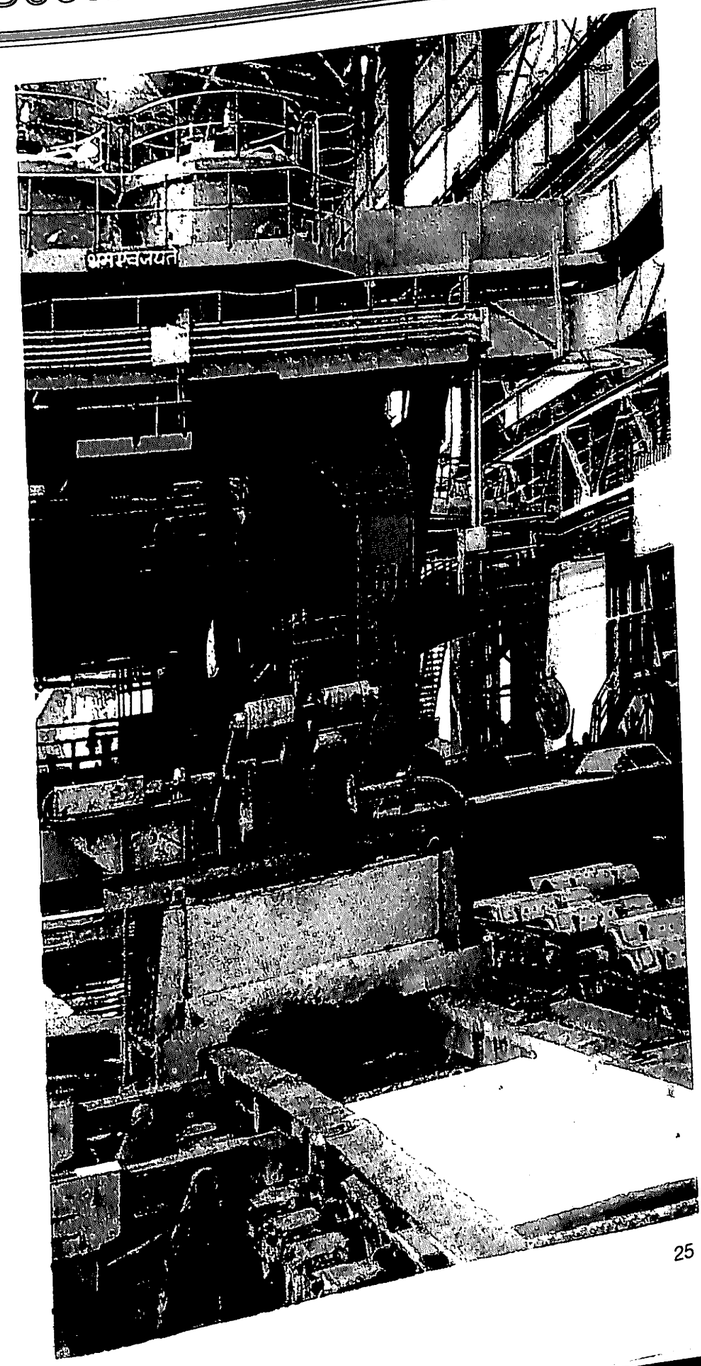
Statement showing the number of cases of inspections of units/suspensions of supplies/debarments during 1986-87 and 1987-88 (April-November 1987)

Region	Inspections		Suspengions		Debarments	
	1986-87	1987-88 (April-Nov.'87)	1986-87	1987-88 (April-Nov.'87)	1986-87	1987-88 (April-Nov.'87)
1.	2.	3.	4.	5.	6.	7.
Bombay	305	190	126	68	12	23
Calcutta	413	180	14	2	13	1
Delhi	182	199	35	54	29	64
Hyderabad	500	388	16	3	18	1
Kanpur	393	206	146	27	113	23
Madras	559	142	51	17	41	14
Total:	2352	1305	388	171	226	126

5. The Public Sector

The Public Sector has been assigned a very important role in the economic development of the country. 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.

A provision of Rs. 6420.13 crores has been made in the Seventh Five Year Plan for iron and steel sector Detailed outlay for various units is shown at page 76



Steel Authority of India Limited

1. General

Steel Authority of India (SAIL) is a wholly owned Government of India enterprise. 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 Indian Iron and Steel Company Limited (IISCO) a wholly owned subsidiary of SAIL, and two special and alloy steels plants at Durgapur (West Bengal) and Salem (Tamil Nadu). The Marketing of products from these plants is through the Central Marketing Organisation which has a country-wide distribution network. In addition, SAIL has a Research & Development Centre for Iron & Steel, a Centre for Engineering & Technology and a Centre for Raw Materials & Mines at Ranchi, Maharashtra Elektrosmelt Limited, a ferro-manganese and special steels producing plant at Chanderpur (Maharashtra) is also a subsidiary of SAIL.

2. Performance of SAIL (excl. IISCO)

2.1 Financial Performance

2.1.1 SAIL closed the financial year 1986-87 with a net profit of Rs. 52.81 crores. The profit was achieved due to higher volume of production, better techno-economics and control on manpower; despite no increase in the steel prices after February'85, though input prices continued to escalate during 1986-87. Profit before interest and depreciation was Rs. 580.65 crores.

2.1.2 Major input price escalations during 1986-87 were:

a) Full year's impact of the revision in coal price effective from 9th January, 1986.

b) Increase in cess on minerals by Orissa Government from 100% to 200% of royalty with effect from 12th June, 1986.

c) Increase in the Railway Freight with effect from 1st December 1986.

d) Revision in power tariffs and duties by the various State Electricity Boards

e) Increase in the prices of imported HR bands used as feed material at Salem Steel Plant.

f) Ad-hoc relief to the executives from 1st January, 1986 and provisions towards wage revision for non-executives from 1st September, 1986.

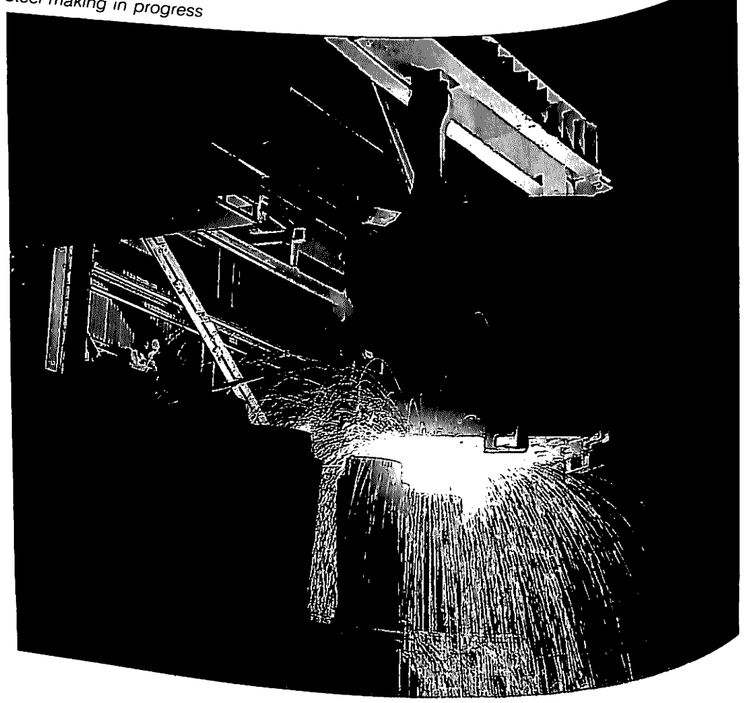
g) Increase in Dearness Allowance

The impact of escalations in prices of coal, power, transportation and cess and levies since February 1985 upto 1986-87 amounted to Rs. 280 crores.

2.2 Liquidity

Mobilisation of alternative sources of funds by SAIL at lower interest rates through public deposits and short term borrowings from other public sector undertakings resulted in lower utilisation of bank overdraft facilities. Total deposits from public as at the end of 1986-87, net of repayments, stood at Rs. 250.74 crores corresponding to Rs. 184.48 crores as at the end of the previous year, an increase of 36 per cent. The short term borrowings from other public sector undertakings increased from Rs. 85.89 crores as on 31st March, 1986 to Rs. 383.20 crores as on 31st March, 1987.

Steel making in progress



The company discharged its obligations towards repayment of Government loans to the tune of Rs.201.28 crores (including interest of Rs. 65.23 crores) and Steel Development Fund loans of Rs.25.00 crores (including interest of Rs.9.00 crores).

2.3 Shareholders' Equity

The authorised capital of SAIL increased from Rs. 4,000 crores to Rs. 5,000 crores during the year 1986-87. Government provided equity funds in cash amounting to Rs. 13.60 crores for meeting capital expenditure of IISCO during 1986-87. The paid up share capital of SAIL as at the end of the year increased to Rs. 3923.96 crores (excluding share money, pending allotment of Rs. 13.60 crores)

2.4 Long Term Debts

During 1986-87, SAIL borrowed Rs. 218.00 crores from the Steel Development Fund. Government provided loans of Rs. 28.76 crores to SAIL for meeting capital expenditure of IISCO (Rs. 28.66 crores) and IISCO Ujjain Pipe and Foundry Company Limited (Rs. 10 lakhs). Government also advanced Rs. 10.00 crores through SAIL to IISCO for meeting its working capital requirements. After adjustment of payments, total borrowings as on 31st March, 1987, from Government and the Steel Development Fund stood at Rs. 757.22 crores and Rs. 1706.00 crores respectively.

2.5 Capital Expenditure

During 1986-87 SAIL spent Rs. 539.86 crores (inclusive of interest) on various capital schemes compared to Rs. 608.95 crores during the previous year. The decline in expenditure was due to the fact that expansion programmes of Bhilai and Bokaro are at advanced stages of completion. Internal resources generation by SAIL coupled with borrowings from the Steel Development Fund and others were utilized for financing capital projects.

3. Production Review

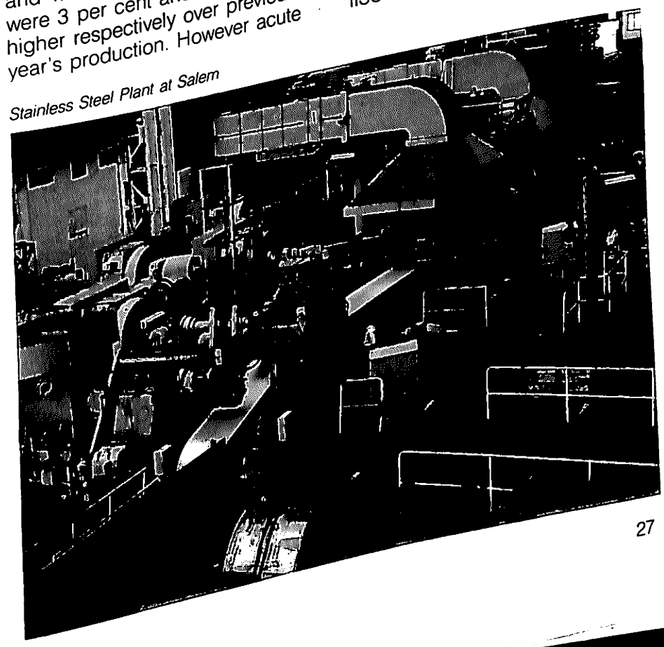
3.1 SAIL established new records in production of saleable steel and hot metal. Continuous improvement in operations of the integrated steel plants at Bhilai, Bokaro, Durgapur and Rourkela resulted in record production of saleable steel at 5.79 million tonnes surpassing the previous best of 5.50 million tonnes achieved in 1985-86. It is worth mentioning that during the second half of 1986-87, the four integrated steel plants achieved 95 per cent capacity utilisation and 99 per cent target fulfilment. Production of 7.67 million tonnes of hot metal and 1.17 million tonnes of pig iron were 3 per cent and 10 per cent higher respectively over previous year's production. However acute shortage of power in the first half of 1986-87 in the Eastern region severely restricted the production at Bokaro, Durgapur and Rourkela Steel plants. Loss of production of saleable steel attributed to power shortages was 534,000 tonnes during the period which was 9.2% of the total production.

3.2 Alloy and special steels plants at Durgapur and Salem also established new records. Salem Steel Plant operated above rated capacity during the year. Alloy Steel Plant produced 70,348 tonnes of saleable steel, during April-87 to Jan-88 as against 82,000 tonnes during 1986-87 and Salem Steel Plant produced 25,679 tonnes of Stainless Steel during April-88 to Jan-88 as compared to 26,600 tonnes of saleable steel, in 1986-87.

3.3 Techno-economic Parameters

SAIL including Burnpur works of IISCO, made significant

Stainless Steel Plant at Salem



achievements in techno-economic parameters during the year.

- Coking coal consumption rate per tonne of hot metal was brought down by 6 per cent. Coke rates at Bhilai and Rourkela during 1986-87 were the lowest ever since inception. Coke rate at Burnpur Works was the best since its take-over.
- Specific consumption rate of raw materials per tonne of hot metal also reduced further.
- Consumption of purchased petro-fuels was brought down by 15 per cent during the year.

3.4 Captive Mines

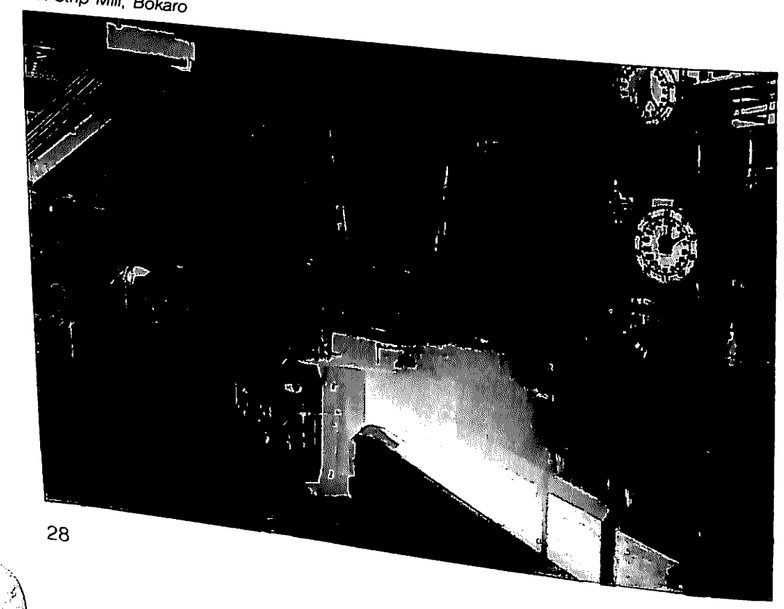
Despatches of major raw materials from captive sources during 1986-87 increased by 9.9 per cent over last year. Production of iron ore in the captive mines showed a growth of 12.9 per cent over last year. Dalli-Rajhara, Bolani and Barsua Mines achieved considerable growth over previous year's production.

Meghahatuburu Iron Ore Mines which was commissioned in 1985-86 produced 931,000 tonnes in single shift operation giving an increase of 169 per cent over last year. Production of SMS grade limestone at Satna Quarry and Kuteshwar Mines increased by 17 per cent and 20 per cent respectively.

3.5 Import Substitution

Efforts on import substitution of spares were intensified resulting in indigenisation of 1137 items valued at about Rs. 9.46 crores during 1986-87. More than 12,000 items valued at 53 crores have so far been successfully substituted, which were earlier imported.

Hot Strip Mill, Bokaro



3.6 Ancillary Industries

Encouragement continued to be given to the development of small scale and ancillary industries. The Company purchased stores and spare items from about 1246 such units during 1986-87 worth Rs. 51 crores against Rs. 43 crores in the previous year.

4. Marketing Performance

4.1. Sales

4.1.1 Mild Steel

Domestic demand for finished steel was higher by about 11 per cent compared to 1985-86. Demand for Company's products except heavy plates and light structurals was, in general, stable.

Sale of 5.167 million tonnes of steel materials during 1986-87 as against 4.944 million tonnes during 1985-86 was the highest achieved in any financial year. The sale of pig iron of 1.115 million tonnes constituted 8.2 per cent increase over previous year.

Amongst the important consuming sectors, supplies of saleable steel to Railways, Heavy Industries and SSI Corporations were higher by 5 per cent, 2 per cent and 9 percent respectively over the previous year.

4.1.2 Tool Alloy & Special Steels

Aggregate sales of about 72,600 tonnes of tools and alloy and special steels from Alloy Steels Plant and 26 thousand tonnes of stainless steel coils/sheets from Salem Steel Plant represented 9 per cent and 21 per cent increase over their respective sales in the previous year and were the highest so far.

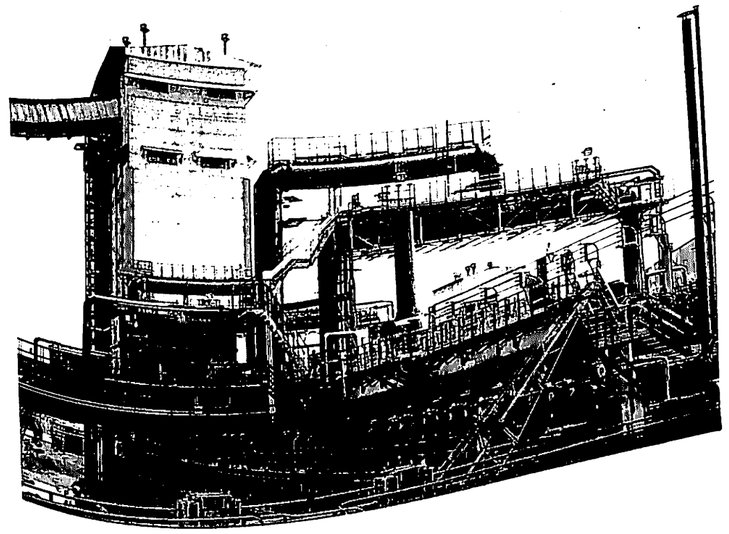
4.1.3 Fertilizer & Chemicals

Fertilizers sale at 165 thousand tonnes during 1986-87 was affected by the glut in the market caused by heavy import arrivals and drought conditions. Sales of benzol and tar products at 15 thousand tonnes and 57 thousand tonnes represent an increase of 35 per cent and 22 per cent respectively over the sales in the previous year.

4.2 Exports

Production of plates continued to be in excess of the domestic demand. Steps were taken to export a part of the surplus. During 1987-88, about 27 thousand tonnes of steel plates valued at about Rs. 9 crores were exported. During April 87—January 88, SAIL exported about 32700 tonnes of plates to USA. Order for export of furthur 10 thousand tonnes booked during the year was fulfiled on 1987. Besides steel plates, over 3 thousand tonnes of CR stainless steel coils/sheets of Salem Steel Plant were exported during April-87 to Jan.-88 against 1026 tonnes exported during 1986-87.

Coke Oven Battery No. 9—Bhilai



4.3 Marketing & Distribution

In the marketing and distribution of saleable products, emphasis continued on supplies to the priority sectors and industrial consumers. In November 1986 the revised guidelines for distribution of iron and steel materials, which envisaged more direct interaction between the main producers and their customers, were adopted.

To provide assured supplies to the customers the scope of "Time Bound Scheme" in which SAIL gives commitment on the schedule of supplies to the customers, introduced in 1986, was widened to include more items. For the items not covered under this scheme, a 'Demand Registration Scheme' was introduced during the second half of 1986-87 to streamline the order booking and execution system.

During 1986-87 consignment agency stockyards were set up at Lucknow and Bharatpur. On completion of modernisation work, new stockyard at Faridabad started functioning. A modern stockyard had also been developed at Kalamboli (near Bombay) and made ready for operation. Acquisition of land for setting up new stockyards at Kanpur and Dankuni (West-Bengal) was completed during the year.

5. Capital Projects

5.1 Bhilai Steel Plant

All phase-I units under the plant's 4 million tonne expansion programme have been commissioned. Of the phase-II units, the blast furnace No. 7 has been commissioned in August, 1987 and the heating of coke oven battery No. 9 started in December, 1987. Further, as a measure of technology upgradation and in consonance with the demand trends, a Vacuum Arc Degassing Unit (VAD) in the converter shop and a second normalising furnace in Plate Mill are also being added. Against the approved cost estimates of Rs. 2145.50 crores for the expansion programme, expenditure upto 31st December, 1987 amounted to Rs. 2058.49 crores.

5.2 Bokaro Steel Plant

The 4 million tonne expansion excepting for the Cold Rolling Mill Complex, is by and large complete. The Cold Rolling Mill Complex is fast nearing completion. Against the anticipated cost estimates of Rs. 2094.98 crores for the 4 million tonne expansion total expenditure upto December 1987 was Rs. 1782.75 crores.

5.3 Rourkela Steel Plant

Commercial production of CRNO stream of the Silicon Steel Project set up in collaboration with ARMCO of USA commenced in May 1986. Commissioning activities of CRGO stream are under way.

5.4 Alloy Steels Plant

Implementation of stage-II expansion of Alloy Steels Plant, increasing its capacity to 260,000 tonnes of liquid steel, is nearing completion. Commercial production in VAD unit has commenced. VOD unit and continuous casting machine are to be commissioned soon.

5.5 Captive Power Plant

Works for augmenting the captive power generation in different steel plants are in advanced stage of completion. During 1986-87 the first units of 2 × 60 MW captive power plants at Durgapur and Rourkela were commissioned. The second units are likely to be commissioned by the end of 1987-88. The first unit of 3 x 60 MW captive power plant of Bokaro was recommissioned in December 1987. This unit originally commissioned in December 1985 had become non-operational due to accidental fire in the Control Room cable gallary in July 1986. The progress of unit II and III was also affected and the units are likely to be commissioned in the first half of 1988-89.

6. Personnel & Welfare

6.1 Changes initiated in human resources management in SAIL in 1985-86 to bring about a qualitative change in its work culture were further consolidated during the year. Improved

[illegible] training and retraining of employees, upgradation of skills, redeployment and rationalisation of the organisation structure are some of the strategies being adopted to achieve higher levels of productivity and efficiency.

6.2 Manpower

Total manpower of the Company as on 31st March, 1987 was 2,05,623 (comprising of 17,000 executives and 1,88,623 non executives) against 2,07,839 as on 31st March, 1986. A revised voluntary retirement scheme was introduced from October, 1986. In response to the scheme 6215 employees have availed voluntary retirement upto December, 1987. Also, during 1986-87, 1719 employees were re-deployed mostly from Mines and Construction area to Works areas.

6.3 Training and Development

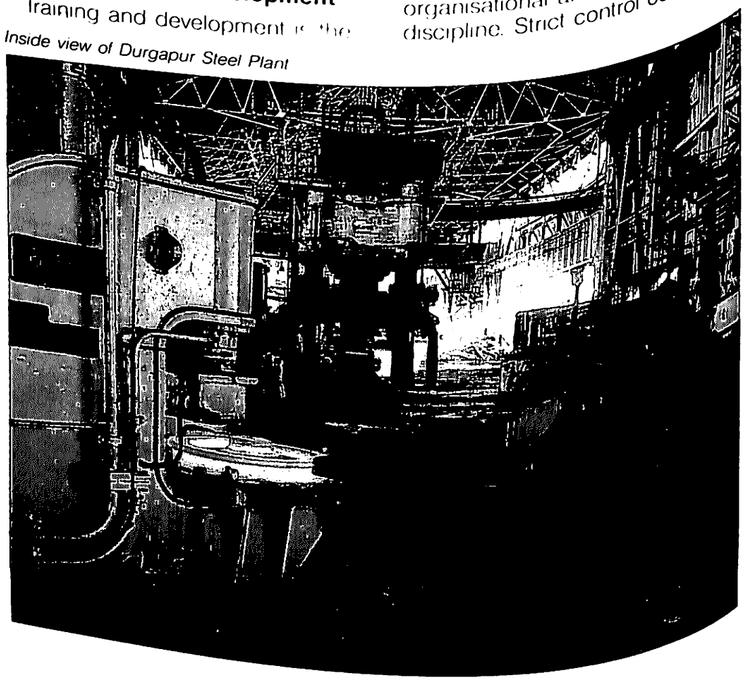
Training and development is the [illegible] SAIL's personnel [illegible] the modernisation and [illegible] upgradation activities [illegible] momentum at SAIL, major [illegible] being given to training and development of its personnel to meet the changing requirements of the organisation. Major emphasis areas are upgradation of skills, knowledge of new tools and tackles, higher standards of technological discipline, greater awareness to quality etc.

An Annual Training Plan was drawn up and implemented focusing on areas of thrust. 17,717 non executives and 7,332 executives have been trained during 1986-87. In addition 190 executives were trained abroad.

6.4 Work Practives

Coordinated action is being taken to improve personnel, organisational and technological discipline. Strict control continues

Inside view of Durgapur Steel Plant



on overtime, absenteeism and reduction in shift change delays in key operations areas. Concerted efforts were made to improve canteen services and resolve employees grievances. There has been no major industrial relation problem in SAIL during the year. A healthy industrial relation climate has been maintained.

6.5 Safety

Improvements in the area of Safety and occupational health received considerable attention during the year. The nucleus of an Occupational Health Centre has been set up at Bhilai. Messrs Arthur D. Little Inc. and Messrs Osha India Limited, consultants were engaged to assess and enhance activities in the area of Safety and Occupational health respectively. Their recommendations are under implementation.

6.6 Reservation for SC/ST

Intake of Scheduled castes and scheduled tribe candidates was 17.94 per cent and 9.88 per cent respectively of the total recruitment. The share of scheduled caste and scheduled tribe employees in promotion was 10.05 per cent and 11.59 per cent respectively. As on 31st March, 1987, scheduled caste and scheduled tribe candidates were 12.82 per cent and 8.28 per cent respectively of the total manpower.

7. Corporate Planning

7.1 SAIL is giving greater emphasis to Corporate Planning to overcome the present constraints for achieving optimum capacity utilisation and cost competitiveness. A long range Corporate Plan upto 2000 AD has been formulated, bringing out the Corporate objectives in terms of production capacity build-up, modernisation of plants, adoption of new technologies, marketing strategy, manpower planning and resources planning.

7.2. The Plan envisages an investment of over Rs. 15000 crores, at current prices, to enable SAIL to achieve production of 15 million tonnes of saleable steel by 2000 A.D., at comparative international levels of energy consumptions, yields and substantial improvement in labour productivity. This will be possible by optimising production from existing facilities and creating additional capacities.

7.3 The capital outlay includes investments towards modernisation, expansion, debottlenecking, automation and process control, development of mines, stockyard development etc. Arising out of the conceptual plan a technology plan has been drawn up by the Research and Development Centre in consultation with the plants

8. Research & Development Activities

8.1 The Research & Development Centre of SAIL is engaged in various programmes of improvement of technologies, conceptualisation to final commissioning of process technologies, products development, identification and adaptation of relevant software based on imported technologies compatible with indigenous requirements. The Centre has also embarked upon collaborative research with outside institutions and organisation to find out solutions of problems faced by Indian steel industry.

8.2 Conversion of open hearth furnace to twin hearth furnace, development of special steel through LD-concast route at Bhilai, dephosphorisation of steel in electric arc furnaces at Alloy Steels Plant and air-injection in open hearth furnace at Burnpur Works

Computerisation at SAIL

of IISCO are some of the significant projects implemented during the year.

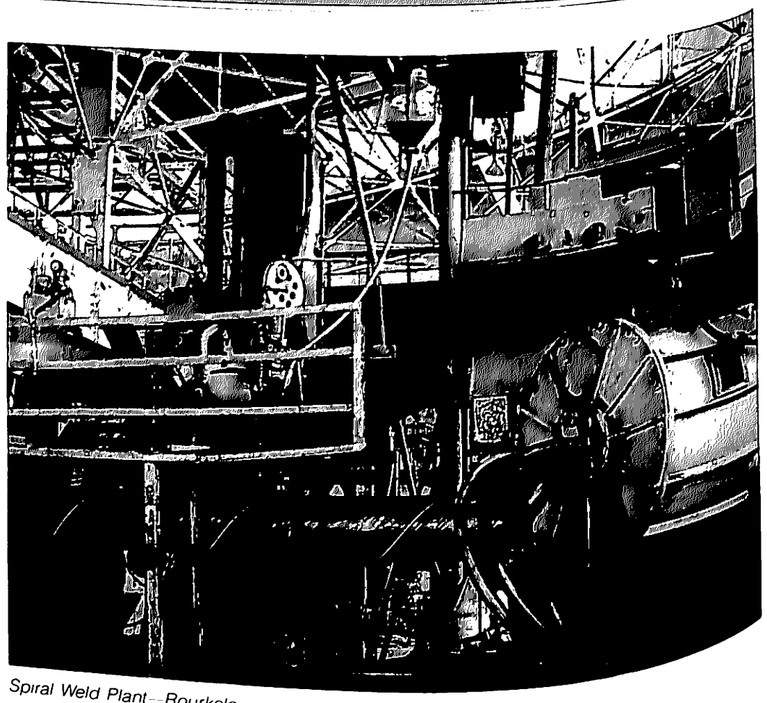
9. Centre for Engineering & Technology

SAIL's in-house Centre for Engineering and Technology is engaged in studies for introducing new technologies, modernisation of old equipment, preparation of feasibility reports on improvement of processes, and modernisation of stockyards for improved customer services. Some of the important assignments completed during the year include feasibility study of gas cutting of slabs at Bhilai for rerolling of long products, modification of design of ingot buggy and track at Bokaro, introduction of combined blowing technology in LD convertors at Bhilai and Bokaro based on RDCIS technology etc.

10. Centre for Raw Materials & Mines

The Centre has helped Bolani Ore Mines to identify bottlenecks in the fines beneficiation plant and

Pilot Plant at RDCIS, Ranchi



Spiral Weld Plant—Rourkela

to step-up production and despatches of washed ore fines to Durgapur. Exploration of new sources of raw material continued during the year. Detailed prospecting work in Jaisalmer area for low silica limestone for LD converter was taken up.

11. Peripheral Development Activities

On peripheral development activities which inter-alia included providing facilities like supply of drinking water, construction of schools, community centre, roads etc. in areas within 10 Kms. of the steel townships, Rs. 24.80 lakhs was spent.

12. Official Language Policy

SAIL continued to pursue vigorously implementation of the Official Language Policy of the Government. Various schemes were introduced to motivate employees to use Hindi progressively in their official work. Training in Hindi stenography and typing was organised which was availed of by a large number of employees. Several competitions were organised, workshops conducted and various attractive incentive schemes introduced with a view to motivate employees to learn Hindi. A Quarterly Journal "Ispat Bhasha Bharti" is also being published in Hindi.

13. Outlook for 1987-88

13.1 SAIL is one of the first public sector enterprises to sign a Memorandum of Understanding with the Government on mutually accepted parameters of performance and certain specified areas of autonomy. The "Annual Performance Plan" for 1987-88 has been made out on these lines. This has led to a clear understanding of accountability and the expectations Government has from SAIL. To ensure that the organisation feels committed to the achievement of the MOU, annual performance plans had been finalised with each of the individual plants. The plants in turn have performance criteria for each of their departments. The spirit and relevance of the MOU has been communicated to a large section of the employees.

13.2 The trend of increase in production at SAIL plants continued to be maintained during the current year also. SAIL plants crossed the seven million tonne mark in the production of crude steel during 1987. Saleable steel production registered an eight percent increase over the last calendar year. On the energy front improvements are noticeable. This is reflected in the coke consumption per tonne of hot metal which has reduced from a level of about 800 kg. in 1985-86 to 760 kg. during April-December, 1987. In addition to increasing production emphasis has also been laid on improving the product mix. Supply of finished steel including rails, hot rolled and cold rolled coils, galvanised sheets has improved by about twenty four per cent over last year. This reflects the awareness that has been created in SAIL with regard to customer service and quality consciousness.

13.3 SAIL steel plants are passing through an interesting and challenging phase of technological consolidation and development. Durgapur Steel Plant modernisation has been approved and the Government has also given "In Principle" approval for modernisation/rebuilding of IISCO. The scheme to modernise Rourkela Steel Plant is under active consideration of the Government. While the debottlenecking schemes at Bhilai and Bokaro are under implementation, studies to expand Bokaro to 4.5 MT are under way. Modernisation of these plants envisage apart from upgradation of technology, considerable improvements in productivity, production costs and quality of products. To ensure timely implementation of these projects, SAIL has reorganised its project wings.

B. Subsidiaries

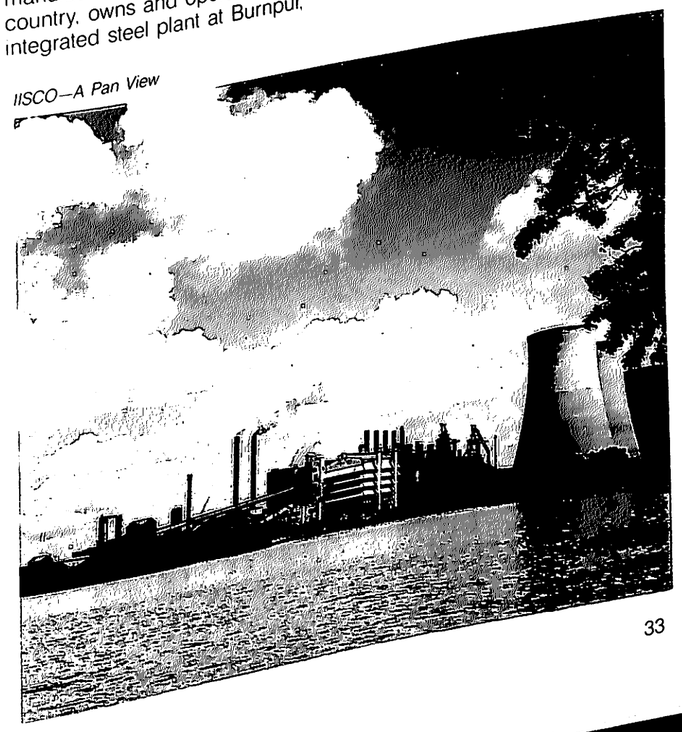
1. The Indian Iron & Steel Company Limited

1.1 The Indian Iron & Steel Company Limited (IISCO), one of the oldest iron and steel manufacturing companies in the country, owns and operates an integrated steel plant at Burnpur, captive iron ore mines at Gua and Manoharpur, captive collieries at Chasnala, Jitpur and Ramnagore, a coal washery at Chasnala and a large foundry complex at Kulti. The management of IISCO was taken over by Central Government on 14th July, 1972 and the shares held by the private parties were acquired by Central Government on 17th July, 1976. The shares held by the public financial institutions etc., were also purchased by Central Government and transferred to Steel Authority of India Limited (SAIL) and IISCO became a wholly-owned subsidiary of SAIL on 30th March, 1979.

1.2 Production Performance

In 1986-87 production of saleable steel at Burnpur Works was 526.7 thousand tonnes. This registered a growth of 5 per cent over 1985-86 and was the highest

IISCO—A Pan View



achieved in last ten years. Production of hot metal at 824.5 thousand tonnes and pig iron at 92 thousand tonnes exceeded the annual targets. During the year better product-mix and significant improvement in coke consumption rate in blast furnaces were achieved.

At Kulti Works production of spun pipes during the year was 51 thousand tonnes which recorded 72 per cent growth over 1985-86. Production would have been still higher but for constraints arising out of depressed market situation. Production of castings at 46 thousand tonnes surpassed the record production of 44 thousand tonnes in 1985-86.

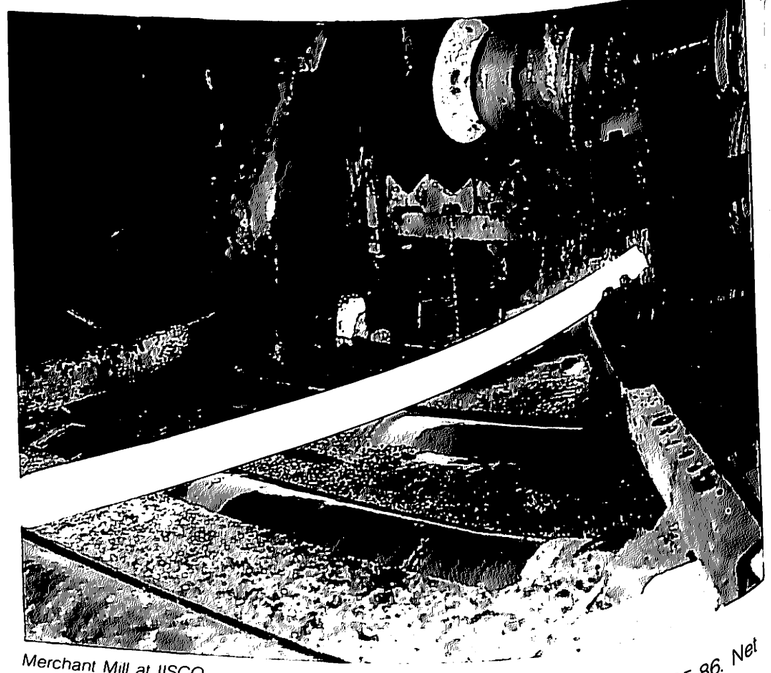
At collieries, production of coal during the year was 559 thousand tonnes. This was marginally higher than that of 1985-86. There was improvement in production at Chasnala Colliery. Due to petering out of reserves in 16A seam, production at Jitpur Colliery dropped. Washery operated with separation of -6mm unwashed fines and this ensured good quality of washed coal.

At Ore mines, production of iron ore lump during the year at 1157 thousand tonnes was a new annual record.

1.3 Projects

During 1986-87 blast furnace No. 4 was relined within the scheduled time at an estimated cost of Rs. 3.75 crores. No. 8 coke oven battery duly rebuilt has been commissioned in December'87.

The major on-going projects in the collieries include the Chasnala upper seam development, balancing facilities for Chasnala Washery and the reconstruction and development of Jitpur Colliery. These projects which are expected to be completed by 1988 and will help raising the quality and



Merchant Mill at IISCO

quantity of coal and coal products. Letter of Intent for rebuilding of No. 9 coke oven battery was issued to MECON on a turnkey basis in January 1987 with a completion Period of 21 months from the date of start of dismantling work. Introduction of KORF technology, in one pair of Open Hearth Furnaces to improve productivity and reduce energy consumption is in progress.

An agreement was signed with Messrs PONT-A-MOUSSON, France to convert the existing Spun Pipe Plant No. 2 for manufacture of ductile iron spun pipes having technical superiority over cast iron spun pipes. Project for modernisation of old foundry at Kulti is expected to be completed by March, 1988.

1.4 Financial Results

During 1986-87 turnover was Rs. 449.66 crores which was seven per cent higher than 1985-86. Net loss after charging depreciation and interest was Rs. 81.91 crores—as against Rs. 60.99 crores in 1985-86. The increase in loss was mainly due to escalations in input prices—increase in railway frieght from 1st December 1986, cost of raw materials, prices of consumable, Stores & Spares, higher salary & wages due to increase in dearness allowance, ad-hoc relief to the executives from 1st January 1986 and provision towards wage revision for non-executives from 1st September 1986.

1.5 Industrial Relations

Industrial relations situation during the year was by and large peaceful. Overtime was completely eliminated. Concerted efforts were made to eliminate shift change-over delays from key areas, control absenteeism and improve work practices.

2. IISCO-Ujjain Pipe & Foundry Co. Ltd.

2.1 IISCO-Ujjain Pipe & Foundry Company Limited (STISCON), a wholly-owned subsidiary of The Indian Iron & Steel Company Limited, manufactures cast iron spun pipes in the range of 80 mm to 350 mm dia sizes.

2.2 Production Performance

During 1986-87 STISCON produced 36 thousand tonnes of cast iron spun pipes as against 33 thousand tonnes during 1985-86 Sales despatches during the year were 33 thousand tonnes. Apart from market shrinkage for C.I. spun pipes STISCON continues to face stiff competition from manufactures of alternative low cost products like AC, RCC and PVC pipes.

2.3 Projects

Change-over from furnace oil to uses of LSHS was completed in June 1986. A 2 MT medium frequency furnace for super-heating the cupola metal was commissioned in September, 1987. Possibility of diversification into high value alloy iron, S.G. iron and steel castings areas is under examination.

2.4 Financial Result

During 1986-87 STISCON incurred net loss of Rs. 24.51 lakhs compared to net profit (after provision for taxation) of Rs. 24.80 lakhs during 1985-86. The loss was mainly due to lower sales and higher wages.

2.5 Industrial Relations

Tripartite Wage Agreement for a period of 4 years from 1st October, 1985 was signed in July, 1987.

3. Maharashtra Elektrosmelt Limited

3.1 General

Maharashtra Elektrosmelt Limited (MEL) became a subsidiary of SAIL with effect from 18th October, 1986. The current financial year, being the transition period, consists of nine months from 1st July, 1986 to 31st March, 1987.

3.2 Financial Review

MEL achieved a turnover of Rs. 28.61 crores during the nine months as compared to Rs. 25.56 crores during the entire previous year, an increase of 49.23% on pro-rata basis. The net profit at Rs. 45.22 lakhs was marginally better than Rs. 59.04 lakhs for the previous year.

3.3 Production and Sales Review

Ferro manganese production and sales during the nine months period were 41,470 tonnes and 40,734 tonnes respectively. Inspite of constraints in availability of high grade manganese ore, higher level of production could be achieved. Realisation from processing and sale of by-products and waste raw materials showed a marked increase during the year. The Company realised Rs. 1.13 crores from the by-products like coke-rejects, ferro manganese slags, ferro manganese fines, etc..

3.4 Capital Schemes

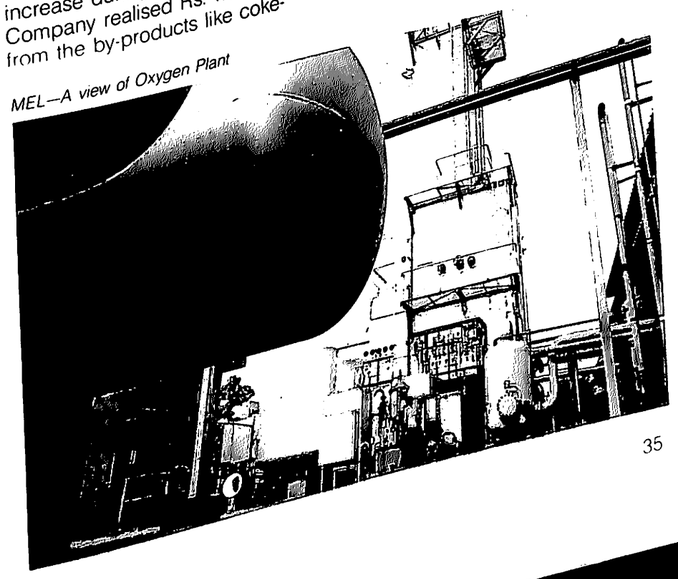
MEL is soon to incorporate CLU Technology from Messrs Uddeholm, Sweden. The know-how and the engineering packages had been received from Messers Uddeholm. Orders had been placed for major indigenous equipments such as boilers etc. Once this technology is established, its implemention in other SAIL Plant's will be taken up.

3.5 Research & Development

It is proposed to develop MEL as a medium sized steel plant with suitable upstream and downstream integration facilities in due course. It was also planned to introduce the most sophisticated technologies like thin slab casting.

Various new technologies like combined blowing in LD converters, coke breeze injection in cupola, etc. were being examined. MEL was also considering possibilities of installing facilities for manganese ore briquettes, high pressure self-fluxed manganese ore sintering etc.

MEL—A view of Oxygen Plant



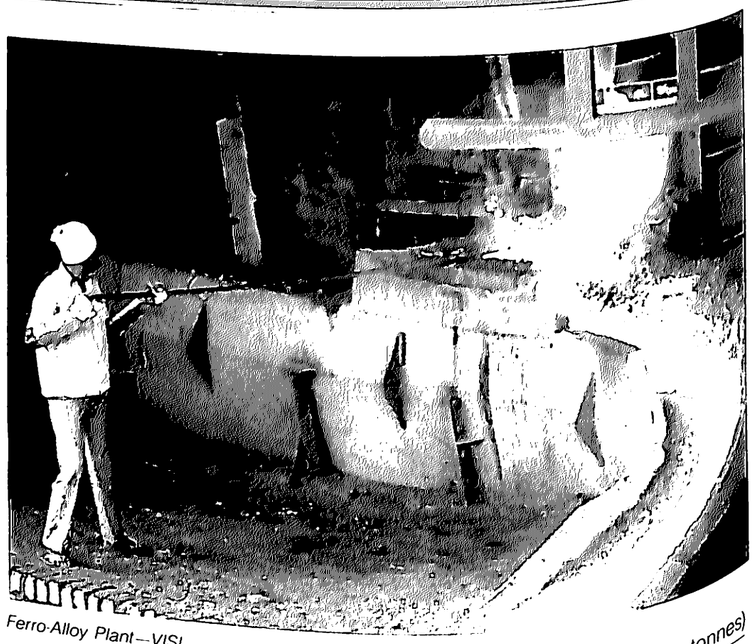
Visvesvaraya Iron and Steel Limited

The Visvesvaraya Iron & Steel Limited (VISL) is a major producer of Special and Alloy Steels with a capacity of 77,000 tonnes per annum. In addition to special steels, it produces Mild Steel, Cement, Ferro Alloys, Castings, Pig Iron, etc.

As on 1-4-1987 the authorised capital of the Company was Rs. 75 crores of which Rs. 46.40 crores is subscribed and paid-up. 60 per cent of the paid-up capital i.e. Rs. 27.84 crores was held by the Government of Karnataka and 40 percent i.e. Rs. 18.56 crores by the Steel Authority of India Limited.

Production

The installed capacity, production during 1986-87 and estimated production during 1987-88 of the plant are as under:-



Ferro-Alloy Plant—VISL

(In tonnes)

Sl. No.	Products	Installed Capacity Tonnes/ annum	1986-87 Actual	1987-88 (upto Dec. 1987) Budget	1987-88 (upto Dec. 1987) Actual Production
1	2	3	4	5	6
1.	**Pig Iron**	1.80.000	4.413		547
2.	**Steel Ingots**				38.594
	a)Mild Steel Ingots	41.000	5.456	400	39.141
	b)Alloy & SS Ingots	1.39.000	48.706	45.840	
	Total	1.80.000	54.162	46.240	1.736
3.	**Saleable Steel**				26.839
	a)Mild Steel	48.000	10.689	13.870	28.575
	b)Alloy & Spl. Steel	77.000	41.118	30.285	
	Total	1.25.000	51.807	44.155	8.893
4.	**Ferro Alloys**				4.919
	a)Ferro Silicon	20.000	4.066	9.170	13.812
	b)Other Ferro Alloy	3.800	4.455	7.921	
	Total	23.800	8.521	17.091	116
5.	**Steel Castings**	2.500	0.227	340	1.859
6.	**CI Castings**	15.600	3.352	3.755	
7.	**CI Spun Pipes**	17.000			1.636
8.	**Refractories**	9.600	6.204*	2.025	202
9.	**Cement**	96.000	20.883		

*including chrome ore brick bats

Financial Performance

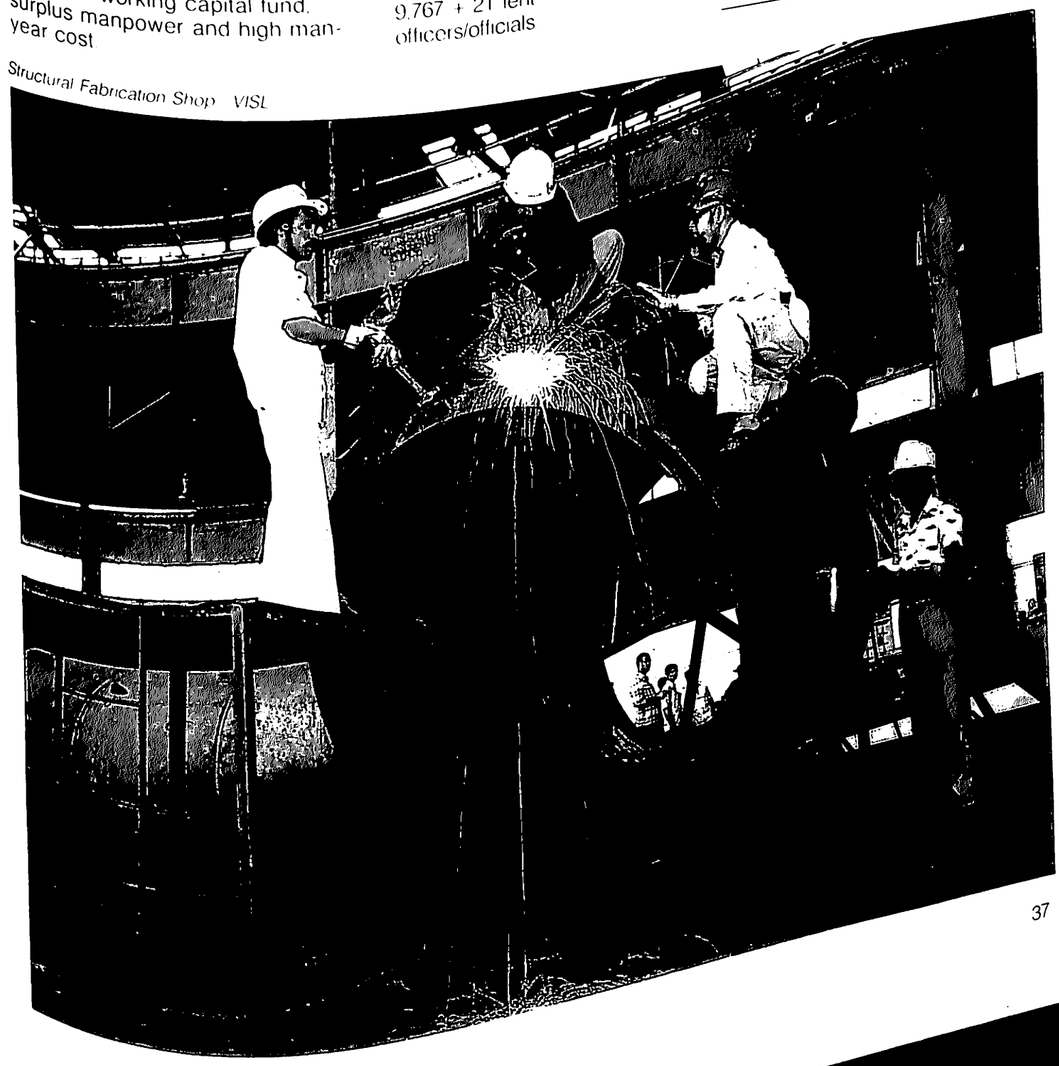
VISL started incurring losses from 1981-82 with a nominal loss of Rs. 94 lakhs. Losses became heavy from 1982-83 onwards. Accumulated losses as on 31.3.87 amounted to Rs. 140 crores. The reasons for losses are inadequate power supply, hike in power tariff, loss of production and income due to lack of working capital fund, surplus manpower and high man-year cost.

In order to make the plant viable, the management is concentrating on the production of items which are less power intensive and of high value. The high power intensive mills have been stopped, such as Electric Pig Iron furnaces. The ferro Alloy Plants are being operated to meet the requirement of ferro silicon and ferro chrome of SAIL, even though they are high power intensive.

Man-power

Man-Power	SC	ST	Ex-servicemen
Total	1,151	78	162
9,767 + 21 lent officers/officials			

Structural Fabrication Shop VISL



Sponge Iron India Limited

1. The demonstration Sponge Iron Plant of the Sponge Iron India Limited (SIIL) was initially set up with an annual capacity of 30,000 tonnes with the assistance of UNDP/UNIDO to establish the techno-economic feasibility of producing sponge iron suitable for steel making in Electric Arc Furnaces from lump iron ore and non-coking coal available in the Country. The plant went into regular operations from November, 1980. The plant is designed and instrumented in a manner which would facilitate its use both for commercial production and for R&D work. The Company has been successful in operating the plant at high levels of capacity utilisation. The sponge iron produced is of good quality, very stable, free from fire hazard and can be transported and stored with some precautions.

Considering the successful operation of the demonstration plant, the expansion of the plant to double its capacity to 60,000 TPA at an estimated cost of Rs. 8.55 crores was sanctioned. The work on the expansion of the project commenced in November, 1982. The erection work was completed by March, 1985 and the Unit went into regular production from October, 1985.

The plant is equipped with sophisticated equipment and its Test Centre has facilities for carrying out basic and applied research in the field of direct reduction. SIIL is also registered as an Industrial Consultant by UNIDO for test work and project feasibility studies in the field of Sponge Iron Technology.

2. Finance

Against an authorised capital of the Company Rs. 13 crores on 31.3.1987, the paid up capital was 12.39 crores. Shares amounting to Rs. 11.56 crores are held by the Government of India and the balance (Rs. 0.83 crores) by the Government of Andhra Pradesh.

3. Production

Taking into account the period for which the plant was used for R&D work, a target of 54,000 tonnes of saleable sponge iron was fixed for 1986-87 against which actual production was 51,545 tonnes, thus attaining 85% capacity utilisation.

The production target was fixed at 55,000 tonnes for 1987-88 on the assumption that power will be available in full. However, severe power cut by Andhra Pradesh State Electricity Board (APSEB) have affected production seriously during this year. Inspite of power cuts, production of 31,367 tonnes was attained upto January 1988 as against the target of 38,400 tonnes. It is anticipated that production of about 43,000 tonnes would be achieved during the year, representing 75% of capacity utilisation.

4. Sales and Profitability

During the year 1986-87, 41,065 tonnes of sponge iron was sold, fetching sales revenue of Rs. 822 lakhs. During the year 1987-88, sales are anticipated at 45,000 tonnes, with total sales realisation of Rs. 924 lakhs.

5. Briquetting Plant

In the process of manufacture of sponge iron, considerable amount of fines in the size range of 3 mm and below are generated, which were dumped as waste products since electric furnace units were reluctant to use these fines due to problem of lower yield and high refractory wear. In order to utilise the fines and thereby further improve the economics of the plant operation, it was considered necessary to agglomerate the fines into briquettes with a suitable binder. A briquetting plant has been installed at a cost of Rs. 125 lakhs. After completing trial runs, the plant (annual capacity 20,000 tonnes) has gone into regular operation from October 1987. The briquettes produced in this plant are now in great demand by users and are selling at a price higher than regular sponge iron.

6. Joint Venture for a Commercial Sponge Iron Plant

The Company is contemplating setting up of a commercial sponge iron plant (capacity 100,000 tonnes per annum in the Bellary-Hospet region of Karnataka as a joint venture with the Karnataka State Industrial Investment and Development Corporation. Linkage of coal and iron ore for the proposed project is being considered. Discussions have been held with the Central Financial intitutions for funding the project.

7. Test Work & Consultancy

In the field of consultancy services the company has carried out an assignment of testing of iron ore from Nepal under a UNIDO Project.

A 3-member team from SIIL visited Africa on the basis of an assignment received from the Ministry of External Affairs for identification of potential sites for establishment of Sponge Iron Plants. The team has completed its mission and have tentatively selected suitable sources of iron ore and coal in Zambia, Tanzania, Uganda, Kenya and Mozambique. The samples of raw materials collected by the team are being shipped to India for undertaking

REPORT 1987-88
MINISTRY OF STEEL AND MINES
DEPARTMENT OF STEEL

ERRATA

Page	Column	Para	Table No./ line	In place of	Please read as
19	1	2.2	4th line	materials become	materials have become
19	3	1	9th line	according to then revised system	according to the revised system
20	3	—	2nd line from top	neglible	negligible
20	3	1	3rd line from bottom	North-Eastern sector or Jammu	North-Eastern Sector and Jammu
21	2-3		Table column 5 against 1987-88	163**	163***
21	2-3		under table 2nd line from bottom	Supplied durect	Supplied Direct
23	1	4.2	1st line	of out	out
24	3	5	1st line	have	has
24	3	5	9th line	Iron Steel Control	Iron and Steel Control
29	1	4.2	5th line	1987-88	1986-87
29	1	4.2	8th line	exported	exported to U.S.A.
29	1	4.2	13th line	on 1987	in 1987
41	3		2nd line	Iron	Iran
60	3		heading of table	Performancer	performance
66	3	2	17th line	Liguid Steel	Liquid Steel
79	3	4	heading	Cappital	Capital projects
81	2		13th line	mimimum	minimum
81			Column 5 of the	51.1	53.1
83	1		table 2	GC/GC	GP/GC
86	3	4	14th line	energy Co.	energy
93	3	7	5th line	25%	30%

necessary test work to establish suitability for production of sponge iron.

The Company also secured a contract for providing technical and training services for the establishment of a sponge iron plant in Vietnam.

8. Research and Development

During the year emphasis was laid on R&D work, oriented towards the improvement in the quality of raw materials, productivity and technology development. An important item of work taken up was with respect to improvement in the quality of non-coking coal received from Singareni Collieries. The study sponsored by the Company and carried out at the National Metallurgical Laboratory, Madras, (NML) established the feasibility of improving the quality of coal to a considerable extent. The Company also completed R&D work with respect to production of special quality, low phosphorus and low sulphur pig iron suitable for special applications, with the assistance of NML, Jamshedpur. The use of highly reactive lignite type of coal, both for regular feed and injection, was tried during the year. R&D work was also taken up for promoting use of sponge iron in Induction Furnaces.

9. Manpower

A break-up of the total number of employees of the Company as on 31.12.87 is furnished below.

Sl. No.	Groups		Total No. of Employees	S.C.	S.T.	Ex-Servicemen	Physically Handicapped	Female
1.	Group	(A)	57	4	—	—	—	—
2.	Group	(B)	19	1	—	—	1	17
3.	Group	(C)	247	28	15	4	5	4
4.	Group	(D)	153	38	24	1	—	2
5.	Group (Sweepers)	(D)	5	2	—	—		
	Total		481	73	39	5	6	23

10. Implementation of Use of Hindi

During the year vigorous efforts were made for progressive use of Hindi in official work of the Company. During the year, two review meetings were taken by Chairman-cum-Managing Director and various measures were identified and implemented.

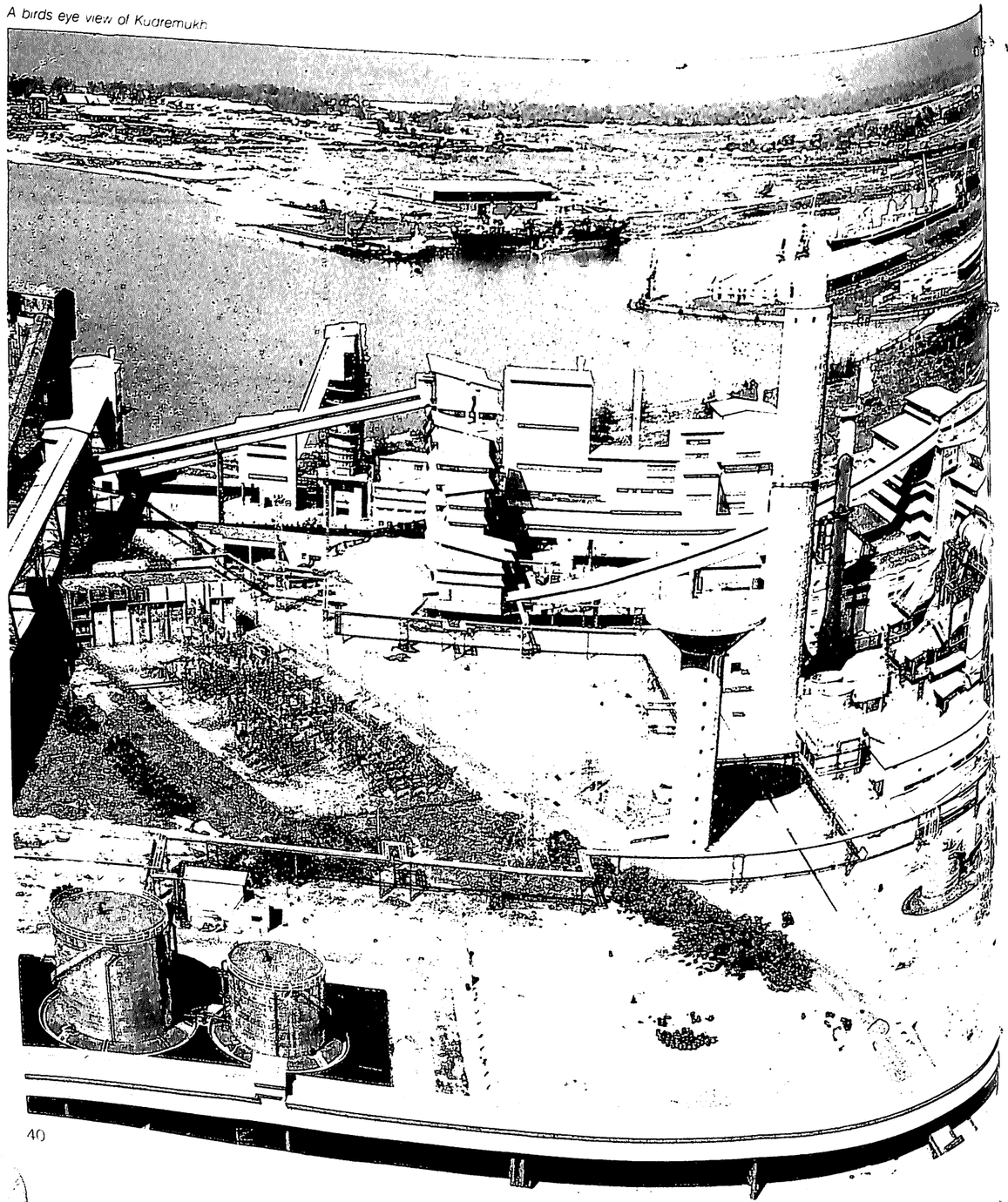
11. Anti-Pollution Measures

The plant has anti-pollution equipment for controlling air and water pollution to international standards. Stack emissions and effluents are regularly analysed to ensure conformity to prescribed standards.

During the year periodical checks were carried out on the efficiency of the systems and, wherever necessary, rectification and repair work was taken up and completed expeditiously. As a part of the maintenance programme, repairs were attended to the concrete waste-gas stack and corroded refractory bricks were replaced.

The two 30,000 TPA Units of SIIL

A birds eye view of Kudremukh



Kudremukh Iron Ore Company Limited

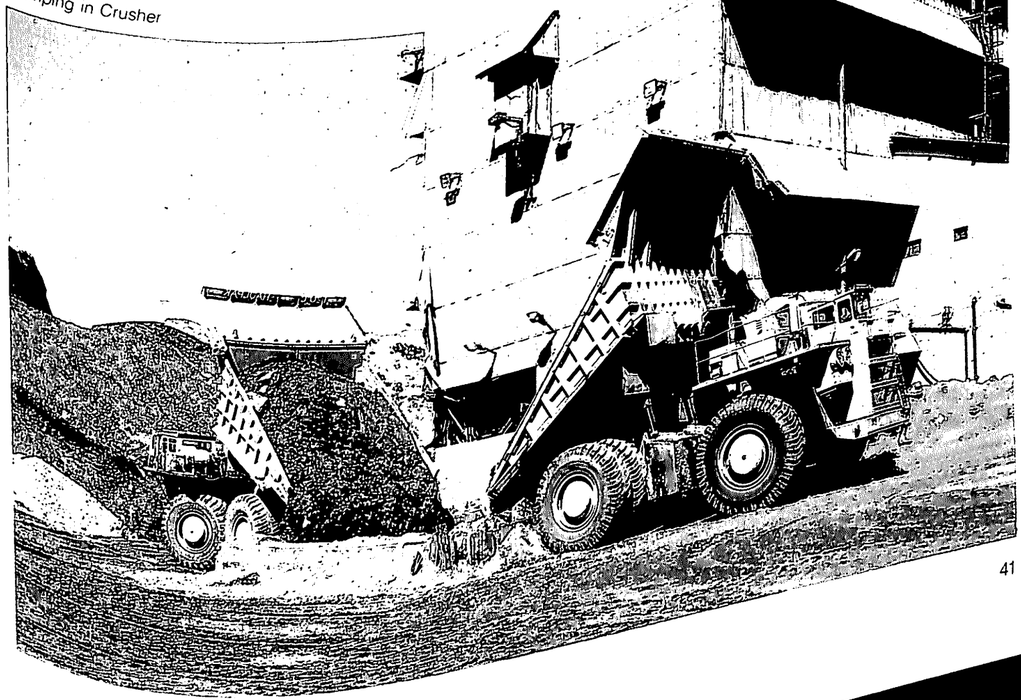
1. General

The Kudremukh Iron Ore Company Limited (KIOCL) was established in April, 1976 for the management of the Kudremukh Iron Ore Project. The Project with an annual capacity of 7.5 million tonnes of iron ore concentrate was implemented on the basis of a Financial Agreement and a Sale & Purchase Contract with Iran concluded in November, 1975. The Sale & Purchase Contract stipulated that Iran would purchase 150 million tonnes of iron ore concentrate from this Project over a period of 21 years commencing August, 1980. Under the Financial Agreement, Iran agreed to extend a loan not exceeding US$ 630 million to meet the cost of the project and related infrastructure. Against this promised loan, Iran paid only US$ 255 million and then stopped further disbursements. Iran has failed to fulfil their obligations under the Agreement in that they have not paid the balance amount of the loan and have also indicated their inability to lift the contracted quantity of the concentrate due to non-favourable conditions existing in that country. However, the Project was completed in August, 1980, as per schedule with the required funds being provided by Government of India and Kudremukh Iron Ore Company Ltd; started locating alternate buyers for the sale of concentrate. The total expenditure incurred on the project is Rs. 517 crores. Negotiations are being held with Iran to resolve the outstanding issues.

2. Pellet Plant

Keeping in view the uncertainty in the off-take of the material by Iron, Government sanctioned setting up of a Pellet Plant of 3 million tonnes per year capacity (to be located in Mangalore) for the conversion of a part of Kudremukh's iron ore concentrate production into pellets in May, 1981. This was because pellets, which are required as a feed material both for use in Blast Furnaces in Steel Plants as well as by gas-based Sponge Iron plants, were expected to have a better marketability than iron ore concentrate and also would be a product with higher value added content. The final cost of the Project has been estimated to be Rs. 118.35 crores. This Project has since been completed and commercial production commenced in April, 1987.

Dumping in Crusher



3. Finance

The authorised capital of the Company is Rs. 675 crores. The paid-up capital as on December 31, 1987 is Rs. 634.51 crores.

4. Production

4.1 Iron Ore Concentrate

The level of production of Kudremukh is tied to the level of exports, which in turn depends on the volume of orders booked. In 1986-87 KIOCL produced 34.58 lakh tonnes of iron ore concentrate. In the period April-December, 1987, 27.90 lakh tonnes of iron ore concentrate has been produced. The total production of concentrate during 1987-88 is expected to be nearly 40 lakh tonnes. For 1988-89 the Company has planned production of 47 lakh tonnes of concentrates.

4.2 Iron Ore Pellets

During trial runs KIOCL produced 1.85 lakh tonnes of pellets in 1986-87. In the period April-December, 1987, since the plant has gone into commercial production, 5.40 lakh tonnes of pellets have been produced. During the year 1987-88 about 8.5 lakh tonnes of pellets are expected to be produced. For the year 1988-89, production of 12 lakh tonnes of pellets has been planned.

5. Exports

As a result of persistent marketing efforts, KIOCL has made steady progress in the sale of their products. In 1986-87, 33.62 lakh tonnes of iron ore concentrate and 1.55 lakh tonnes of pellets were exported. In the period April-December, 1987, 21.75 lakh tonnes of concentrate and 5.07 lakh tonnes of pellets have been exported. About 32 lakh tonnes of concentrate and 8.5 lakh tonnes of pellets are expected to be exported in the year 1987-88. For 1988-89, the total level of exports are planned to be around 4.7 million tonnes with the share of pellets increasing further to nearly 25% of the total product sale.

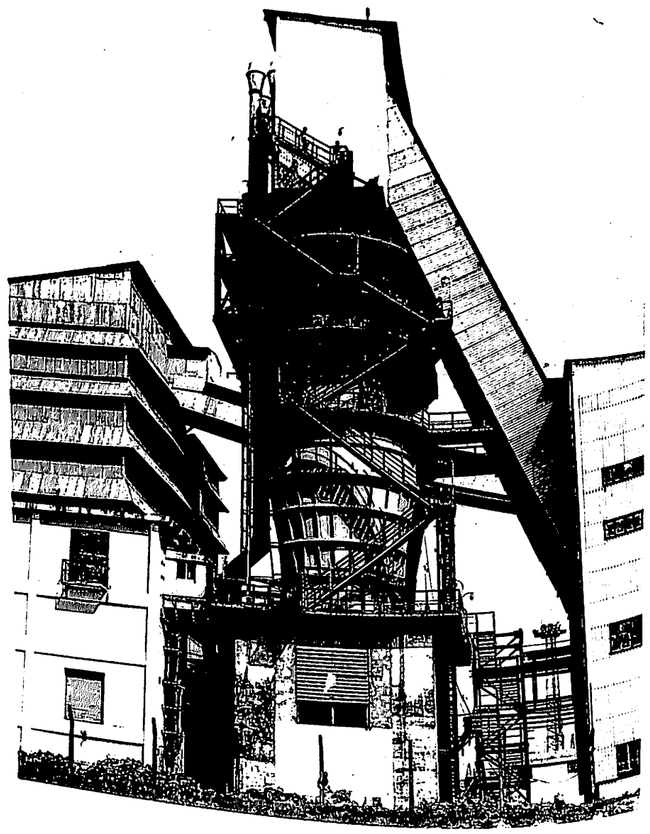
6. Working Results

In 1986-87 the Company suffered a net loss of Rs. 15.27 crores. The loss was mainly due to the restricted production of iron ore concentrate on account of failure of Iran to take the contracted delivery of the material and lack of other buyers in the international market. The Company is likely to incur a loss of about Rs. 28 crores in 1987-88.

7. Energy Conservation and Cost Reduction Measures

A tunnel has been constructed, along with other connected facilities including a pipeline, so as to convey water from the Lakhya Dam to the Concentrator plant by gravity system in place of pumping arrangement, which has resulted in saving of electrical energy and reduction in operation costs. Some major modifications to the plant have also been carried out to increase the throughput.

Pellet Plant



8. Manpower

The details of employees in the Company as on 31st December, 1987 are as follows.

Group	No. of Employees		SC		ST		Ex-Servicemen	
	Male	Female	Male	Female	Male	Female	Male	Female
A	*393	*29	*29	2	2	*1	7	—
B	63	11	2	—	—	—	121	1
C	*1335	81	*121	2	*13	1	5	—
D	214	13	45	3	30	—	—	—
D (Sweepers)	31	8	26	8	3			
Total	*2036	*142	*223	15	*48	*2	133	1

*includes 4 trainees

9. Employees Participation in Management

The Company has set up 10 Shop-level Councils and 2 Joint Councils at the Apex Level. These Councils meet periodically to discuss measures for improving production and productivity. In addition, the Company has constituted Works Committees at its Kudremukh and Mangalore establishments comprising representatives of both management and workmen. These Committees deal with matters of general interest.

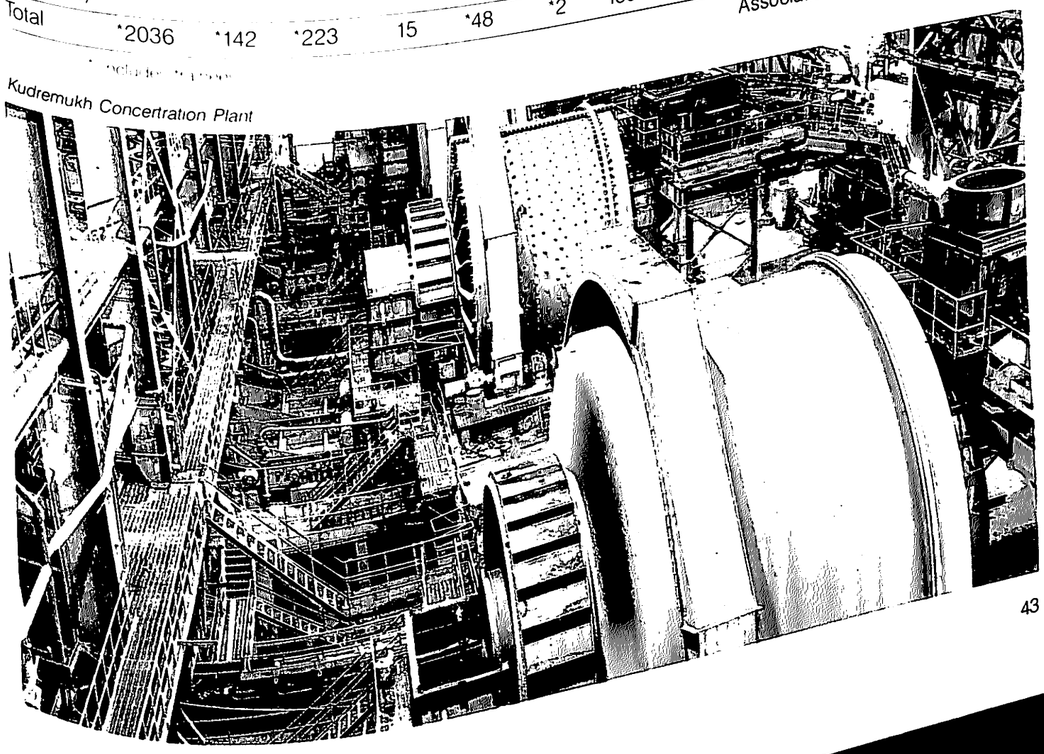
10. Contract Labour

KIOCL, as a matter of policy, does not employ contract labour. Only jobs of casual nature are got done through contractors. In such cases, provisions of Contract Labour (Regulation and Abolition) Act, 1970, and obligations under the Act as principal employer are implemented.

11. Safety Measures

A Safety Department is functioning independently. In addition, every department in KIOCL has Safety Committee which meets once a month. Safety Campaign is observed for a week every year. Safety rules have been compiled for each work area considering all safety aspects. All employees have been provided with these booklets. The Company has received shields and medals for the best safety measures adopted from the Mines Safety Association.

Kudremukh Concertration Plant



Manganese Ore (India) Limited

1. Manganese Ore (India) Limited is the largest producer of high grade manganese ore in the country. The Company originally started as the Central Provinces Prospecting Syndicate in early 1896. Later, it became C.P. Manganese Ore Company Limited (registered in London). The Company was incorporated under the Indian Companies Act, 1956, in June, 1962. It became a fully owned Government Company in October 1977. The equity of the Company is presently held by the Government of India, Government of Madhya Pradesh and Government of Maharashtra in the ratio 77.8, 9.5: 12.7 respectively, including share money pending allotment. High grade manganese ore is used for producing ferro manganese, which is used in the manafucture of steel.

2. Finance:

The authorised capital of the Company is Rs. 17 crores and the paid up capital was Rs. 8.28 crores as on 31st December, 1987.

3. Production & Sales:

In 1986-87 Manganese Ore (India) Ltd. produced 4.79 lakh tonnes of manganese ore of various grades from its various mines as against the target of 4.55 lakh tonnes. From April 1987 to December 1987, the Company produced 3.56 lakh tonnes of manganese ore as against a target of 3.58 lakh tonnes. The marginal shortfall is likely to be made up in the last quarter of the year and the annual target of 4.89 lakh tonnes for 1987-88 is likely to be achieved. The Company has exported 0.155 lakh tonnes of Manganese Ore during the period April-December 1987.

Sales during the period April 1987 to December 1987 were 3.292 lakh tonnes valued at Rs. 1629.27 lakhs. The anticipated domestic sales during January-March 1988 are valued at Rs. 916.43 lakhs from 1.80 lakh tonnes. The targetted sales for 1987-88 is valued at Rs. 2543.36 lakhs from sale of 5.09 lakh tonnes of manganese ore. This target is expected to be achieved.

Balaghat Mine View

4. Working Results:

During the year 1986-87, the Company earned a profit of Rs. 48.40 lakhs, after providing for depreciation (Rs. 139.86 lakhs) and Interest (Rs. 106.07 lakhs), as against a loss of Rs. 10.54 lakhs in the previous year. Since the Company had earned a profit, dividend on preference shares, including arrears for the years 1983-84, 1985-86 and 1986-87, was paid during the year. The targetted profit for 1987-88, is Rs. 12.44 lakhs.

5. Capital Schemes:

Deepening of Holmes Shaft at Balaghat Mine of the Company has been completed. A Crushing & Screening Plant at Balaghat Mine has also been commissioned. The Sinking of a Vertical Shaft at Chikla Mine and a Main Hoisting Shaft at Ukwa Mine have been taken up. The establishment of an Electrolytic Manganese Dioxide Plant is under active consideration. The Company also proposes to take up the production of ferro manganese through Plasma Furnace route

6. Safety Measures:

Over the years, ore deposits in MOIL's areas of operations near the surface have been gradually getting depleted. Workings are extending deeper and extraction is increasingly through underground workings. Deeper workings require, extra vigilance with regard to support system, ventilation and efficient filling of the voids arising out of extraction of ore. Even in respect of opencast workings, the depth had increased and hence judicious use of earth-moving machinery has been resorted to to ensure safe and efficient workings. Emphasis is laid on training and re-training of employees to face the challenges associated with underground workings. In addition, mine workings are inspected by staff members of Pit Safety Committees, Workmen Inspectors, Safety Officers and the Chief Safety Officer. Safety Weeks are observed and exhibitions are held to inculcate safety habits to ensure safe working. Safety Committee Meetings are held during which any unsafe acts committed/observed and accidents taken place are discussed to avoid recurrence. These combined efforts have resulted in improvement of overall safety record of the company.

7. Workers Participation in Management:

Works/Canteen/Grievance Committees are functioning satisfactorily at each unit. The Members of these Committees are from different sections of the employees. During the Committee Meetings they are encourged to put forth problems, along with suggestions if any, to ensure efficient functioning of different Welfare Schemes at the units. Various Consultative forums are functioning at different units of the Company to ensure effective participation of employees in management of affairs of the Unit.

Shop/Plant level Committees are actively functioning at the different units. Problems which cannot be solved at the Unit level are referred to the Apex Body at the Corporate level.

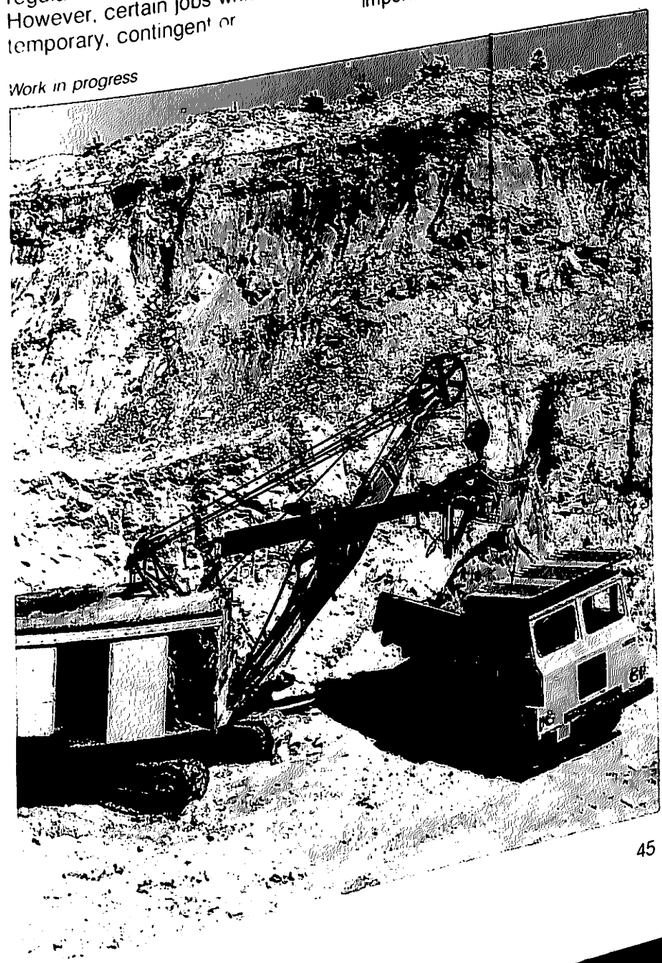
8. Contract Labour:

Casual/contract labour is not employed on jobs of permanent, regular and continuous nature. However, certain jobs which are of temporary, contingent or intermittant nature like transportation and railing of ore and supply of filling materials, are managed by casual/contract labour. Also in one of the small mines, because of limited ore reserves spread over a wide area, some contract labour is engaged. Total number of such casual/contract labour employed by the company is 1,759 as on 31.12.1987.

9. Progressive Use of Hindi:

MOIL attaches a lot of importance to the progressive use

Work in progress



of Hindi in its various units and at Head Office. Raj Bhasha Adhikari, assisted by supporting staff, is looking after these functions. Hindi books are being progressively added to the Library and employees are encouraged to make use of them. Periodical Meetings with the senior executives of the Company are held to review the progress relating to the use of Hindi. MOIL was awarded a trophy by the Ministry of Steel & Mines (Department of Steel) for doing good work in Hindi.

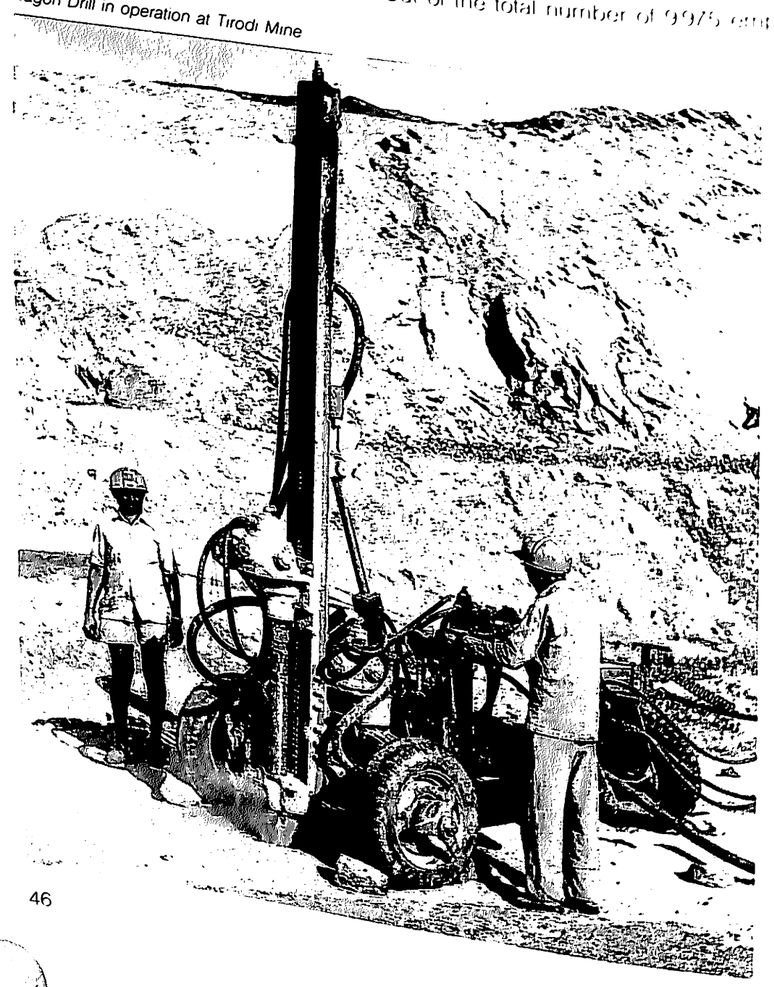
10. Personnel:

The details of employees as on 31.12.1987 are indicated below

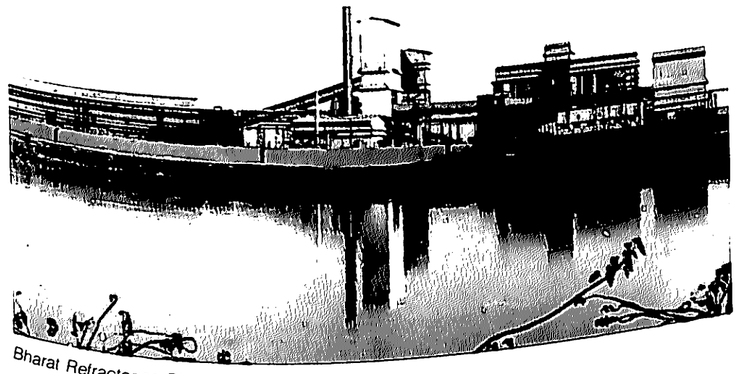
Group			Others	Total
A			160	166
B			162	199
C			1016	1528
D	257	255	4017	7985
Others	1376	2592		97
Total	97			9975
	1754	2866	5355	

Out of the total number of 9975 employees, 2353 are female

Wagon Drill in operation at Tirodi Mine



Bharat Refractories Limited



Bharat Refractories Plant at Bhilai

1. The Refractory Plant at Bhandaridah was acquired by the Government of India under the provisions of the Asian Refractories (Acquisition of Undertaking) Act, 1971, and was managed on behalf of the Government of India by the erstwhile Bokaro Steel Limited upto 21.7.1974. On 22.7.1974 a separate Company in the name and style of "Bharat Refractories Limited" was incorporated as a subsidiary to the Bokaro Steel Limited. Subsequently, under the provisions of the Public Sector Iron and Steel Companies (Restructuring and Miscellaneous Previsions) Act, 1978, Bharat Refractories Limited ceased to be a subsidiary of Bokaro Steel Limited/Steel Authority of India Limited, and the Company was placed under the direct administrative control of Department of Steel with effect from 1st May, 1978. The following undertakings were also transferred to and vested in Bharat Refractories Limited from the above date.

a) Refractories Plant at Ranchi Road (now known as Ranchi Road Refractories Plant), which had earlier been taken over by erstwhile Hindustan Steel Limited, along with its captive sillimanite mines in Meghalaya, known as Nengstoin Sillimanite Mines.

b) The Refractories Plant of Bhilai Steel Plant of SAIL located at Bhilai (now known as Bhilai Refractories Plant.

India Firebricks & Insulation Company Limited, formerly a subsidiary of Steel Authority of India Limited, was made a subsidiary of BRL.

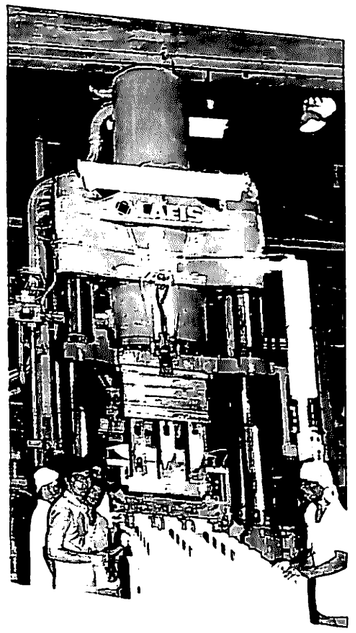
All the units of the Company, including the subsidiary company (IFICO) but with the exception of Bhilai Refractories Plant, were taken over as sick units from the private sector.

2. Capital Structure

The authorised share capital of the Company is Rs. 40 crores against which the paid up capital is Rs. 38.59 crores as on 31st December, 1987. Total outstanding loans, together with interest accrued thereon, as on 31.12.1987 amounts to Rs. 58.54 crores. The capital investment of the Company and its subsidiary as on 31st December, 1987 is as below:-

(Rs. in lakhs)

Name of Unit	Capital investment as on 31.3.1987	Capital Expenditure during April to Dec.'87	Total (upto Dec. '87)
Bhandaridah	683.81	124.68	808.49
Ref. Plant (BHRP)	176.42	103.00	279.42
Ranchi Road Ref.		39.39	4941.10
Plant. (RRRP)	4901.71		
Bhilai Ref.		11.27	143.22
Plant. (BRP)	131.95	6.53	47.96
Pithoragarh	41.43		
Magnesite			960.58
Project (PMP)		69.41	87.10
Head Office	891.17	4.07	7267.87
India Firebricks	83.03	358.35	47
and Insu.Co. Ltd.			
(IFICO)	6909.52		
N.S. Mines			



4. Financial Performance

During 1986-87 [illegible] incurred a net loss of Rs. [illegible] lakhs after providing for depreciation of Rs. 252.15 lakhs. During 1986-87 the Government [illegible] interest holiday and [illegible] the net loss does not [illegible] the incidence of interest. The Plant-wise position about results of performance was as follows:

Bhandaridah Refractories Plant	Rs. ( ) 33.91 lakhs
Ranchi Road Refractories Plant	Rs. ( ) 53.29 lakhs
Bhilai Refractories Plant	Rs. (+) 11.87 lakhs
	Rs. ( ) 75.33 lakhs

During 1987-88, the Company is likely to incur a net loss of Rs 555.40 lakhs after providing for interest and depreciation (including DRE) to the tune of Rs 389.61 lakhs and Rs. 334.71 lakhs respectively. The plant wise break up of the likely loss as being projected is as under:-

(Rs. in lakhs)

Name of the Unit	Loss likely to be incurred
Bhandariah Refractories Plant	86.97
Ranchi Road Refractories Plant	104.78
Bhilai Refractories Plant	363.65
Total	555.40

* includes actual loss incurred till December, 1987 and anticipated loss for the period January to March, 1988.

3. Production Performance

The production performance of the various units of the Company as well as subsidiary, IFICO, during the years 1986-87 and 1987-88 is given below:-

(in tonnes)

Name of Unit	Production of bricks including mass and mortar	
	1986-87	1987-88
Bhandaridah Refractories Plant	16,431	18,780
Ranchi Road Refractories Plant	4,431	5,404
Bhilai Refractories Plant	33,498	35,546
Total of Bharat Refractories Limited	54,360	59,730
India Firebricks and Insulation Company Ltd.	31,276	32,175 (*)

(*) as projected

During 1986-87, the subsidiary company, IFICO incurred a net loss of Rs. 171.42 lakhs after providing for interest and depreciation to the tune of Rs 149.06 lakhs and Rs. 44.18 lakhs respectively. During 1987-88, the subsidiary is likely to incur a net loss of Rs. 173.97 lakhs after providing for interest and depreciation amounting to Rs 158.92 lakhs and Rs. 51.31 lakhs respectively.

5. Financial Relief Granted by the Government

The Government has granted waiver of all outstanding interest on Government loans as on March 31, 1986, interest holiday for the year 1986-87 and waiver of non-plan loan of Rs. 720 lakhs.

In addition, the Government has allowed consolidation of all plan loans oustanding as at 1.4.1987 repayable over a period of 15 years commencing from 1987-88 and carrying an interest @ 10% per annum. The Government has also granted moratorium on payment of interest upto 1989-90 and the accumulated interest from 1987-88 is to be paid during the currency of loan in equal instalments together with the current interest from 1990-91 onwards.

6. Product Diversification

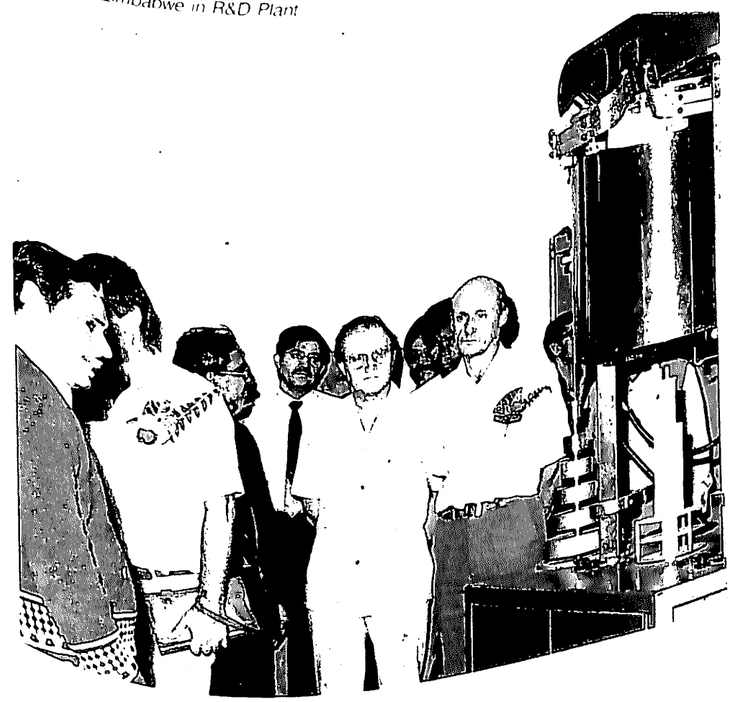
For the production of sophisticated refractories conforming to very stringent specifications of the steel plants as also import substitution of certain items, the Company has already entered into a technical collaboration with M/s. Kawasaki Refractories Company Limited Japan. During the year 1986-87, Bhilai Refractories Plant achieved a significant breakthrough by successfully producing Magnesia-carbon bricks fulfilling the stringent quality parameters required by the steel plants, with the know how acquired through the Japanese collaboration. This product has since been commercialised.

Another item covered under the collaboration agreement with Kawasaki Refractories Company Limited, Japan is Cast-Mix for steel ladles. This item has since been developed at the subsidiary company, IFICO. IFICO is also engaged in developing one more item, namely, Refractories for sliding Gate Systems under the same collaboration.

In order to strengthen collaborative efforts aiming at development of new products in the field of refractories, the Company has already entered into two agreements with Research & Development Centre for Iron & Steel Industry (RDCIS) of Steel Authority of India Limited (SAIL). A monolithic item namely, RAD-GUN has since been developed by Bhilai Refractories Plant of the Company in collaboration with RDCIS/SAIL and another item viz. Magnesite based dry ramming mass, is in the process of development.

Of late, deamand for sillimanite bricks has dwindled. This has affected production at the Ranchi Road Plant. Therefore, as a part of its diversification programme, this unit has successfully started production of chemically bonded steel clad basic bricks.

Visitors from Zimbabwe in R&D Plant



7. Research & Development Facilities

All the units and subsidiary have laboratories which are equipped

with facilities for testing, quality control and technological imprevements. The R&D Laboratories of the Company and subsidiary have been recognised by the Department of Scientific and Industrial Research, Ministry of Science & Technology, Government of India.

8. Industrial Relations

The industrial relations situation in the Company remained generally peaceful.

9. Manpower

The manpower position as on 31.12.1987 in different units of the Company and its subsidiary was as follows :-

SL. No.	Name of Unit	Total Manpower	SC	ST	Women	Physically handicapped
1.	Bhandaridah Plant	875	107	61	91	1
2.	Ranchi Road Plant	353	32	43	15	3
3.	Bhilai Plant	1575	183	269	16	11
4.	Nongstom Sillimanite mines	232	2	107	14	1
5.	Pithoragarh Magnesite Project	40				
6.	Head Office	142	3	1	2	
	Total	3217	9	4		
7.	IFICO	1130	336	475	138	16
	Grand Total	4347	42	154	32	12
			378	629	170	28

10. Safety Measures

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. Contract Labour

Contract labour is engaged only on non perennial jobs. They are being paid minimum statutory wages. In addition, they are extended other benefits like. Provident Fund, Medical Facilities, Leave etc.

12. Implementation of Official Language

The Company has been vigorously pursuing implementation 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.

National Mineral Development Corporation Limited

1.0 National Mineral Development Corporation Limited (NMDC) was incorporated on November 15, 1958 as a Government Company for developing and exploiting the mineral resources of the country (other than coal, oil, natural gas and atomic minerals).

1.1 Presently, on the production side, the activities of NMDC are confined to Iron ore and diamond.

The following units are under the control of NMDC.

		State in which located
A.	**Production Projects**	
	Iron Ore	
	Bailadila-14	Madhya Pradesh
	Bailadila-5	Karnataka
	Donimalai	
	Diamond	Madhya Pradesh
	Panna Diamond Mining Project (Majhgawan Mine)	
B.	**Projects Recently Commissioned**	
	Iron Ore	
	Fine Ore Handling Scheme (Bailadila-5	Madhya Pradesh
	Bailadila-14 Expansion and Modification Scheme (Bailadila-11C)	

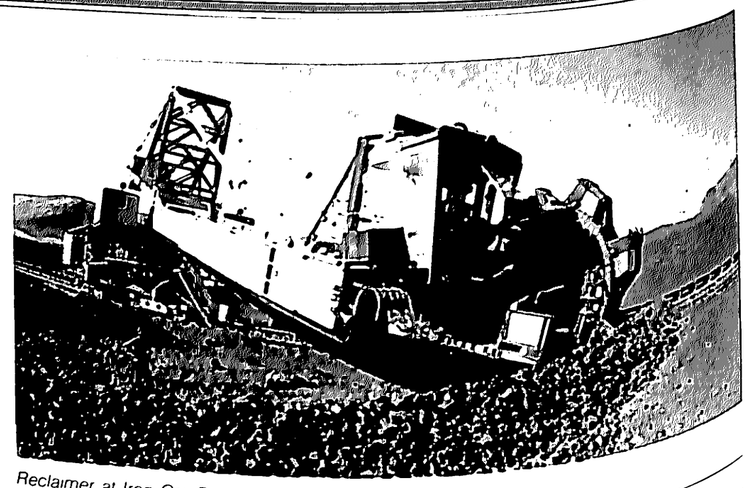
Screening Plant at Bailadila—14

2.0 Finance

The authorised capital of the Corporation is Rs. 150 crores. The equity capital was Rs. 113.07 crores as on 31.3.87 and Rs.115.35 crores as on 31.1.88 The outstanding Government loans amounted to Rs. 50.39 crores as on 31.3.87 and to Rs. 60.06 crores as on 31.1.88.

3.0 Production

Production in the units of NMDC during 1986-87 and 1987-88 is given below:



Reclaimer at Iron Ore Project

Name of the Project	1986-87 (Actuals)			1987-88 Targets for the full year*			1987-88 Actuals for April 87 to January 88			1987-88 Targets for Feb. to March 88*		
	Lump	Fines	Total	Lump	Fines	Total	Lump	Fines	Total	Lump	Fines	Total
A. Iron Ore												
(in Lakh Wet Tonnes												
1. Bailadila-14/11C	20.00	10.09	30.09	18.00	10.00	28.00	13.04	7.13	20.17	4.80	2.95	7.75
2. Bailadila-5	30.14	15.76	45.90	30.00	12.00	42.00	21.08	13.93	35.01	5.90	2.36	8.26
3. Donimalai	15.02	10.24	25.26	13.75	11.25	25.00	11.16	12.12	23.28	2.05	1.93	3.98
Total Iron Ore (1+2+3)	65.16	36.09	101.25	61.75	33.25	95.00	45.28	33.18	78.46	12.75	7.24	19.99
B. Diamond												
(Carats) Panna Diamond Mining Project			15190			15500			13179@			2700

*The targets are as per Corporate Plan for the year 1987-88
@This is site weight. At the time of pooling of diamonds for sale, there is likelihood of a reduction of estimated 0.4% on the total site weight for the year

The drop in production during 1987-88 is mainly due to fire accident of Conveyor Belt in Bailadila-14 April 87 which affected production for 3 months.

4.0 Export/Sale

4.1 The quantity of iron ore contracted for export by MMTC is as follows.

1986-87	91.50 lakhs tonnes
1987-88	80.50 lakh tonnes

The actual quantity of iron ore exported during 1986-87 was 83.86 lakh tonnes. Against this, the total quantity exported in the current year of 1987-88 was 63.91 lakh tonnes upto January, 1988.

4.2 17,117 carats of diamond were sold through auction/tender for a value of Rs. 286.25 lakhs during the year 1986-87. In the current year 1987-88 (upto the end of January, 1988), the quantity sold was 14,258 carats for a value of Rs. 283.50 lakhs.

Loading at Bailadila

5.0 Operating Results

The accounts for the year 1986-87 have since been approved by the Board of Directors with 'Standard Cost' as price. The profit on that basis is Rs. 66 lakhs. However, the final decision in regard to the price payable by Minerals and Metal Trading Corporation to NMDC is still to be declared by Government, and the accounts for 1986-87 will have to be modified on that basis.

6.0 Highlights of Performance During 1986-87

i) The production of 101.25 lakh tonnes of iron ore during the year 1986-87 was the highest till date for the Company and is more by 7.9% over the previous year.

ii) The sale of 92.08 lakh tonnes of iron ore during the year 1986-87 was also the record for the Company till date, registering an increase of 8.7% over the previous best of 84.74 lakh tonnes achieved in 1985-86.

iii) Production of 25.26 lakh tonnes of iron ore at Donimalai during 1986-87 is the highest till date for the Project, which is 5.4% more than the previous year (23.96 lakh tonnes).

iv) A record movement of 65.57 lakh tonnes of iron ore from Bailadila sector during the year 1986-87 was achieved against 60.33 lakh tonnes in 1985-86.

v) The sale of 16.19 lakh tonnes of iron ore fines from Bailadila Sector during 1986-87 was also the highest against the previous best achievement of 10.19 lakh tonnes.recorded in 1985-86. the increase being 58.9% over the previous year.

vi) Disposal of diamonds from Panna Diamond Mining Project, through auctions and tenders, during the year 1986-87 for Rs. 286 lakhs is also an all time record for the project.

vii) The foreign exchange earned on the export of iron ore from the mines of NMDC (as distinct from the Company's own receipts) amounted to about Rs. 179 crores.

7.0 Projects Recently Commissioned

i) Fine Ore Handling Scheme (Bailadila-5)

To meet the demand for fine ore for Visakhapatnam Steel Plant (which is under construction) and for export, it had been planned to provide mechanical facilities for loading/reclamation of fines at Bailadila-5, with a handling capacity of 2.8 million tonnes of iron ore fines per year. The Fine Ore Handling System was commissioned in January, 1987. The sanctioned revised capital cost of the project is Rs. 30.77 crores. The project has been completed within the revised estimated cost.

ii) Bailadila-14 Expansion and Modification Scheme (Bailadila—11C)

The project was taken up as supplementary/replacement mine for Bailadila-14, to meet the iron ore requirement of Visakhapatnam Steel Plant and for export. The designed capacity is 3.3 million tonnes of ROM to yield 2.8 million tonnes of lump plus fines per year. The project has been commissioned. Trial runs are in progress. The sanctioned revised capital cost of the project is Rs. 29.52 crores.

8.0 Projects under consideration for Investment Decision

i) Deeper Level Mining at Bailadila Deposit-14.

A Project Report has been prepared for continuation of mining at Bailadila-14 at deeper levels for a production of 2 million tonnes of ROM per annum. This Report is under consideration.

ii) Bailadila-14 Expansion and modification (i) Blue Dust Mining Scheme and (ii) Fine Ore Handling Scheme.

A scheme incorporating the above two schemes has been proposed in July 87. This Report deals with (i) mining and handling of 0.7 million tonnes of high grade blue dust per yeat at Bailadila-14 and (ii) mechanised handling system for Bailadila-14 fines, for export and for supply to Visakhapatnam Steel Plant. The matter is under consideration.

iii) Kotmi-Sonar Dolomite Project

NMDC was assigned the task of developing a Dolomite deposit for supplying Blast Furnace Grade Dolomite to Visakhpatnam Steel Plant. A Project Report for this project has also been prepared. However, on economic consideration, it is now likely that the dolomite supply to VSP would be linked to the Patpahar Deposit of Bisra Stone Lime Co. Ltd., Birmitrapur. In that case, the Kotmi-Sonar Project would not be pursued further.

9.0 Environmental Improvements

Long range planning for environmental protection measures has been prepared for the projects of NMDC for four years (1986-87 to 1989-90) based on the assessment studies made at each project on pollution and the recommendation of expert consultants.

The major activities in this area are broadly :-

i) Construction of tailing dams, check dams, drains, etc. in Bailadila and Donimalai.

ii) Improving dust collection systems at Crushing Plants and Blast Hole Drills and ensuring adequate water sprinkling for dust superession.

iii) Installing monitoring equipments for recording various paremeters on air, water, noise and vibation.

Afforestation programme at working sites, residential areas and wastelands within lease-hold land is being implemented on high priority. A survival rate of 95% has been achieved in this regard.

10.0 Investigation

The Company is engaged in investigation of following mineral desposits:

i) Super SMS Grade Limestone Deposits at Arki in Solan District of Himachal Pradesh and Chawandiya in Nagaur District of Rajasthan.

ii) High Grade Magnesite deposit at Panthal in Jammu and Kashmir.

iii) Tungsten Deposits at Burugubanda and Tapaskenda in Andhra Pradesh

11.0 Research and Development

During the year 1986-87 as well as the current year (1987-88), the R&D Laboratories of the Corporation at Hyderabad had undertaken various investigation studies in respect of projects of NMDC as well as a number of outside agencies covering various minerals.

Special studies on use of Blue Dust for use in 'High Tech' areas and manufacture of steel are being carried out.

12.0 Training Activities

The Corporation attaches great importance to the development of the skills of its employees through suitable training programmes. These training programmes are designed to meet the needs of the Company. During the period April to December 87;626 employees of the Corporation had gone through such programmes (510 employees were exposed to training programmes conducted within the Company; 86 were sent to attend programmes conducted externally; and 30 derived the benefit of attending seminars).

13.0 Personnel

The details of the employees in the Corporation as on 31.12.87 are indicated below.

14.0 Industrial Relations

The overall Industrial Relations situation in the Corporation during the period April to December 87 was peaceful.

15.0 Workers' Participation in Management

The Scheme of workers participation in management is working satisfactorily at all the three levels viz. shop level, plant (project) level and Apex (Corporate) level.

The meetings of joint councils at various levels take place regularly and follow-up steps provide an effective two way communication and valuable exchange of information between the management and the workers.

Group	Total No. of Regular of Regular Employees as on 31.12.87	No. of Scheduled Caste Employees (out of col 2)	No. of Scheduled Tribe Employees (out of Col 2)	No. of Women Employees (out of col. 2)
1	2	3	4	5
A	565	26	16	147
B	831	48	505	153
C	3446	460	482	
D (Excluding Sweepers)	1826	380		25
D (Sweepers)	133	101	1	367
Total	6801	1015	1008	

16.0 Contract Labour Position

The number of labourers engaged in transportation and loading of fine ore into railway wagons at Bailadila-14 has come down marginally to 858. As compared to last year, the number of contract labour engaged in petty civil construction and miscellaneous jobs has also been reduced to around 1100 as on December 1987.

17.0 Safety Measures

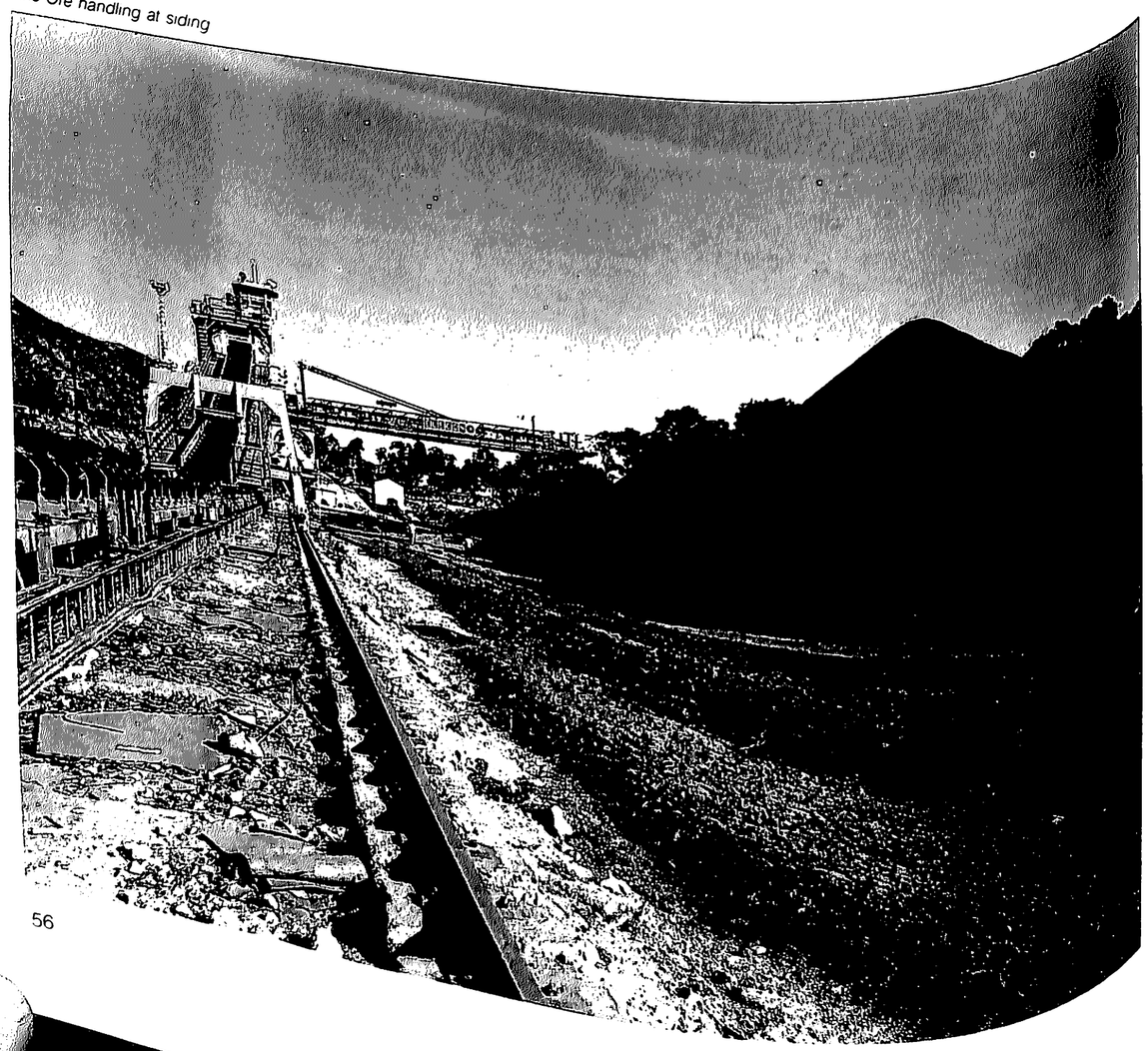
Apart from normal statutory provisions as provided under Mines Act, Mines Rules and Mines Regulations, NMDC is taking specific measures in reducing the occurence of accidents at all their mines. To achieve the above, the following are being implemented by the Corporation:

a) Vocational training.
b) Refresher training.
c) Acquainting the new appointees with the safety standards through the safety officers.
d) Regular Pit Safety Committee meetings.
e) Medical examinations.
f) Celebration of Safety Week every year to propagate safety conciousness among mine employees.
g) Providing the workers with safety equipments/appliances duly approved by DGMS.
h) Each mine has separate safety officer and training officer to look after and train on the safety aspects in the mine. The compliance report on safety aspects is sent to Head Office for review in tripartite meetings. A separate Internal Safety Organisation headed by a senior officer is working at Corporate Office to monitor the progress in this respect.

i) A Tripartite Review meeting was conducted at Hyderabad on 22.8.87 to review the progress of implementation of recommendations of the VIth Conference on Safety in

[illegible] by DGMS. The [illegible] is fully geared to ensure that safety is given prime importance in all spheres of production and construction activities in NMDC mines.

Fine Ore handling at siding



Mandovi Pellets Limited

1.1 National Mineral Development Corporation (NMDC) is participating on behalf of Government of India in a joint sector enterprise, Mandovi Pellets Limited (MPL), which was approved in 1975 to produce 1.8 million tonnes of blast furnace grade iron ore pellets. The plant started production in 1979 as a 100% export oriented unit. NMDC and M/s. Chowgule and Company Private Limited (CCPL) each contributed 1/3rd of the equity capital of this Company. The remaining 1/3rd was to be contributed by the general public/financial institutions. MPL had entered into a long term agreement with the Japanese Steel Mills (JSM) for the export of a total quantity of 18.32 million tonnes of pellets at a rate of 1.82 million tonnes per year over a period of 10 years, starting from the year 1978-79. Due to delay in the commissioning of the plant, MPL could not ship any pellets in 1978-79. In the following two years 1979-80 and 1980-81 also, the Company could export only 0.66 million tonnes and 0.88 million tonnes respectively. The reason for shortfall in production was inadequate supply of power.

1.2 The MPL Plant had to be subsequently closed down in 1981 as the manufacture of pellets became economically unviable due to high price of furnace oil and shortage of power, combined with a steep fall in pellet prices in the international market.

1.3 An agreement was executed whereby the Japanese Steel Mills agreed to take 2.3 million tonnes of iron ore fines instead of pellets for the year 1981-82. The JSM also agreed to pay a premium of $ 4.85 in 1981-82 per tonne approximately over and above the price of fines. Due to continued recession in the steel industry this agreement was further extended for another 3 years i.e. 1982-83 to 1984-85 but the premium was reduced to $ 4.5 per tonnes of fines. The contract for supplying fines was assigned to M/s. CCPL who also paid contribution to MPL for this deal.

1.4 In February, 1985, MPL and JSM executed an agreement under which JSM agreed to purchase a total of 2.98 million DMT of iron ore with a total premium of US $ 14.35 million during 1985-86 and 1986-87. The long term contract was cancelled by mutual agreement without any further rights or obligations to either party. The shipments have since been completed by CCPL on behalf of MPL. The pellet Plant continues to remain closed.

1.5 There is no possibility of re-opening the Pellet Plant for production of pellets for export. MPL is negotiating with SAIL to re-locate the pellet plant near Bhilai Steel Plant to convert BSP's iron ore into pellets to be supplied to BSP as blast furnace feed. Trials with 10,000 tonnes MPL pellets at BSP have proved encouraging, and significant increase in productivity is indicated. Negotiations are at an advance stage.

Metal Scrap Trade Corporation Ltd.

Part—I

1. Introduction

The Metal Scrap Trade Corporation Ltd. (MSTC), a Government of India Enterprise, is the canalising agency for export of ferrous scrap and import of Carbon Steel Scrap including Alloy Steel Scrap, Sponge Iron/Hot Briquetted Iron, Re-rollable Scrap, Pig Iron Chips and old ships for breaking. The Company is also responsible for disposal of Ferrous and miscellaneous scrap arisings from Integrated Steel Plants under SAIL and disposal of scrap and surplus stores from other Public Sector undertakings and Government Departments.

2. Present Activities & Objectives:

2.1 Main activities of the Company through its two Operating Divisions, viz. Foreign Trade and Domestic Trade may be briefly described as follows.-

Foreign Trade:

i) Canalising import of Carbon Steel Melting Scrap, Alloy Steel Scrap, Sponge Iron/Hot Briquetted Iron, Re-rollable Scrap, old ships for scrapping, pig iron chips.

ii) Export of Ferrous Scrap.

Domestic Trade:

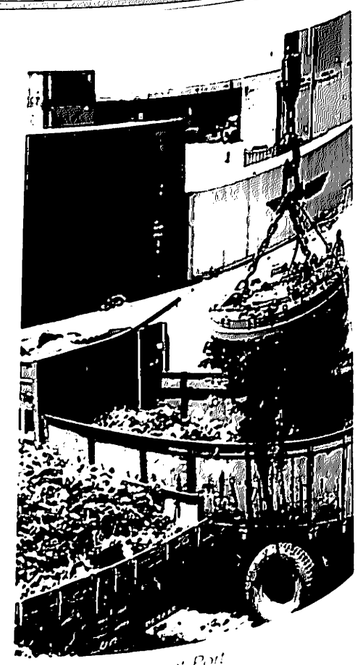
i) Disposal of Ferrous and miscellaneous scrap arisings from integrated Steel Plants (Under SAIL).

ii) Disposal of scrap and surplus stores from other Public Sector undertakings and Govt. Departments.

The Corporation has also a Market Reasearch and Development Division which basically aims at improving the quality of servicing through its

market research ... activities. The ... division are by ... regular feedback ... development for ... MSTC by planning ... of diversification and ... plans and by serving as ... for regular supply of ... within the organisation.

3.2 While the major ... policies and strategies are ... at the Head Office level, ... activities have been decentralised ... at the Zonal level in the overall ... interest of servicing the scrap ... based industry. Suitable ... and action plans were drawn ... the beginning of the financial year 1986-87 and these contributed to the accelerated growth rate and performance achieved during the year under report.



Loading of scrap at Port

Part—II

1. Performance & Results

1.1 Physical Performance

		Unit '000' Tonnes/LDT Actuals		
		1985-86	1986-87	Upto Dec. 1987-88
A.	**Import of**			
	i) Carbon Steel Melting Scrap/ Sponge Iron/HBI (including under NOC)	1544	2482	1439
	ii) Stainless Steel Scrap	56	55	49
	iii) Ships for breaking	615	386	103
B.	**Export of** Mill Scale Scrap	84	47	38
C.	**Home Sales-** Scrap arising of			81
	i) Steel Plants and	210	127	4.737
	ii) Other Public Sector Under takings (Rs. in lakhs)	Rs. 3279	Rs. 5190	Rs.

1.2 Financial Results:

	Units	Rupees in Crores	
	(1)	(2)	(3)
i) Gross Profit before Interest & Depreciation	8.90	10.45	6.75
ii) Interest & Depreciation	0.42	0.97	1.20
iii) Profit before tax	8.48	9.48	5.55

2. Special Achievements during 1986-87:

2.1 Notable features during 1986-87 in terms of financial achievements are described briefly as under.-

i) The total turnover of MSTC was Rs. 459.04 crores as against Rs. 340.14 crores during the previous year 1985-86 thus registering an increase of 35 percent.

ii) An all-time record profit of Rs. 9.48 crore before tax has been achieved during 1986-87 as against Rs. 8.48 crores in 1985-86 which again compared to the Profit before tax of Rs. 4.61 crores of 1984-85 accounted for about 84% improvement.

iii) After maintaining a steady rate of 20% dividend and all payments of taxes, the reserves of MSTC stand at Rs. 10.36 crores as on 31-3-87 as against Rs. 6.60 crores as on 31-3-86.

iv) Contributions to the National Exchequer was to the tune of Rs. 5.74 crores during 1986-87.

v) The volume of foreign trade rose from Rs. 337.08 crores in the previous year to Rs. 455.73 crores during the year under report, thus registering a significant increase of 35 percent.

3. Employment Statistics:

3.1 The distribution of manpower at different centres including three Zonal offices of MSTC besides Head Office at Calcutta as on 31-3-87 are given below.-

	Executive	Non-Executive	Total
i) Head Office in Calcutta	60	126	186
ii) Regional Office at Bombay (including Bhavnagar)	12	14	26
iii) Regional Office At New Delhi	8	8	16
iv) Regional Office at Bangalore	7	10	17
	87	158	245

4. Diversification Plan:

4.1 The Company had undertaken plans to diversify its activities in the following projects:-

i) Equipment Leasing:

As a step towards achieving diversification of activities, MSTC procured equipments worth around Rs. 4.38 crores upto the end of financial year 1986-87 and leased out the same to its Subsidiary Company on an annual rental basis towards its programme for replacement and modification of old and obsolete equipments. Further, investment of Rs. 0.62 crores in the same direction was envisaged during 1987-88 out of which Rs. 0.48 crore had already been invested upto December, 1987.

ii) Scrap Processing cum Storage Yard:

With a view to supply scrap materials in shapes and sizes suitable for actual users in India after processing, few scrap processing cum storage yards had been planned for implementation in the near future. The first two of its kind is likely to be developed at Delhi and Calcutta during the financial year 1988-89.

Ship breaking at Alang

Ferro Scrap Nigam Limited

Introduction:

Ferro Scrap Nigam Limited (FSNL) is a joint sector Company under Ministry of Steel & Mines with a paid-up capital of Rs. 200 lakhs in which the Metal Scrap Trade Corporation Limited (MSTC) holds 60% of the equity shares and the remaining 40% being held by M/s. Harsco Corporation Inc. U.S.A. The Company undertakes recovery and re-processing of scrap from slag and refuse dumps in the Steel Plants in Jamshedpur, Rourkela, Burnpur, Bhilai and Bokaro Steel Plant. The operations at TISCO, Jamshedpur have come to an end w.e.f. 1/8/87 due to expiry of the contract with TISCO, Jamshedpur.

Overall Performance:

[illegible] dumps current [illegible] steel plants. [illegible] 1986-87, the [illegible] service charges [illegible] Rs. 1267 lakhs resulting [illegible] Rs. 328 lakhs. The [illegible] figures for 1985-86 [illegible] of service charges [illegible] 201 lakhs as net profit for the year

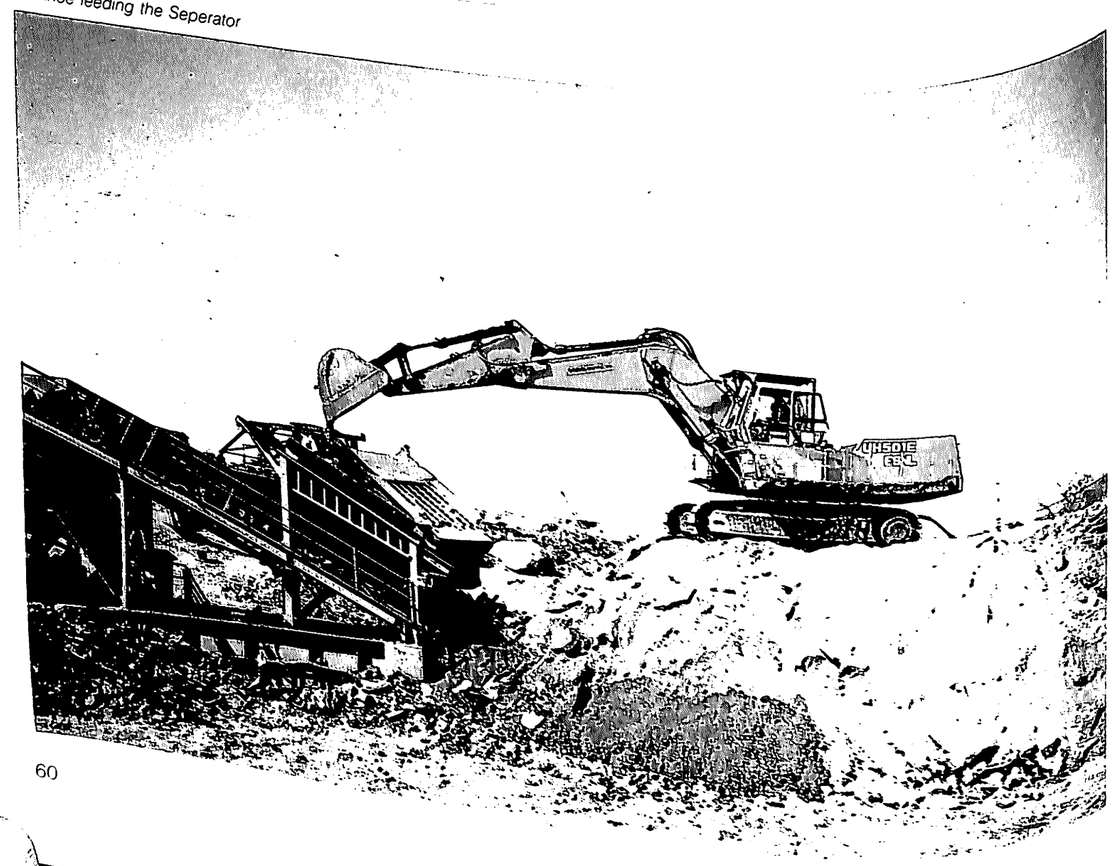
Financial Performance:

For processing [illegible] reclamation of [illegible]

Performance

Major Product	1986-87	1987-88	1988-89
Recovery of Scrap from Dumps (lakhs MT)	5.62	5.60	4.44
Value of Production (in Rs. Crores)	116.00	138.00	114.00	116.00

Backhoe feeding the Seperator



1987-88 is estimated to be Rs 188 lakhs. The reduction in profit is due to the closure of Jamshedpur unit and non-utilisation of full productive capacity at Bokaro Steel Plant. The net profit target for the year 1988-89 has been fixed at Rs. 207 lakhs.

Sales Realisation

Sales realisation in 1986-87 and estimated sales realis-ation in 1987-88 and 1988-89 per M.T. at constant prices is indicated below:-

1986-87 (Actual)	1987-88	1988-89
244.20	244.20 (at constant price)	244.20 (at constant price)

Future Programme:

Keeping in view, the availability of the scrap arisings in the various Steel Plants, and a huge quantity of iron and steel scrap lying buried in the dumps of various steel plants, the Company has expanded the capacity in its existing level by augmenting the resources in terms of equipment, marginal manpower, etc. It also propose to take up scrap processing in other steel plants like Bhadravati, Durgapur and Vizag, during the next five years. The Company has already started scrap recovery in Bokaro since 1984-85 as a part of phased programme. It has accordingly drawn up a plan for replacement/renovation of the ageing equipments and procurement of additional machinery at an estimated investment of Rs. 45 crores during VIIth Five Year Plan.

Efforts Made Towards Cost Reduction:

(a) As a short term strategy the cost has been controlled by taking the following actions:-

(i) Pegging the Man Power strength at the present level;

(ii) Improvement in the machine availability through careful plant preventive maintance;

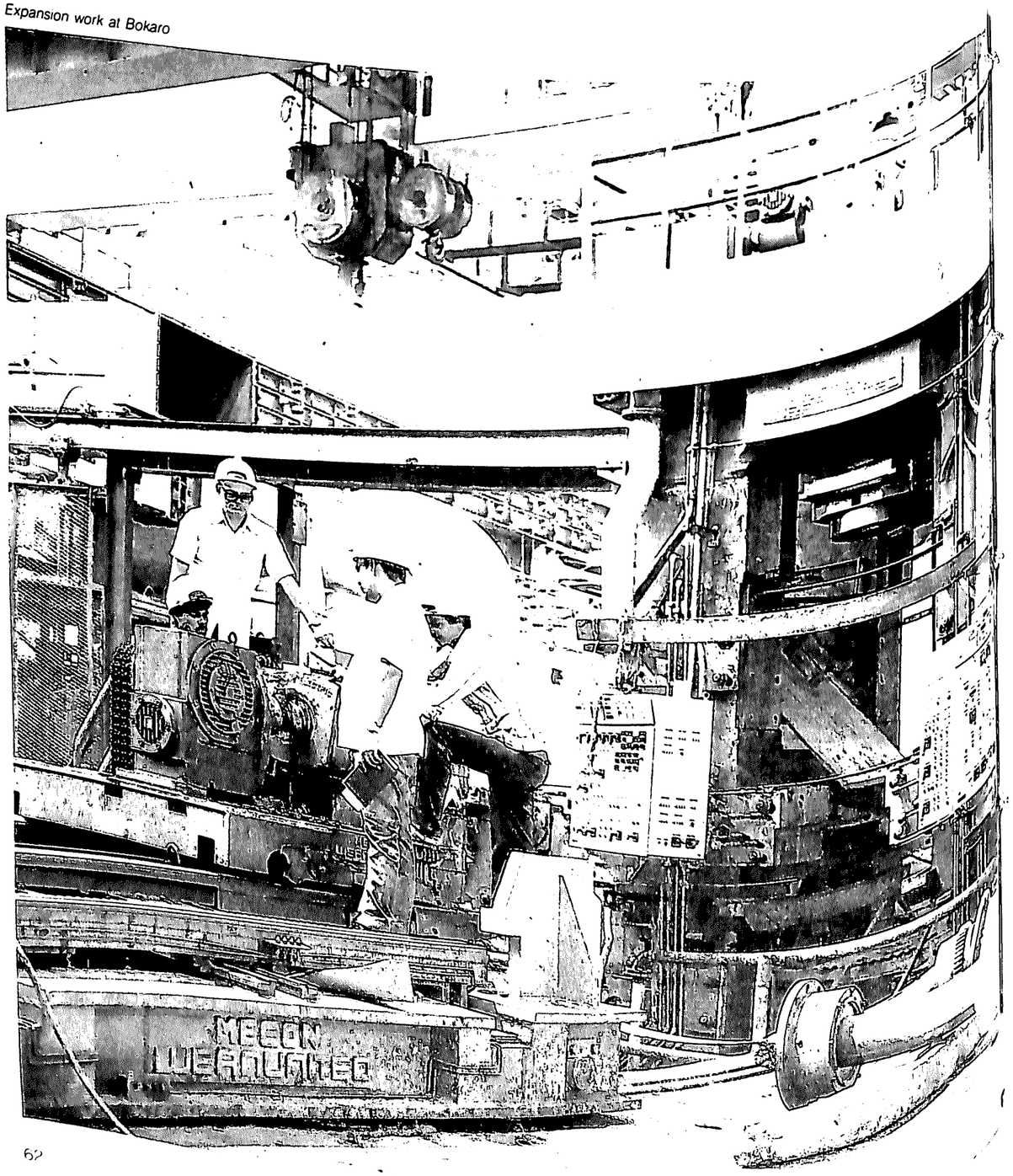
(iii) Better material management operations; &

(iv) Quality improvement in the scrap recovered.

(b) The Company with the help of IDPL Hyderabad has achieved success in the controlled crack initiation technology. Efforts are being made to Commercialise the same. The process besides hastening the process of skull breaking, may result in reduction in consumption of Oxygen.

(c) In order to minimise the escape of metallics in the worked through slag while recovering the scrap from the slag through the separators, FSNL has introduced double magnetic drum in each of the 4 separators fabricated by Mcnally Bharat Engineering Company.

Expansion work at Bokaro



Metallurgical & Engineering Consultants (India) Limited

MECON was set up in 1959 as Central Engineering & Design Bureau of erstwhile Hindustan Steel Limited and later incorporated as fully owned subsidiary of SAIL on 31st March, 1973. In 1978 when SAIL was made into an operative company from the earlier holding company status, MECON was brought directly under the Department of Steel in the Ministry of Steel & Mines. It has emerged as a premier design, engineering and consultancy organisation in Public Sector for metallurgical industry. MECON offers a comprehensive range of services which include -

i) Rendering technical consultancy, design and engineering and other technical services providing supervision of construction, erection and commissioning at site.

ii) Project management services for setting up plant and machinery in ferrous, non-ferrous metallurgical, chemical, defence and engineering industries.

iii) Design and supply of equipment for Coke Oven Batteries (including 7 Metre high coke ovens) dry coke cooling plants, benzol plants, blast furnace, gas cleaning plant and rolling mills.

iv) Design, engineering and supply of processing, finishing and galvanising lines for ferrous and non-ferrous industries etc.

2. Present Major Contracts

a) Design, engineering, supply, erection & commissioning of 30,000 tonnes/year Benzol Plant on a turnkey basis for Vizag Steel Plant

b) Dismantling, design, engineering, supply, erection & commissioning of Coke Oven Battery No. 9 on a turnkey basis for Indian Iron & Steel Company (IISCO), Burnpur.

c) Modernisation of Durgapur Steel Plant.

d) Detailed engineering and consultancy services, inspection of indigenous equipment, construction, supervision & monitoring services for the 880,000 tonnes/year gas based Sponge Iron Plant being set up at Hazira by M/s. ESSAR Steels Ltd.

e) Detailed engineering and consultancy, project and construction management services for 15,000 tonnes/year Strip Rolling Complex being set up at Waidha by M/s. Integrated Steels Limited.

f) Design, engineering, consultancy and project management services for various Defence establishments in the country.

g) Detailed engineering and consultancy services including inspection of plant and equipment for Lead-Zinc Smelter Complex at Chanderia for Hindustan Zinc Limited.

h) Modernisation and debottlenecking of Khetri Copper Refinery Plant for Hindustan Copper Limited.

i) Basic design, detailed engineering, consultancy, erection, heating up and commissioning of 7 M tall Coke Oven Batteries and Dry Coke Cooling Plants for Vizag Steel Plant.

j) Design of plant and equipment and systems including supply, erection and commissioning of 710,000 tonnes/year Light & Medium Merchant Mill, Gas Cleaning Plant of Convertor Shop for Vizag Steel Plant.

k) Detailed Engineering and Consultancy services for the New Mint Project at NOIDA.

l) Design, engineering, suply, supervision of erection and commissioning of Mini Galvanising Lines for M/s. Century Tubes Ltd. M/s. Munak Calve Sheets Ltd.

3. Assignment Abroad

MECON is rendering consultancy, Project Management and Technical Services for construction of 1.3 MT per annum capacity Blast Furnace based integrated Steel Plant at Ajaokuta, Nigeria and at present 70 MECON Engineers are deputed in Nigeria for this job. The two rolling mills of priority commissioining units under Stage I have already been commissioned. The Company has renewed the contract upto May, 1988 with Delta Steel Company, Warri for rendering post commissioning services and for setting up of Design Bureau.

The Company has submitted Feasibility Report for Kyanite, Calcination Plant at Zimbabwe, and Pre-investment Feasibility Report for setting up a Rolling Mill unit in Nigeria.

4. Finance

The authorised and paid up capital as on 31.3.1987 was Rs. 4 crores and Rs. 2.02 crores respectively.

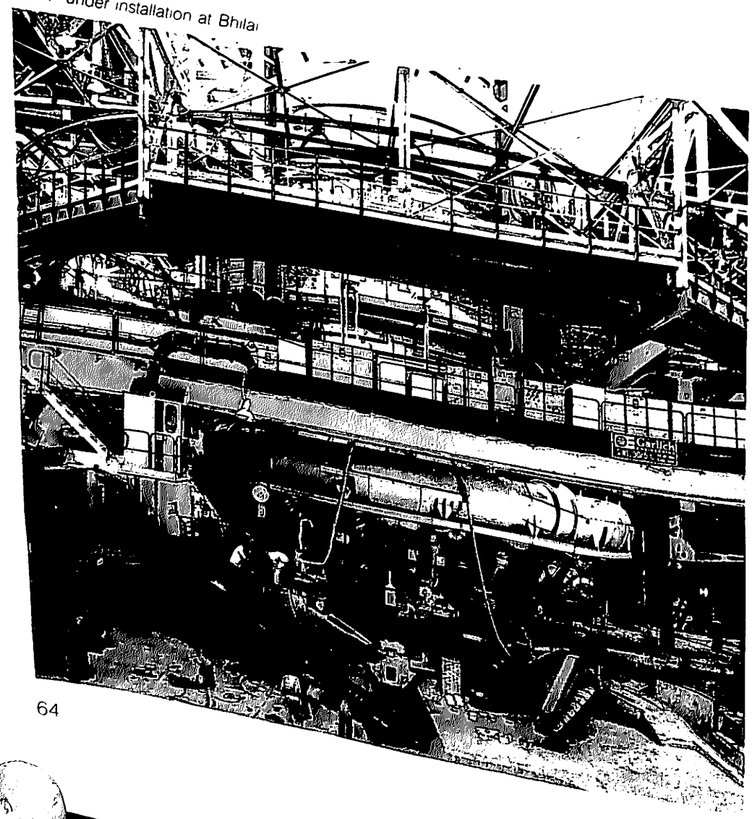
5. Working Results

The Company's turnover during the year 1986-87 was Rs. 77.29 Crores against Rs. 100.75 crores during 1985-86. The Company earned a net profit before tax of Rs. 12.97 crores during 1986-87 against Rs. 12.14 crores during 1985-86. The budgetted turnover and profit before tax for the year 1987-88 has been estimated to be Rs. 86.44 crores and Rs. 10.74 crores respectively.

6. Expertise beyond Normal Consultancy & Engineering Services and Major Contribution towards bridging technical know-how gap.

Over the last 29 years, the Company has developed expertise far beyond what is normally understood as consultancy and engineering services. It has contributed in a major way in bridging the technological gap in the country in the "HIGH TECHNOLOGY" areas for Metallurgical Industries. In this connection besides its own development, the Company has entered into basic know-how licence/cooperation agreements with a number of foreign

B.F.–7 under installation at Bhilai



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7. Contract Labour Position

[illegible]

8. Industrial Relations and Workers Participation

The Industrial Re[illegible] in MECON ever [illegible] inception in 1973 has been generally good. This has been possible because of healthy cooperation existing between MECON Management and the MECON Employees Union [illegible] political union and has been recognised by the Management on the recommendation of the State Government

9. Capacity Utilisation:

[illegible] engineering [illegible] its main assets [illegible] competent and [illegible] technical staff. [illegible] at its disposal [illegible] engineering [illegible] million drafting [illegible] annum. In terms of [illegible] drawing drawings [illegible] capacity to [illegible] 35,000 working [illegible] annum. Capacity [illegible] of engineering manhours [illegible] the year 1987-88 (upto December '87) has been around 84.6 [illegible] on chargeable jobs of which detailed engineering jobs represents about 34.5%

10. Towards Cost Reduction

In order to have an effective control on cost, all efforts are made to keep the manpower at the minimum required and there has been no significant addition to the manpower during the year. The existing manpower resources are put to maximum use and the manhours on each job are closely monitored by the use of the inhouse computer. The expenses on overtime allowance, travelling, advertisement, seminars, stationery etc. are constantly reviewed for effecting economy in these areas.

11. Efforts Made Towards Indigenisation

MECON has been doing pioneering work in Technology transfer resulting in indigenisation of high technology in various fields including design and supply of Rolling Mills, design of processing lines, coke oven batteries, dry coke cooling plant, gas cleaning plant etc. Specific mention may be made with regard to design and supply contracts being executed by MECON for Bar/Rod Plant, Light and Medium Merchant Mill, Wire Rod Mill and Gas Cleaning Plant for Visakhapatnam Steel Project.

The Company is not only keeping abreast with the latest technology in its field of activities but also getting the appropriate technologies transferred with a view to assimilating and indigenisation of the same. MECON has taken initiative in acquiring technology in a number of areas for the iron and steel industry like selective crushing of coal, design of coke over battery with a stamp charging technology, recovery of anhydrous ammonia by phosam process etc. In addition the Company is pursuing for the transfer of complete know-how for sintering plant, basic oxygen furnace shop and computerised process control etc.

12. Welfare Measure

The Company has a well planned township, at its headquarter at Ranchi which meets housing need of 67% of the employees posted in Ranchi. There is a well equipped 50 bedded hospital which provides free medical treatment to employees and their family members, a Higher Secondary School providing free education to nearly 3520 children upto Class XII. There are various facilities for cultural creativity, sports, games etc., for employees and their family members.

13. Responsibilities Towards Society

The Company pays proper attention for peripheral development of its surrounding areas which is situated in a tribal belt of Chotanagpur, it pays regular scholarship text book/grants to the meritorious students of two schools in the neighbouring villages besides grants to various schools at Ranchi. The Company has adopted two villages in the neighbourhood of Ranchi and has been extensively helping the tribal people of these villages for their economic upliftment, improvement of road, street lighting, sanitary condition etc.

The Company is acting as the major driving force in maintaining the Cheshire Homes of India, Ranchi which looks after nearly 40 chronically sick, permanently disabled, crippled and destitute persons.

14. Manpower Position

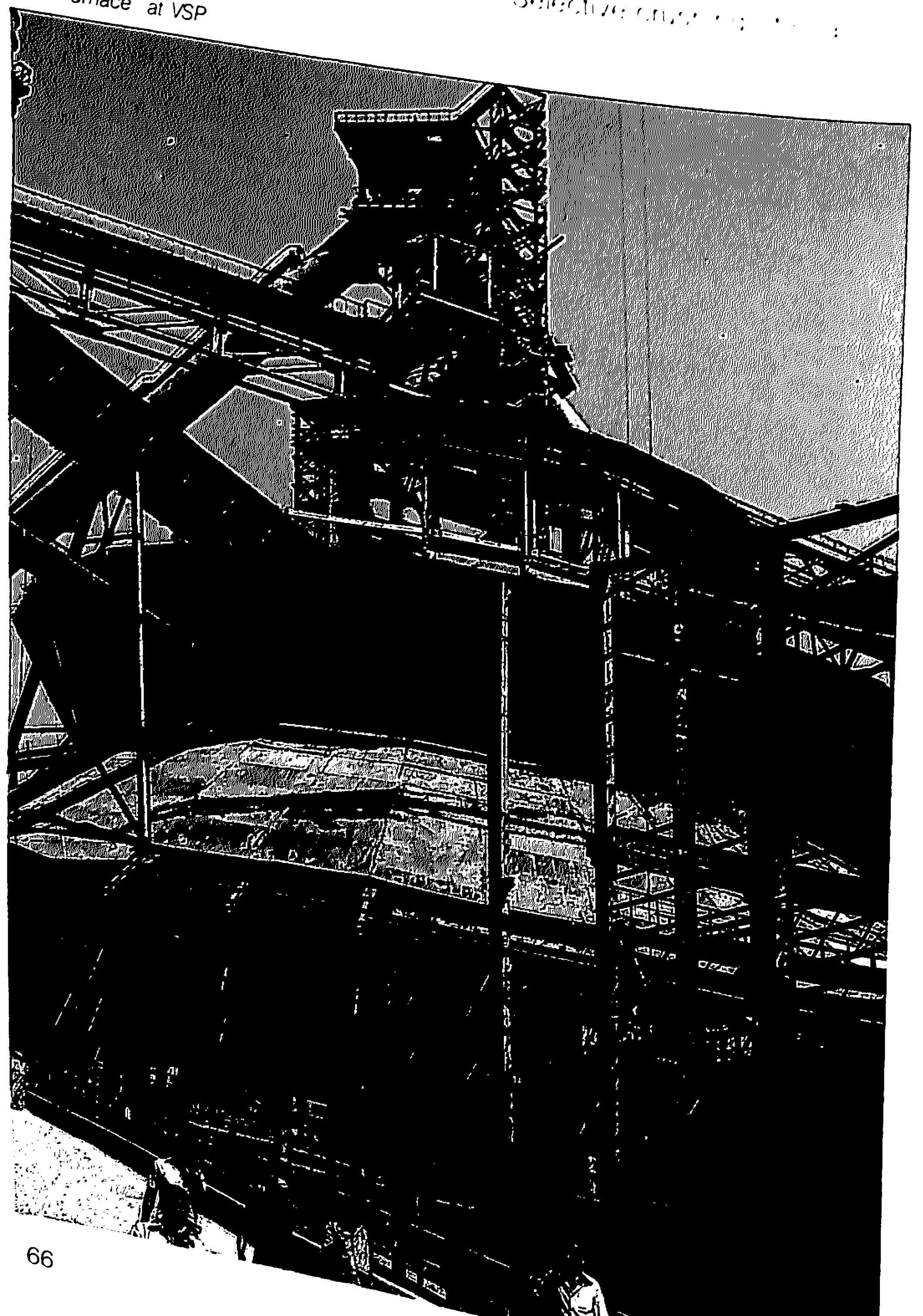
The growth of the technical manpower of MECON over the last decade has been phenomenal. In 1970 MECON's technical strength was only 600 comprising 400 engineers and 200 drafting personnel. Presently MECON's technical manpower strength is over 2168 comprising 1671 qualified engineers and about 497 drafting personnel. Besides this, the supporting technical/non-technical manpower of the company is 1668 making a total manpower strength of MECON 3836. The total number of employees in the company as on December, 1987 is 3836 out of which 241 are Scheduled Caste and 451 are Scheduled Tribes.

Visakhapatnam Steel Project

1. Project Profile

Visakhapatnam Steel Plant is the first shore-based integrated steel plant being set up in India. The location is advantageous as 20% of its coking coal requirements would have to be met by imports. Exports would also be easier. Being a major producer

Blast Furnace at VSP



of [illegible]

2. [illegible]

Selective [illegible]

[illegible] Coke Ovens [illegible] of coke with [illegible] power generation [illegible] blending of sinter [illegible] Blast Furnaces [illegible] charging and bell-less top charging for Blast Furnaces

Torpedo ladle for Steel Melt Shop in addition to Conventional Mixer

Cast house slag granulation for Blast Furnace

100% Continuous Casting of Liquid Steel

Gas expansion turbine for power generation utilising Blast Furnace gas top pressure

Hot Metal Desulphurisation

Extensive treatment facilities for effluents for ensuring proper environmental protection.

- Computerisation for process control
- Sophisticated high speed and high production rolling mills.

3. Revision of Project Concept and Cost

The Visakhapatnam Steel Plant was designed to produce 3.4 MT of molten steel. A Revised Project Concept has been adopted for implementation of this project at a lesser capital cost and within a shorter time-frame in order to improve its economic viability. As against the revised estimated cost of about Rs. 7500 crores for the approved concept the cost has been reduced to about Rs. 6,300 crores (at 1st quarter, 1986 prices).

The first phase of the project is now scheduled for commissioning by December 1988 and the

complete plant by June 1990 as against 1990-91 envisaged for the earlier revised concept. The revised project concept is under Government's consideration. However the project has been allowed to go ahead with the revised concept.

4. Product Mix Under the Rationalised Concept

The Product Mix of VSP under the Rationalised Concept is shown in the following table :

Finished Steel (For Sale)	Tonnes Per Year
Rounds and Bars	1,256.000
Flats	74.000
T Bars	24.000
Equal and Unequal Angles	661.000
Channels	251.000
Beams	144.000
Billets	246.000
Total	2,656.000
Pig Iron for Sale	555.750

6. Progress of External Infrastructure Facilities

1. Rail Facilities:

VSP has been linked to South Eastern Railway network in August, 1987. Linkage to South Central Railway is in progress. There is no conventional exchange yard system in VSP. Construction of the peripheral yard system inside the Plant which eliminates the requirement of a conventional Exchange Yard is under progress.

2. Coking Coal:

As per design the blend ratio of coking coal is 35% indigenous prime, 45% indigenous medium and 20% imported. Indigenous prime coking coal is not likely to be available till 1992. VSP will import this shortfall. Medium coking coal will be available in time from Rajrappa and Gidi washeries.

3. Boiler Coal

Anantha Mines are linked to VSP for supply of boiler coal. But coal from this source will be available from 1991 onwards only. Interim supplies will be met from Jagannath-Bharatpur Mines.

4. Water

Andhra Pradesh State Government is implementing the Yeleru water supply scheme for the supply of water to VSP. The A.P. State Government has assured availability of water from this source by June, 1988.

5. Power

The power requirement will be partly met by VSP's own generation and the balance from APSEB. The main receiving station of VSP has been testcharged with 220 KV power from APSEB in November, 87 and power supply established in December, 1987.

6. Port Facilities

The general cargo berth situated in the Outer Harbour of Visakhapatnam Port is proposed to be used for import of coking coal. Till the handling facilities are provided for this purpose the imported coking coal will be handled through Inner Harbour of Visakhapatnam Port. The imported SMS grade lime stone will be handled through inner harbour of the Port.

5. Progress of Construction

Overall progress of construction at site in major areas upto December, 1987 was as under:-

Sl. No.	Item	Total Quantity (revised concept)	Cumulative till December, 1987 Scheduled	Actual	% Fulfilment of Schedule
1	CONCRETE (M^3)	2790395	2411881	2407704	99.8%
2	STRL FABRICATION (T)	414307	344650	329921	95.7%
3	STRL ERECTION (T)	414307	303696	286004	94.2%
4	EQPT ORDERING (T)	415750	393002	404497	102.9%
5	EQPT ERECTION (T)	415750	220057	166680	75.7%
6	REFR ORDERING (T)	165496	167326	166856	99.7%
7	REFR ERECTION (T)	165496	92777	80683	87.0%

7. Iron Ore

NMDC will meet VSP s iron ore requirement from Bailadilla Mines.

8. BF Grade Dolomite

For supply of BF Grade Dolomite VSP is negotiating with Bisra Lime Stone Company Birmitrapur.

7. Budget and Expenditure

The total budget allocation for 1987-88 was Rs. 890 crores including an amout of Rs. 44.98 crores made available to the project from extra budgetary resources. Actual expenditure during the year upto December, 1987 was Rs. 597.50 crores including FE component of Rs. 95.26 crores. The cumulative expenditure up to December, 1987 was Rs. 3631.44 crores.

8. Environmental Pollution Control

Various measures have been taken by VSP to ensure that the pollution of the environment is minimised and kept within the prescribed limits, VSP has also got environmental clearance from Andhra Pradesh Govt. and the Union Govt. Massive afforestation programme has been taken up by VSP. In the year 1987-88 a total of 5 lakh trees have been planted till December, 1987 against the plan of 2 lakh trees for the year.

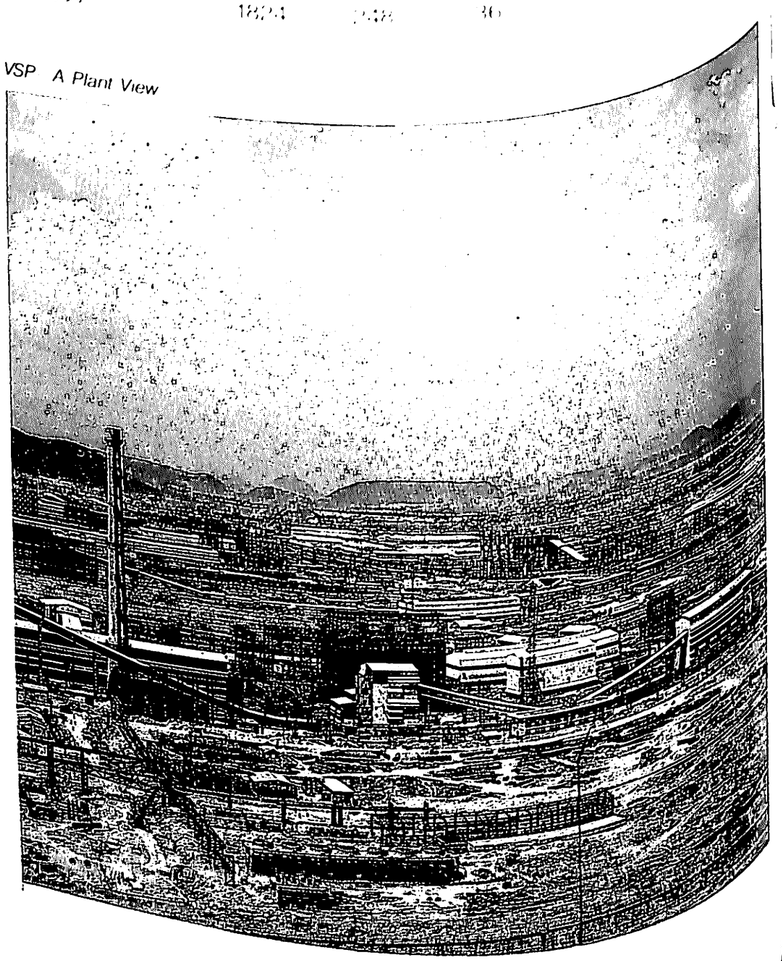
9. Personnel and Man-Power

The total number of the employees of the Project is 6010 as at the end of December, 1987, of which 1079 are executives, 216 are management trainees. 2891 are non-executives and 1824 are trainees. The representations of SC/STs, ex-servicemen, Physically handicapped persons

1987 2233
persons including 772
been provided
the Company.

Group	Total	SC	ST	Ex.S	PH	Women
A					1	19
B					4	3
C					25	75
D (excluding Sweepers)					1	14
D (Sweepers)						3
Total					32	114
Trainees					6	

VSP A Plant View



Neelachal Ispat Nigam Limited

In October, 1980, Government decided in principle to set up a second steel plant in Orissa Accordingly, Government formed Neelachal Ispat Nigam Ltd (NINL) 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.

The total provision in the Seventh Five Year Plan for new steel plants, which includes the Neelachal Ispat Nigam Limited, is only Rs.,10 crores. With this meagre allocation, it has not been possible to take any substantive steps for setting up this plant so far.

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. Accordingly, in Dec., 1982 a separate Company, Vijayanagar Steel Limited, was incorporated.

The total plan provision in the Seventh Five Year Plan for new steel plants, which includes the Vijayanagar Steel Ltd., is only Rs. 10 crores. With this meagre allocation, it has not been possible to take any substantive steps for setting up this plant so far.

Hindustan Steelworks construction Limited

1. Hindustan Steelworks Construction Limited (HSCL) a premier construction organisation of the country. was established in 1964 under the Ministry of Steel and Heavy Industry as a construction agency of the Government of India with the objective of creating an organisation in Public Sector to undertake execution of modern integrated Steel Plants. Initially set up by pooling the expertise already available in all the disciplines in the three Steel Plants constructed at Rourkela, Bhilai and Durgapur with a view to creating a base for undertaking steel plant construction, HSCL has diversified its activities over the years and has developed

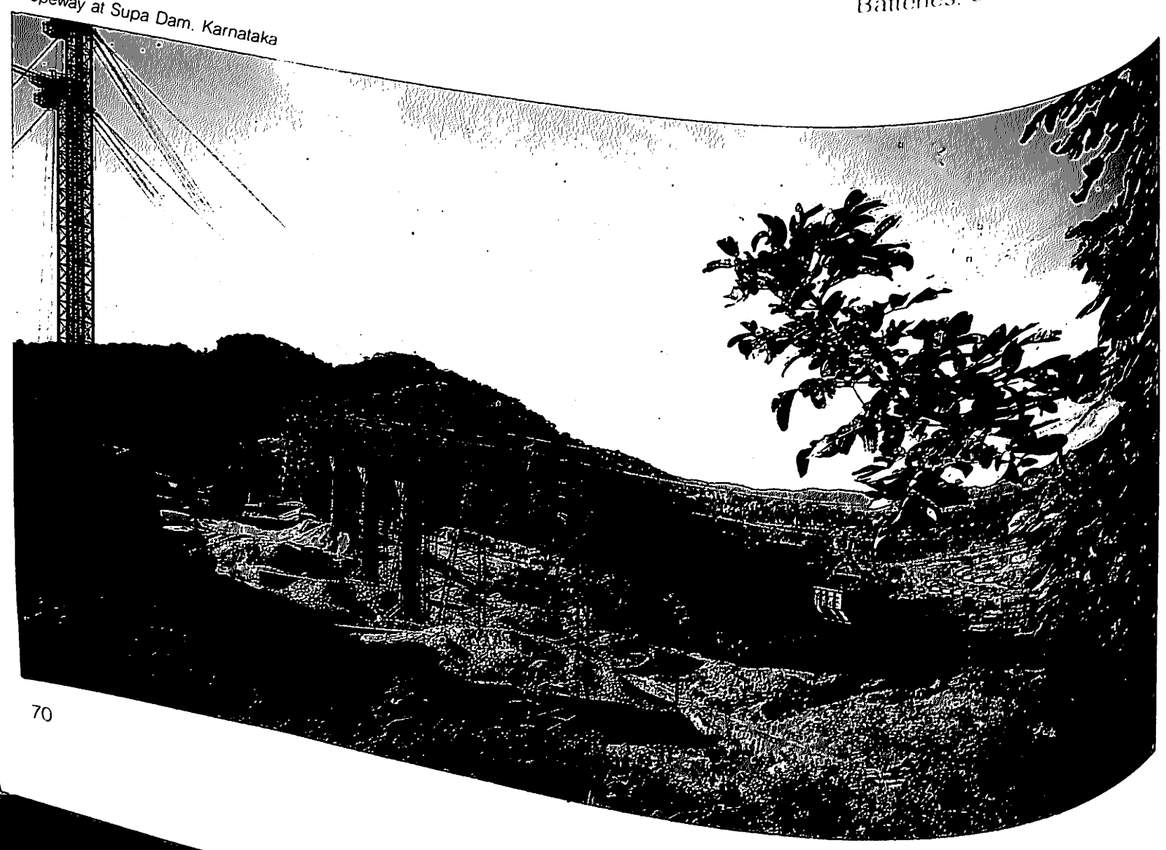
[illegible] Concrete
[illegible] and Erection of
[illegible] Technological
[illegible] Pipe Lines
[illegible] Testing and
[illegible] Commissioning of Mechanical
[illegible] Electrical Equipment.
[illegible] Plant Outdoor Cable
[illegible] works
[illegible] Communications
8. Internal and External electrification
9. Refractory works
10. Instrumentation
11. Railways
12. Erection of Outdoor Pipelines
13. Hot and capital repairs of Coke Oven and Blast Furnances
14. Rebuilding of Coke Oven Batteries, etc.

[illegible] Water Front [illegible] Complexes, etc. [illegible] up integrated Steel Plants [illegible] also attained the capacity [illegible] undertake complex projects [illegible] plants on turnkey basis.

With its vast resources in terms of equipment and manpower of various skills, HSCL is fully capable of the following

1. Investigation and Geodatic Survey
2. Design and Architectural Service

Ropeway at Supa Dam, Karnataka



2. Finance

The authorised and paid up share capital as on 31.3.1987 was Rs. 20 crores. The total amount of loan outstanding from Government as on 31.3.1987 was Rs. 74.68 crores as against Rs. 68.68 crores as on 31.3.1987. Total loan of Rs. 6.00 crores has been received till December 1987 from Government during the year

3. Working Results

The cumulative turnover (1987-88) achieved upto the end of December 1987 was Rs. 98.74 crores (Rs. 97.85 crores for Indian operation and Rs. 0.89 crores for Libyan operation) against a target of Rs. 108.63 crores

The company achieved a turnover of Rs. 182.12 crores in the year 1986-87 while suffering a loss of Rs. 10.33 crores (Indian operation Rs. 3.30 crores, Libyan Operation Rs. 7.03 crores) However, this loss did not include interest on Government loan amounting to Rs. 10.09 crores, waiver of which was requested to Government and is under consideration with them. The Company has incurred a loss of Rs. 32 crores (Indian operation Rs. 21.04 crores and Libyan operation Rs. 10.96 crores) during the year till end of December 1987. It is expected that the position would improve during the last Quarter of 1987-88

4. Efforts Made Towards Cost Control, Cost Reduction and Improvement

i) With the decline in the scope of civil engineering works in the Steel Plants, the Company is making all out efforts to obtain construction works in various disciplines in Power, Coal and Industrial Industrial Sectors including construction of Dams, Townships etc.

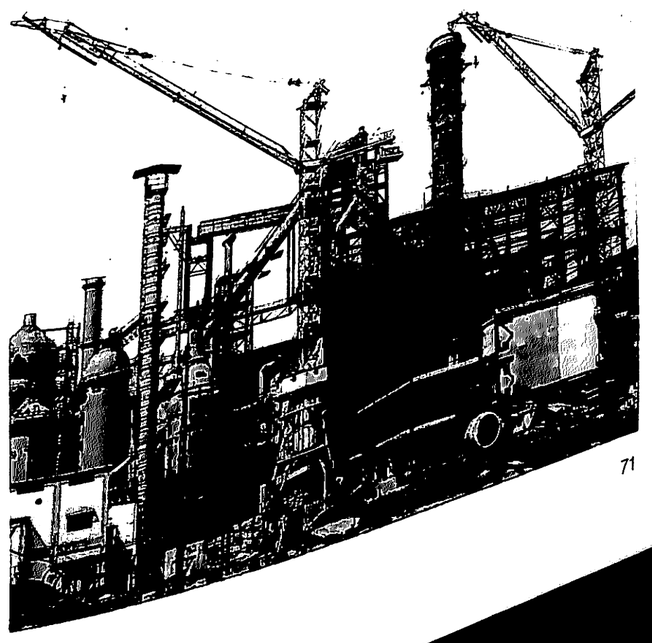
ii) Constant efforts are being made to effect economy in the construction cost as well as reduction in administrative expenditure of the Company.

iii) The Company has a system of Budgetory control for operation of on-going contracts. Profitability position is reviewed periodically and greater emphasis is laid for improvement of programmes.

iv) The Company has been making concerted efforts to improve the order book position and substantial progress in this regard has been made.

v) During the last three years billing on clients have been given priority as a result of which cosiderable improvement has taken place in the areas of submission of Running/Final bills particularly in Bokaro Steel Plant. Efforts are also being

Construction work at Steel Plant



made to reduce the time cycle for billing

vi) Intensive efforts are also being made to settle various outstanding issues/claims with the clients and realise the debts in order to improve the liquidity position. During the year 1986-87 substantial progress has been achieved particularly in steel sector in improving debtors position

vii) Necessary efforts are being made for rendering services for capital and running repairs for various steel plants. Efforts in this directive have also met with some success particularly in Bhilai and Bokaro unit.

viii) The Voluntary Retirement Scheme earlier invoked was extended upto 30th June, 1987 and threafter the scheme as such has not been extended but option has been kept open so that in case somebody opts for voluntary retirement his/her case could be considered on individual basis. Since the scheme was not very attractive the matter has further been discussed with the Ministry and re-revised draft voluntary retirement scheme has been submitted to Government for consideration and approval before implementating the same.

6. Personnel

Manpower Strength:

Manpower position of the Company as on 31.12.1987 alongwith the statistics of SC/ST

[illegible] in Table-I

7. Surplus Labour

With the reduction [illegible] in the Steel Sector [illegible] at Bokaro and Bhilai units, some deployable workforce is expected to remain. However the reduction of the workload in Steel Sector is gradually being off set by securing additional works in other sectors like power and coal etc. Since the highest concentration of employees exists in Bokaro unit of the Company, special efforts have been made to disperse manpower from B.S. City. It has been possible to deploy about 2650 employees from B.S. City to other Projects such as Icha Dam, BCCL works/Dhanbad, Vizag Steel Project, Tanakpur, Durgapur and Madhuband, Neyveli, Dumrighat, Patna etc. during the period from 1st April, 1985 to 31st December, 1987.

The Voluntary Retirement Scheme for workers operative at Bokaro unit earlier was re-introduced in June 1986 for all categories of employees and was extended to all the units of the Company. As on 31.12.87, 910 employees have already retired voluntarily from the services of the Company. The break-up of which is as under.

Category	No. Retired voluntarily
Executives	20
Non-Executives	70
Workers	820
	910

8. Contract Labour Position

The total number of workers engaged by PRW/Contractors at [illegible] of the Company is [illegible] as on 1.12.1987. [illegible] which these agencies are engaged are mostly Civil [illegible] Structural Fabrication [illegible] Erection, Equipment [illegible] etc. Besides these, to [illegible] extent they are also employed in Mechanical and [illegible] works to supplement the [illegible] being done by the departmental workers in these areas. The engagement of such workers has been necessary to execute the various works on schedule fixed by our clients.

9. 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 General Manager/Dy. General Managers. In smaller units the Resident Engineer is incharge of safety organisation.

b) Contracts/PRWs engaged at various HSCL sites are appraised of the safety measures and implementation of safety measures are constantly monitored. 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

Table-I

Group	Total strength
A	1920
B	700
C	15410
D	3550
Total:	21580

S/C	S/T	Female employees	Ex-Servicemen	Physically hadicapped
60	15	8	3	1
55	5	10	192	32
1500	755	202	4	11
1285	2025	1220	215	45
2900	2800	1440		

10. Workers' Participation in Management

The details of participation of workers in HSCL during the year 1987 are as under.-

1. Appex Level Joint Forum

This comprises of the management of HSCL and the National Level Trade Unions viz. INTUC, CITU, AITUC, HMS and three Independent Unions. From the inception of the formation of the Apex Level Joint Forum body in 1981 there have been 19 meetings altogether. The Sub-committee of the Joint forum met two times during 1987 to discuss important matters as under:

i) Departmental working in HSCL:
The productivity and discipline among departmental workers be improved so that more and more work can be executed departmentally.

ii) Voluntary Retirement Scheme:
So far 910 employees-20 Executives, 70 Non-Executives and 820 workers have already retired voluntarily from the services of the Company under the Scheme which was re-introduced at all units of the Company during 1986, which was in force upto 31-12.1987. The benefits offered under the scheme were not found lucrative so as to attract a sizeable number of employees in comparison to the total strength of the Company. A draft of a revised scheme, more or less on the pattern of the scheme introduced in SAIL has been proposed and submitted to the Government.

iii) Services Linked Advancement Scheme:
The Scheme has been introduced in the Company w.e.f. 1st April 1987. So far around 5,000 employees have been benefitted under the scheme.

iv) Employees' Voluntary Welfare Scheme:
A Central Welfare Fund scheme for employees has been introduced in the Company w.e.f. 1.4.1987. So far 27 nos. of the dependants of the deceased member employees of the Company have been benefitted under the Scheme.

2. Safety Committee

The Committee reviews and analyses causes of accidents during the year and suggests preventive measures to be taken to avoid future recurrence of such accidents. Training on safety has also been organised at the unit to inculcate the safety consciousness among the supervisors. It has further been decided to intensify training programme on construction safety. Each GMs office including Head Office will nominate Safety Officers, who will periodically check that all safety procedures, as required, are taken care of at the units. GMs will ensure that a weekly list of safety sensitive operations are drawn up and Sr. Officers are present at the actual time of execution of jobs at the concerned site.

11. Welfare Plan for SC/ST

a) Such employees are exposed to various management developments and training programmes.

b) Schools have been provided with assistance of the Management in the areas where SC/ST employees mostly reside.

c) Assistance is given for supply of drinking water.

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

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

Companies of the Bird Group

The erstwhile Bird and Company Limited was taken over by Government with effect from 25th October 1980 under Section 4(1) of the Bird and Company Limited (Acquisition and Transfer of Undertakings and Other Properties) Act 1980 whereby and by the Bird and Company (Shares) in certain other Companies specified in Schedule 1 to the Act stood transferred to the Central Government. Such Companies included six investment Companies of the Bird Group. These were analgamated in September 1984 into one company known as Eastern Investment Limited under a notification issued by Department of Company Affairs.

The Department of Steel looks after the affairs of the following companies of the Bird Group as a share holder on behalf of the President; the percentage of share capital of each company held by the President of India is specified below.—

1. The Orissa Minerals Development Company Limited
2. The Karanpura Development Co. Ltd. 14.20
3. The Kumardhubi Fireclay and Silica Works Limited 31.25
4. The Bisra Stone Lime Company Ltd. 8.00
5. Eastern Investment Limited One out of Share 5,00,000 34.77

Scoot a Saxby Limited is a fully owned subsidiary of the Karanpura Development Company Limited.

The Orissa Minerals Development Company Limited

The Orissa Minerals Development Company Limited is engaged in the mining of iron ore

[illegible] construction [illegible] supply of [illegible] repairing and [illegible] pumps and [illegible] pipelines for [illegible] plantations for [illegible] use in [illegible] national [illegible] in pumps. [illegible] and their [illegible] the year 1987. [illegible] Company was [illegible] incurred a net loss [illegible] during the year [illegible] 88 [illegible] sanctioned a [illegible] lakhs for [illegible] requirements of [illegible] and two non-plan [illegible] Rs 50 lakhs for [illegible] working capital [illegible] needs of the Company.

The Kumardhubi Fireclay and Silica Works Limited

It is one of the major producers of refractories in the country. It has an installed capacity of 135,000 tonnes of refractories, mainly fire bricks, high alumina bricks, silica bricks and castables. The Company was maintaining its accounts by the calendar year till 1985. It has now switched over to financial year accounting. During the period January 1986 to March 1987 it produced 59,439 tonnes of refractories valued at Rs. 11.05 crores. It incurred a net loss of Rs. 1.77 crores during the period. The main problem faced by the Company is shortage of working capital leading to non-availability of raw materials, essential spare parts for sustaining production and meeting the emergent as well as regular maintenance requirement of plants and machineries.

The Karanpura Development Company Limited

The Company is presently engaged in the mining of lime stone and clay. During the year 1987, it produced 91,510 tonnes of limestone and 704 tonnes of fireclay. It incurred a net loss of Rs. 25.52 lakhs during the year

A refractories unit is also owned by the Company which continued to remain closed throughout the year, being unviable

Scoot and Saxby Limited

This Company is a fully owned subsidiary of Karanpura Development Company Limited. Its activities are sinking of deep

The Bisra Stone Lime Company Limited

It is engaged in the mining of limestone and dolomite. The Company has mining leases covering an area of [illegible] sq. kms. in Birmitrapur in Sundergarh district of Orissa. It supplies limestone and dolomite to steel plants at Durgapur, Burnpur (IISCO) and Rourkela. The Company produced 8.00 lakh tonnes of limestone and 3.80 lakh tonnes of dolomite during 1986-87. It incurred a net loss of Rs. 6.88 crores during the year after allowing for depreciation and investment allowance reserve. There was a sharp drop in offtake of limestone by the steel plants. The company has introduced a Voluntary Retirement Scheme to bring about reduction in staff to match its despatches. This scheme has had a good response and a reduction of about 1000 in the work-force is expected.

Eastern Investment Limited

It is an investment Company with income from dividend and interest on its investments. The Company as it exists at present has been formed by amalgamation of six other investment companies of the Bird Group. The Company incurred a loss of approx Rs. 91,462 in 1987.

Outlay for central industrial and mineral projects in the Seventh Five Year Plan

S.No.	Name of the Undertaking	(Rs. In Crores) 7th Plan (1985-90) Outlay
1.	2.	3
A.	**DEPARTMENT OF STEEL**	
1.1	**IRON & STEEL**	
1.1.1	**Bhilai Steel Plant**	**906.33**
1.1.2	Continuing Schemes	621.33
1.1.3	Replacement & Renewals	100.00
1.1.4	Modernisation & New Schemes	180.00
1.2	Township and other programmes	5.00
1.2.1	**Bokaro Steel Plant**	**774.01**
1.2.2	Continuing Schemes	554.01
1.2.3	Replacement & Renewals	55.00
1.2.4	Modernisation & New Schemes	160.00
1.3	Township and other programmes	5.00
1.3.1	**Durgapur Steel Plant**	**688.03**
1.3.2	Continuing Schemes	28.03
1.3.3	Replacement & Renewals	190.00
1.3.4	Modernisation & New Schemes	460.00
1.4	Township and other programmes	10.00
1.4.1	**Rourkela Steel Plant**	**674.20**
1.4.2	Continuing Schemes	166.20
1.4.3	Replacement & Renewals	143.00
1.4.4	Modernisation & New Schemes	360.00
1.5	Township and other programmes	5.00
1.5.1	**Alloy Steels Plant**	**94.23**
1.5.2	Continuing Schemes	66.23
1.5.3	Replacement & Renewals	23.00
1.6	Township & other programmes	5.00
1.6.1	**Salem Steel Plant**	**16.06**
1.6.2	Continuing Schemes	10.06
1.6.3	Replacement & Renewals	5.00
1.7	Township and other programmes	1.00
1.7.1	**Indian Iron & Steel Company & IISCO-Ujjain**	**215.14**
1.7.2	Continuing Schemes	73.14
1.7.3	Modernisation & New Schemes	52.00
1.7.4	Replacement & Renewals	83.00
1.8	Township and other programmes	7.00
1.8.1	**Research & Development Centre**	**90.44**
1.8.2	Continuing Schemes	38.44
1.8.3	Modernisation & New schemes	50.00
1.9	Township and other programmes	2.00
1.9.1	**Central Marketing Organisation**	**48.00**
1.9.2	Continuing Schemes	12.00
1.9.3	Replacement & Renewals	8.00
1.9.4	Modernisation & New Schemes	26.00
1.10	Township and other programmes	2.00
1.10.1	**Corporate Office, CET & MTI**	**18.00**
1.10.2	Continuing Schemes	5.00
1.10.3	Modernisation & New Schemes	5.00
	Township and other programmes	8.00

1.	2.	3
1.11	**Visvesvaraya Iron & Steel Co. Ltd.**	**51.24**
1.11.1	Continuing Schemes	1.24
1.11.2	Modernisation and New Schemes	50.00
1.A.	**STEEL AUTHORITY OF INDIA LTD.**	**3575.68**
1.A.1	Continuing Schemes	1575.68
1.A.2	Replacement & Renewals	607.00
1.A.3	Modernisation & New Schemes	1343.00
1.A.4	Township and other programmes	50.00
1.12	**RASHTRIYA ISPAT NIGAM LTD**	**2500.00**
1.12.1	Continuing Schemes	2500.00
1.13	**SPONGE IRON INDIA LTD.**	**31.80**
1.13.1	Continuing Schemes	1.80
1.13.2	Replacement & Renewals	5.00
1.13.3	Modernisation and New Schemes	25.00
1.14	**METALLURGICAL & ENGINEERING CONSULTANTS (INDIA) LIMITED**	**8.00**
1.14.1	Continuing Schemes	3.00
1.14.2	New Schemes	5.00
1.15	**HINDUSTAN STEEL WORKS CONSTRUCTION LIMITED**	**24.66**
1.15.1	Continuing Schemes	14.66
1.15.2	Replacement & Renewals	10.00
1.16	**BHARAT REFRACTORIES LIMITED**	**45.99**
1.16.1	Continuing Schemes	5.99
1.16.2	Replacement & Renewals	25.00
1.16.3	Modernisation & New Schemes	15.00
1.17	**METAL SCRAP TRADE CORPN. (Modernisation and New Schemes)**	**10.00**
1.18	**NEW STEEL PLANTS**	**10.00**
1.19	**LOAN TO STATE GOVTS. FOR TENUGHAT & MAHANADI**	**14.00**
A.	**TOTAL IRON & STEEL**	**6220.13**
1.20	**FERROUS MINERALS**	
1.20.1	**NATIONAL MINERAL DEVELOPMENT CORPN.**	**145.30**
1.20.2	Continuing Schemes	39.38
1.20.3	Replacement & Renewals	45.00
1.20.4	Modernisation & New Schemes	54.00
1.21	Township and other programmes	6.50
1.21.1	**KUDREMUKH IRON ORE. CO. LTD.**	**18.45**
1.21.2	Continuing Schemes	16.45
1.22	Replacement & Renewals	2.00
1.22.1	**MANGANESE ORE (INDIA) LTD.**	**18.80**
1.22.2	Continuing Schemes	0.30
1.22.3	Replacement & Renewals	8.00
1.22.4	Modernisation & New Schemes	8.00
1.23	Township and other programmes	2.50
1.23.1	**MINERAL DEVELOPMENT BOARD**	**5.00**
1.24	Modernisation & New Schemes	5.00
1.B.	**LOANS TO KARNATAKA GOVERNMENT FOR ROAD & POWER SCHEMES OF KUDREMUKH PROJECT**	**12.45**
	TOTAL FERROUS MINERALS	**200.00**
	GRAND TOTAL-DEPARTMENT OF STEEL	**6420.13**
		77

Continuous Caster for Billets at TISCO

6. The Private Sector

Tata Iron and Steel Company Limited

1. The Tata Iron and Steel Company Limited (TISCO) the only integrated steel plant in the private sector, is the oldest plant in the country and consists of an integrated steel plant at Jamshedpur, captive collieries at Sijua, Jamadoba and West Bokaro and an iron ore mine at Noamundi in Bihar. M/s. TISCO embarked on an ambitious modernisation programme in 1980 and commissioned first phase of modernisation in March, 1983. Presently they are implementing Phase II of their modernisation programme. Under Phase II, M/s. TISCO have installed a new bar and rod mill of 3,00,000 tpa capacity and after completion, their saleable steel capacity will increase to 2.1 mtpa from 1.74 mtpa, achieved in Phase I.

2. Production

Production in the first ten months of the year has been as under:

(Tonnes)

	April '87/ January '88	April '86/ January '87	Change	
Hot Metal	1649,700	1591.900+	57,800	(+ 3.6%)
Liquid Steel	1877.700	1837.300+	40.400	(+ 2.2%)
Saleable Steel	1517.900	1518.200-	300	

A change in product-mix affected output of saleable steel for 10 months in the current year as compared to that in the previous year. The production of higher value finished steel increased to 48% as against 39% in the corresponding 10 months of the previous year.

Operational performance has been considerably helped by the availability/use of following imported raw material:—

	Tonnes used in 1987 (April/December)
a) Coking Coal	432.841
b) Limestone	76.751
c) HBI	70.485
d) Coke	32,853

Subject to availability of all imports and power, coal, coke, scrap in the remaining months, saleable steel production is expected to be 1.930 million tonnes.

3. Financial Performance

Tata Steel has reported a profit before tax of Rs. 34 crores for the period April-September, 1987 as against a profit of Rs. 30.56 crores during the corresponding period April/September, 1986. The envisaged capital outlay for the financial year is Rs. 219 crores.

4. Modernisation Phase II/Other Cappital Projects

Work on Units on this phase is proceeding well. The most important unit-3,00,000 capacity Bar and Rod Mill was commissioned in March, 1987 as per schedule. Two other major facilities under Modernisation Phase-II, the 1.37 mtpa capacity Sinter Plant and the Raw Material Yard are scheduled to be commissioned by December, 1988. Operations of the Recycling Plant have stabilised. The availability of processed scrap from this Captive Unit has been of help, particularly,to major steel Melting Shop-SMS No. 3 (Open Hearth).

For the first time in the Country, KORF High Intensity Oxygen Technology was introduced at TISCOs SMS 3 Open Hearth Furnances during the year converting one pair oven to this process.

Other major facilities scheduled for completion are Coke Oven Battery No. 7, Stamp Charging facility for above battery, New Coal Handling Plant at Coke Ovens and Dry Circuit Processing Plant at Noamundi. The vital scheme for augmenting Captive Power generation-2 x 30 MW Sets at a capital cost of Rs. 90 crores has been delayed due to problems at DPL, Durgapur. Revised Plans have been drawn and are being implemented.

5. Industrial Relations

Harmonious Industrial relations continue at TISCO. This is significantly aided by the effective funcitoning/contribution of the Joint Department Council which are 42 in number.

6. Energy Conservations/ Management

Energy Conservation/optimisation has received a special attention at Tata Steel. There were several land-marks in the Works operations during the period April/December 1987. Lowest ever fuel rate of 9.326 x 106 Kcal/t.c.s. was achieved during this period, thus improving upon the previous year figures by 0.5%

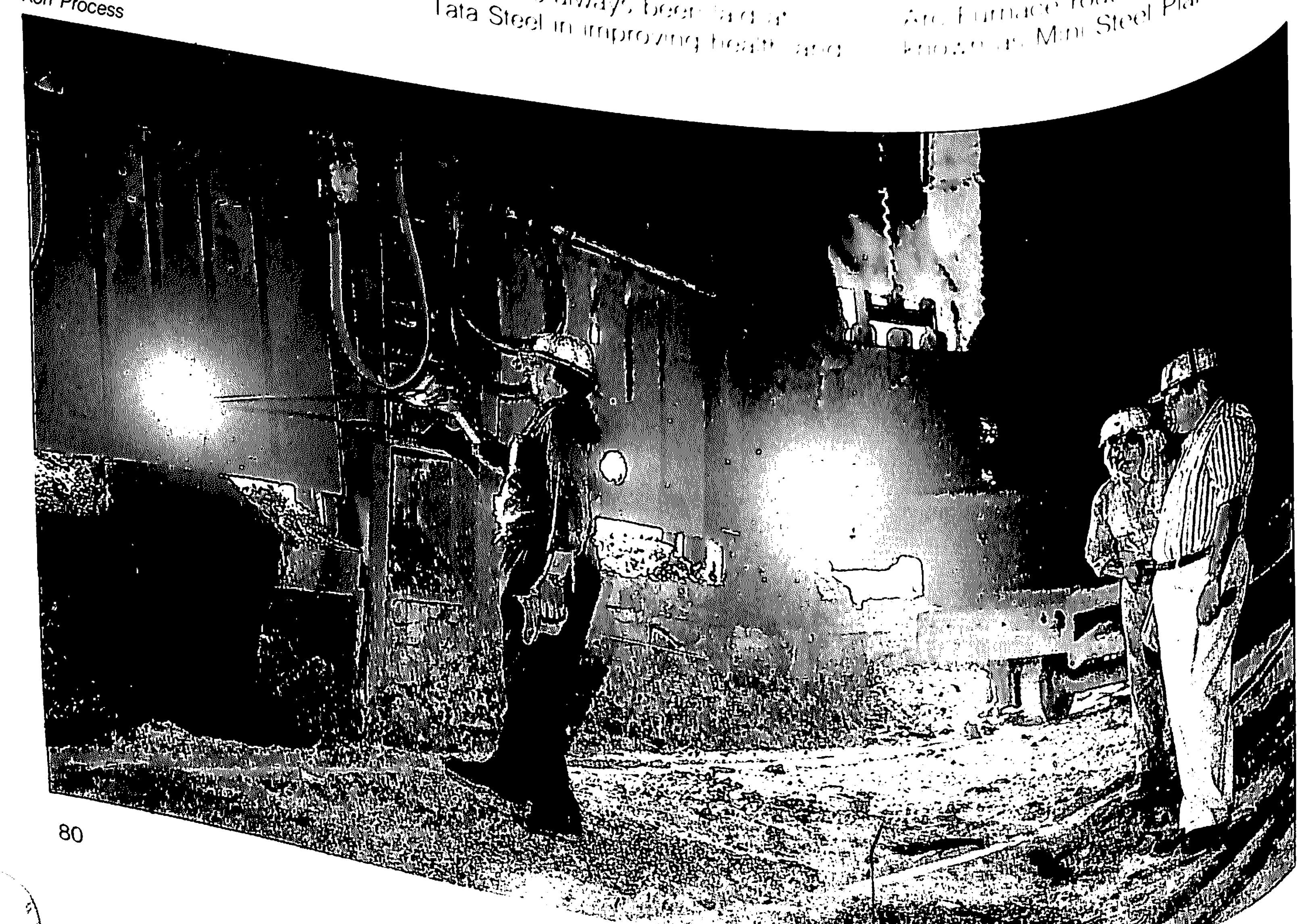
[illegible] 10 Kg [illegible] reduced [illegible] 2.3% Refractory [illegible] reduced by 9.80 [illegible] 18.00%)

Higher LD gas [illegible] this period [illegible] monthly saved fuel [illegible] 610 Kl per month.

7. Safety Measures

Safety measures continue to receive priority attention. Special stress has always been laid at Tata Steel in improving health and [illegible] work force. [illegible] work areas [illegible] work safety. The [illegible] prevention is [illegible] high priority by [illegible] 1987 has been [illegible] year on the [illegible] total number of [illegible] lowest on [illegible] completed 3.3 [illegible] man hours at [illegible] October 29 for the [illegible]

Korf Process



Electric Arc Furnace Industry

Production of steel by Electric Arc Furnace route, popularly known as Mini Steel Plants, started in India in early [illegible] to meet the acute shortage of steel and presently about 3.0 million tonnes of steel accounting for nearly 30% of India's steel production, is produced through this route. Several factors like affordable and comparatively lower capital cost compared to integrated steel plants, lower gestation period, adaptability of production range due to medium capacity of the furnaces, and easy integration with downstream technological developments such as continuous casting and ladle metallurgy practices, favoured the development and emergence of EAF route for production of steel. Today Mini Steel Plants are producing all grades of steels including alloy, high carbon and special steels.

The main raw material of Mini Steel Plants is steel scrap. Since the availability of the Steel scrap in India is limited, Government have permitted liberal imports of melting scrap, sponge iron HBI and heavy melting scrap. However, in order to reduce over dependence of the industry on imported scrap, Government have permitted setting up of new units based on modern technological concept which includes setting up of Ultra High Power Furnace, laddle refining, water cooled panels etc. which are capable of utilising sponge iron upto 70% in the feed material. The existing units are also being encouraged to modernise through adoption of modern energy saving equipment and replacement of smaller furnaces by bigger ones. In the guidelines recently announced by the Government, provision has been kept for replacement of smaller furnaces of the capacity ranging from 5 to 10 tonnes each by a single furnace of 15 to 25 tonnes capacity. This would not only lead to modernisation of the industry but also increase availability of steel.

Further, incentives by way of liberal grant of additional capacities have been announced in order to encourage the existing mini steel plants to undertake modernisation. Any existing mini-steel plant which after modernisation would be able to produce liquid metal sufficient for producing a mimimum quantity of 1 lakh tonnes per annum of hot rolled strips/coils would also be permitted to set up facilities for the manufacture of hot rolled steel strips/coils in the wider width (600 mm and above).

At present 196 mini-steel plants with a total capacity of about 6.6 million tonnes per annum have been licensed and out of these 163 units with a capacity of 4.64 million tonnes have already been commissioned. In addition, one unit holding a letter of intent for a capacity of 50.000 tonnes per annum has started production in Madhya Pradesh.

Production of EAF units, which are reporting their production to the Office of Development Commissioner for Iron & Steel, during the last three years and April-Sept., 1987 is given below:—

(In thousand tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., 1987
Mild Steel	1648.2	2173.1	2213.8	1091.0
Medium High Carbon Steel	306.2	312.4	364.1	182.1
Alloy Steels	317.2	365.3	440.9	203.8
Stainless Steel	68.4	93.4	98.3	51.1
Total	2340.0	2944.2	3117.1	1530.0

The above does not include production of Casting Units registered with D.G.T.D.

Steel Re-rolling Industry

There are about 1054 units holding COB licences, Industrial Licences, registrations and letters of intent for rerolling of long products with a capacity of about 22 million tonnes. In addition, there are quite a large number of units which are operating in the small scale sector. Capacity utilisation of this industry is quite poor and is in the range of 18 to 20%.

In order to improve the health of the re-rolling industry and to optimise their product-mix, Government will henceforth permit liberal modernisation, replacement of obsolete equipments. The existing rolling units will be allowed free diversification to roll all grades of carbon steel and alloy steels including stainless steel. They will also be allowed to produce all types of bars, rods and structurals within their overall licensed capacity.

In order to give further push to re-rolling industry, Government have constituted an Advisory committee under the

Chairmanship of Development Commissioner for Iron & Steel for development of indigenous Re-rolling Industry. On the basis of discussion held in the Advisory Committee Meetings it has been decided to put up a National Institute for Secondary Steel Technology to be established at Mandi Gobindgarh, Punjab for imparting training to personnel of secondary units mainly mini-steel plants and steel re-rolling units on subjects relating to:

i) Energy conservation;
ii) Reduction in cost of production;
iii) Pollution control etc.

Production of re-rolling units which are regularly sending production report to the Office of Development Commissioner for Iron and Steel during the last 3 years and for April-Sept., 1987 is as follows:—

(In thousand tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., 1987
Bars/Rods	1305.9	2305.0	2134.9	1347.1
Wire Rods	362.7	362.0	444.6	305.8
Structurals	333.9	442.0	840.7	538.4
Hoops	30.7	23.4	23.3	14.9
Spl. Sections	90.8	129.1	195.6	95.9
Slabs/Plates	12.0	15.8	16.5	5.7
Total:	2136.0	3277.3	3655.6	2307.8

Steel Wire Drawing Industry

a) At present, there are 73 units having industrial licences with a capacity of 0.84 million tonnes per year. In addition to this, there are about 500/600 units operating in the small scale sector.

b) Production of steel wire drawing units which are reporting to the Office of Development Commissioner for Iron & Steel during the last three years and April-Sept. 1987 is as under:

(In thousand tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., '87
Mild Steel	163.1	197.9	257.1	111.9
Medium/High Carbon	120.3	141.7	154.8	70.6
Alloy Steels	7.2	6.6	7.7	3.7
Stainless Steel	1.5	1.4	1.5	1.0
Total.	292.1	347.6	421.1	187.2

c) In order to develop this industry Government have taken up the following measures:

i) import of carbon, alloy and stainless steel wires of all sizes have been restricted to encourage indigenous production.

ii) diversification in production of all grades of carbon, alloy and stainless steel wires except for mild steel wire thicker than 12 SWG has been allowed to the existing units to improve economic viability.

In order to cater the regional requirement the industry has been de-licensed except for MRTP/FERA Companies.

Cold Rolled Steel Strips Manufacturing Industry

There are 56 units licensed/granted letter of intents for a capacity of around 1.2 million tonnes. Out of these 47 units are already in production.

The production of units which are reporting to the Office of Development Commissioner for Iron & Steel for the last 3 years and for April-Sept., 1987 is as in table-I

The existing cold rolling units could not improve their production substantially due to the scarcity of hot rolled steel strips-a raw material for them. In order to give more stability in production and also improve their economic viability Govt. had allowed the existing units to diversify freely into production of all grades of carbon and alloy steels including stainless steel strips with indigenous raw material. A minimum economic capacity of 10,000 tonnes has

Table-I

(In tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., '87
Mild Steel	152,504	168,744	219,094	124,134
Medium Carbon Steel	10,348	9,155	9,008	3,353
High Carbon Steel	7,382	8,557	7,800	4,228
Alloy Steel	472	537	840	389
Stainless Steel	17,124	14,539	15,993	7,896
Total.	187,830	201,532	252,735	140,000

been fixed for these units. Govt. would also consider grant of higher capacity upto 50,000 tonnes per annum to those CR units which have facilities to produce wider width strips and are prepared to undertake modernisation/renovation and installation of balancing facilities.

Hot Rolled Steel Strips Units

Apart from the integrated steel plants—Bokaro and Rourkela there are 7 licensed units in the private sector for the manufacture of HR Sheets/Strips with a licensed capacity of 2,22,500 tonnes per annum. In addition, 9 units have been issued letters of intent for a capacity of 5,42,500 tonnes per annum. These units are at the various stages of implementation.

The total production of Hot rolled steel strips units during the last 3 years and April-Sept., 1987 is as under:-

(In thousand tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., '87
Hot Rolled Strips	9.3	16.3	34.3	21.9

In order to augment the availability of the hot rolled steel strips it has been decided to permit the existing electric arc furnace units to set up hot rolling mills on a selective basis. Any existing electric arc furnace unit who after substantial expansion by way of modernisation increases its steel making capacity so as to justify setting up of a HR mill with a capacity of 1 lakh tonnes per annum of wider HR strips would be permitted downward integration.

GP/GC/Galvalum-e/Galfan/PVC/Vinyl Coated sheets/strips:

There are 15 units holding licences/granted letter of intent for the manufacture of GP/GC sheets. Out of these, 9 units with a licensed capacity of 3,46,500 tonnes, have been granted industrial licences. Another six units holding letters of intent with a capacity of 2,15,000 tonnes are in various stages of implementation.

Production of the GP/GC sheets during the last 3 years and April-Sept., 1987 is as table-II.

Table-II

(In thousand tonnes)

Category	1984-85	1985-86	1986-87	April-Sept., '87
GC/GC Sheets	—	9.5	63.0	48.2

There are 4 units which have been granted letter of intent for the production of Galvalume with a total capacity of 2,60,000 tonnes. They are still at the various stages of implementation and yet to come in commercial production.

Govt. have also granted 7 letters of intent for aggregate capacity of 3,25,000 tonnes for the production of PVC/Vinyl coated sheets/strips. These letters of intent are at various stages of implementation, and have yet to commense commercial production. Since these items are new for the country, the market potential is also not yet established.

In order to give more flexibility of the product-mix and to improve economic viability of the units, Govt. has decided to permit the broad-banding of GP/GC sheets/Galvalume/PVC/Vinyl coated sheets.

Tinplates

a) Besides Rourkela Steel Plant, there are two more units in the private sector for production of tinplates. Total capacity of these 3 units is 0.3 million tonnes of electrolytic tinplate per year. All these 3 units use imported tin mill black plate as their raw material.

b) To help the indigenous industry become more viable Govt. have allowed import of TMBP at a concessional rate of duty.

c) Production of electrolytic tinplate of the two units in the Private Sector during the last 3 years and April-Sept. 1987 is as table-III.

Table-III

Category	1986-87	(In thousand tonnes) April-Sept. '87
[illegible]	[illegible]	21.5
[illegible]	59.6	2.9
[illegible]	16.7	24.4
Total	76.3	

Ferro Alloys

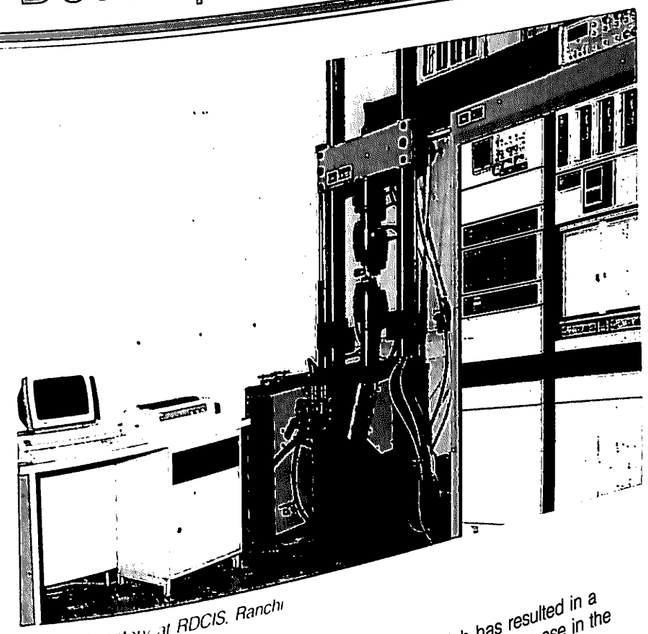
Ferro Alloy is one of the vital input raw material for steel making. At present 25 units in the Organised Sector having Industrial licences/letters of intent with capacity of 0.65 million tonnes per year. There are also three 100% export oriented units for manufacture of charge chrome with a licensed capacity of 0.14 million tonnes who have started production. Besides, one more 100% export oriented unit, having letter of intent with licensed capacity of 50,000 tonnes for manufacture of charge chrome, is yet to be commissioned. Production during the last 3 years and April-Sept., 1987 is as Table-IV

Table-IV

	1984-85	1985-86	1986-87	(In tonnes) April-Sept. 1987
Ferro Manganese	121829	191024	193933	98497
Silico Manganese	31897	1647	5.419	7383
Ferro Silicon	50892	55097	58.155	21914
Ferro Chrome	23876	30063	35.177	16290
Silico Chrome	3802	4178	3.408	1560
Charge Chrome	31702	37535	52.215	31389
Other Ferro Alloys	284	615	721	354
Total:	264.282	320.159	349.028	177387

7. Research & Development

1. The Research & Development Centre for Iron & Steel (RDCIS) has been entrusted with the avowed objective of improving the techno-economic performance of the public sector steel plants. The thrust of the R&D Centre thus revolves around improving productivity through process optimisation and reducing cost of production, developing new products and ensuring their quality, introduction of cost effective and relevant technologies and introduction of energy conservation programmes and practices. The Centre has been pursuing a large number of research programmes to fulfil these goals. The details of the projects undertaken are indicated hereunder:



R&D Laboratory at RDCIS, Ranchi

	As on 31.1.88
(A) Running Projects	296
i. In-house projects	9
ii. Indo-Soviet collaborative projects	15
iii. SAIL-CSIR interaction projects	2
iv. UNDP assisted projects	11
v. 4 Mt expansion projects at BSL and BSP	333
Total	257
(B) Completed projects (since inception)	58
(C) Implemented projects (since inception)	

The impact of the R&D Centre is gradually being felt by the steel plants with greater number of projects being implemented with consequent techno-economic benefits. The performance of the Centre over the past three years is given below:

	1984-85	1985-86	1986-87 (As on 31.1.88)	1987-88
Projects taken up	56	82	103	43
Projects completed	23	20	15	29
Projects implemented	6	9		18

2. The highlights of some of the projects which has been pursued/implemented in different steel plants during the current year are mentioned below:

— The technology of groupwise crushing of coal was introduced in BSL and BSP which has resulted in a significant increase in the coke strength.

— Horizontal transfer of technology related to the combined blowing process installed at BSL to reduce ferro-alloy consumption, increase yield and improve lining life is being planned.

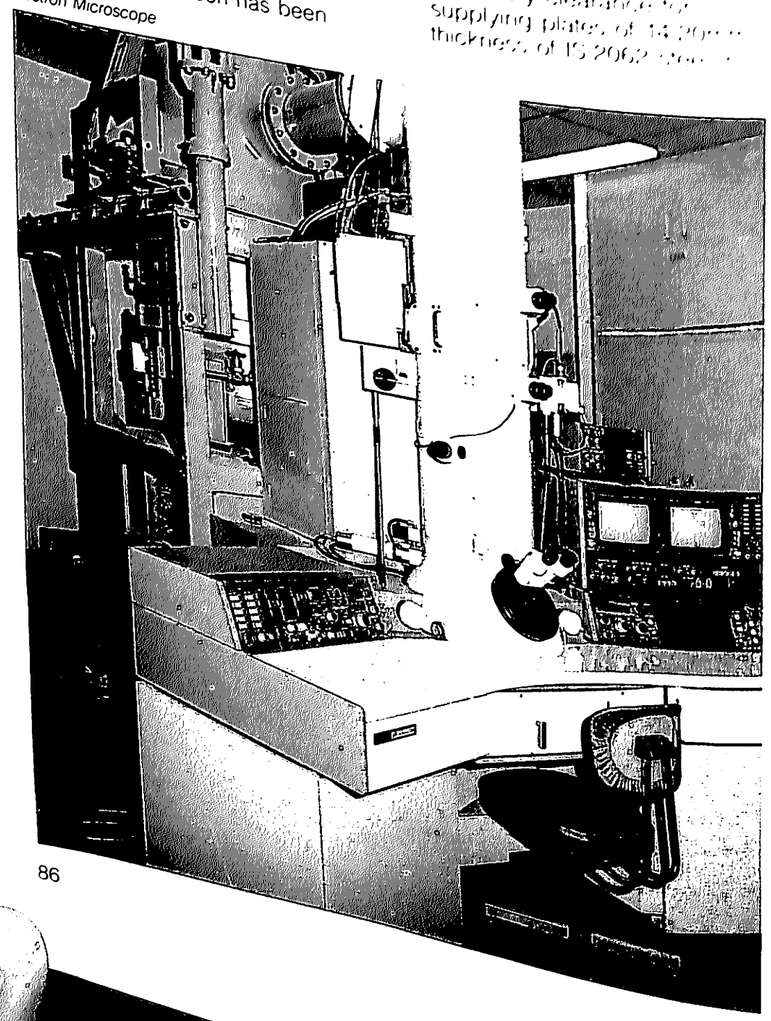
— Lime dust injection unit has been commissioned at DSP which will reduce raw limestone requirement in the burden and give rise to increased productivity and reduce production cost.

— The implementation of the KORF process at RSP has indicated that the heat duration can be reduced, alongwith specific fuel consumption, leading to savings in energy.

— The modified checker system in open hearth furnaces at IISCO resulted in better heat exchange between checker brick and the waste gas/preheating air.

- The introduction of Kyanite free steel ladle mortar has increased the overall life of steel ladles.
- With the commissioning of roll knurling machine at BSP skidding of ingots in the Blooming Mills has been eliminated.
- Improvement in the ingot to slab yield has been realised by the design and development of recessed bottom plates for 16.6T moulds at RSP.
- High carbon sponge iron having 2% carbon has been

Electron Microscope



[illegible] controlled cooled [illegible]

3. [illegible] National Mission on Iron [illegible] suggested by the [illegible] Committee for [illegible] out tangible [illegible] in the performance [illegible] steel industry, has [illegible] approved by the [illegible]. The Mission's [illegible] national structure constitutes [illegible] namely, (i) Apex Board [illegible] Management Board (PMB) [illegible] Programme Management Board (PMB). The [illegible] implementation of the mission [illegible] with MMB and will operate from Ranchi with the Director, RDCIS being the Mission Director. The thrust of the overall mission lies in pooling together the experience, expertise and infrastructure available within the country to meet the goals. A number of academic institutions and national laboratories, integrated steel plants and RDCIS are participating in the mission. The various research projects falling under five broad programmes are being worked out.

4. Targets have been fixed for reducing the overall energy consumption in SAIL steel plants by approximately 10%. The implementation of the various programmes by the Centre alongwith the plant personnel and their subsequent monitoring has shown that a slight reduction in the energy consumption as already been achieved. However, efforts are being made to achieve more substantial reduction in energy co. consumption levels.

5. A Technology Performance Cell has been established in RDCIS, Ranchi, for close monitoring of technological performance parameters in SAIL plants and for providing timely assistance in technical areas. Computerised data base for a few critical technological indices are being generated. The Cell is involved in identifying problem areas and suggesting methods for improving technological performance indices of the steel plants

6. The Centre has been engaged in conducting intensive refresher courses for working personnel in the steel plants, MECON, CFT and national laboratories to update their knowledge base for better understanding and output. The faculty for the courses have been drawn from RDCIS, CET, CRMM and MECON. Three courses have been organised this year, namely, (i) Raw materials beneficiation and agglomeration, (ii) Reheating rolling and finishing and (iii) Blast furnace iron making under Indian conditions.

7. RDCIS is now equipped with sophisticated equipment which provide the basic infrastructural support to pursue in-depth research. Most of the equipment that have been planned for procurement have been commissioned and are being effectively utilised. During the year some equipment have been installed and commissioned thereby further strengthening the research base of the Centre.

8. A consultancy contract for the development of an automatic "Anode Effect Quenching System" for the electrolytic cells in the smelter shop of BALCO has been successfully completed. Being encouraged by the initial performance, BALCO has requested the Centre to act as a technical consultant for the automation of the total smelter shop consisting of 408 electrolytic cells.

9. The Process Analysis Centre for Emerging Technology (PACET) has been set up to investigate the new emerging technologies for liquid iron production and to assess their relevance and importance in our conditions. Two reports have been published by PACET so for.

10. Maharashtra Elektrosmelt Ltd. (MEL), taken over by the management of SAIL, has embarked upon ushering in new technologies for diversification of its product range. The CLU technology for the manufacture of good quality stainless steel is presently being commissioned. The existing facilities of MEL are also being used for the development of various grades of steel for improving the overall viability. Apart from the manufacture of ferro-manganese, the plant has ventured into the production of silico-manganese for the first time. RDCIS has been actively involved in assisting MEL in its developmental efforts.

11. Collaborative research has received great priority in the activities of R&D Centre. Some of the important collaborations are highlighted below:

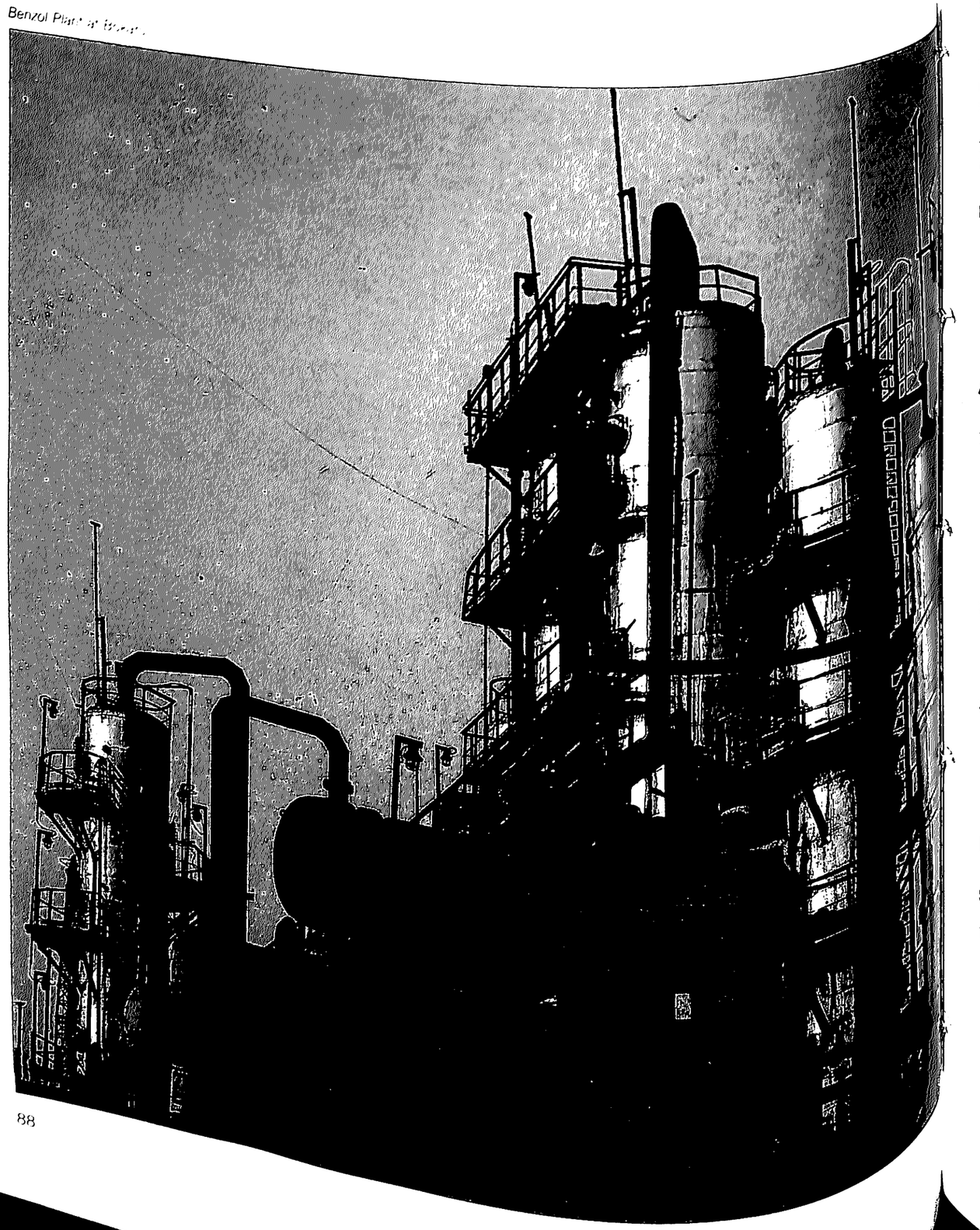
- Indo-Soviet Collaboration: Joint research programmes have been initiated in all the SAIL steel plants and quite a few of them have been successfully completed. The implementation of the completed projects have resulted in substantial techno-economic benefits.

- Collaboration with National Science Foundation, USA: R&D Centre, which has been selected as the nodal agency in India for pursuing collaborative research projects, have already started work with NSF. This proposed collaboration is under consideration of Government.

- This collaboration will be effective through two institutions in the USA Colorado School of Mines in the Product Area and Carnegie Mellon University in the Process Area.

- R&D Centre has been coordinating the activities at RSP, DSP and IISCO pertaining to the recommendations made under the SAIL-NKK agreement. After intensive investigations of all operating divisions, except Rolling Mills, the recommendations made by NKK to upgrade the technology base in the three steel plants, have been classified priority-wise. Some of the recommendations have already been implemented which has resulted in improving the performance indices. The Centre and the steel plants are jointly evaluating and assessing the impact of the implemented recommendations.

- Interaction with Academic Institutions: Participative research Programmes with various academic institutes in the country have been formulated in order to find early solutions to the problems of the steel industry. These projects are basic in nature and involve intensive laboratory scale investigations. One important research programme in the area of Product Development relates to the development of "Rapid solidification technology to produce microcrystalline steels and iron base metallic glasses of superior properties" and is being carried out with participation of Banaras Hindu University.



Benzol Plant at Bhilai

8. Management Information System

In pursuance of the efforts initiated to streamline information systems in various functional areas, large number of projects initiated in previous year were stabilised and at the same time efforts were made to initiate new projects for problem solving. MIS efforts in the department has been made in collaboration with National Informatics Centre (NIC)

The functional areas for which an Integrated MIS has been developed are as follows:

A. Administrative efficiency
B. Performance Monitoring of PSUS.
C. Steel supply.
D. Projects.
E. Finance, Budgeting & Accounts

A. Administrative efficiency

	Area	Brief description
1.	System to Monitor Important Cases (SMIC)	SMIC monitorsd VIP references such as letters from MPs, Ministers and PM's office and important issues such as Parliament assurances.
2.	Decision Monitoring System (DMS)	Monitors all the vital decisions taken at different meetings or otherwise needing follow up.
3.	Section's Activity Monitoring System.	Monitors the section's activities Monitoring System such as Recording, Indexing, Weeding and Reviewing etc.

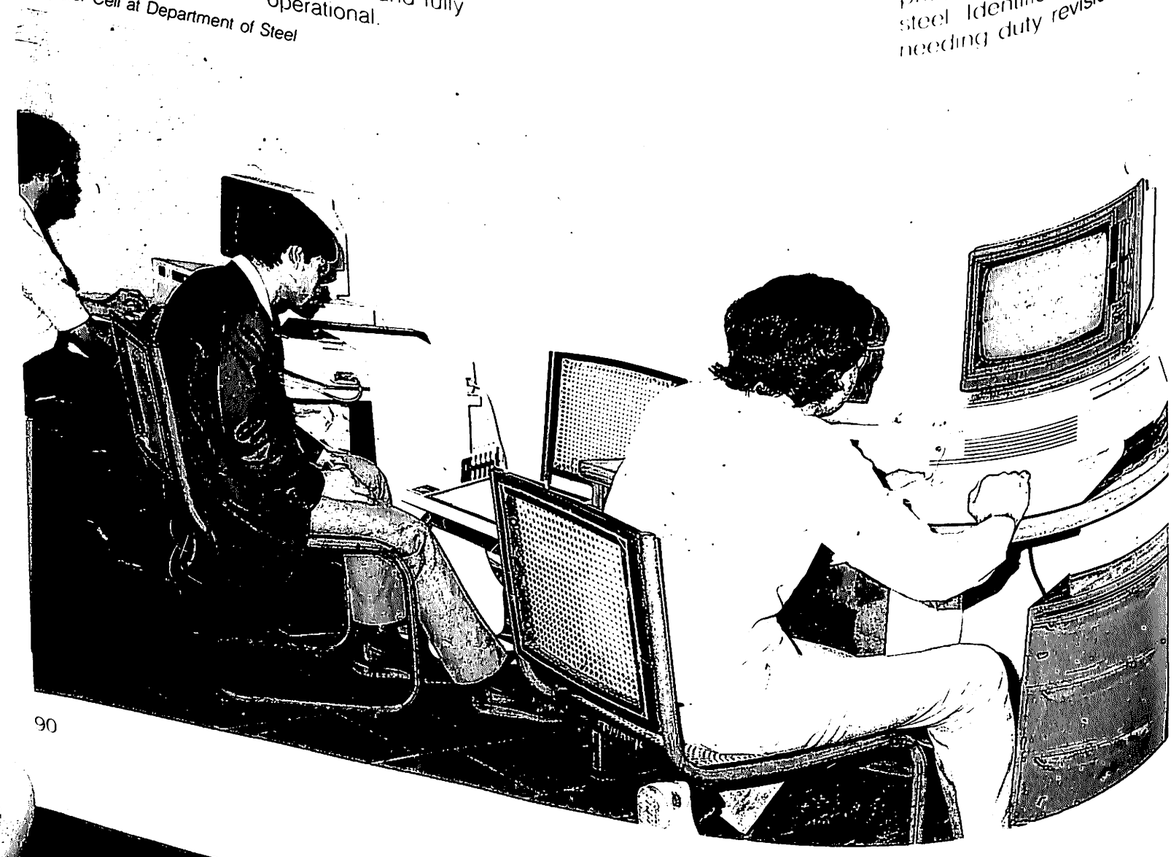
B. Performance Monitoring of PSUs

System/software packages under operation:

1.	Public Enterprises Performance Monitoring System (PEPMS)	PEPMS generates action/exception oriented reports on the performance of public sector undertakings to provide an effective decision support to Department of Steel.
2.	SAIL Production Data Base	Production data base since 1975-76 has been created with reference to all SAIL plants. It provides effective decision support for production performance monitoring of steel plants.
3.	PSU Production Data Base	Production Data Base for all PSUs have been created to provide effective decision support.
4.	SAIL Technical Data Base	Data base on vital technical indices such as coke rate, energy consumption rate and six other vital indices have been created to monitor energy conservation efforts.
5.	Creation of PSU Financial data base	Financial data base for 1985-86 & 1986-87 has been created with reference to all PSUs. This will serve the major need of storage and quick retrieval of data for financial analysis and capital restructuring decisions etc.
6.	10 Day Monitoring of SAIL Plants.	A system to log 10 day on actual production, power position etc., have been developed. This gives signals at the appropriate time for corrective action to be initiated.
7.	Category-wise Production Data Base of SAIL	Category-wise data base for 1985-86 & 1986-87 has been created with reference to all SAIL plants. It provides effective decision Support for Category-wise production effective decision support for Category-wise production performance of Steel Plants for various grades of steel.

8.	Creation of SAIL Financial/Manpower Data base.	[illegible] data base for [illegible] 1986-87 has been created. This server is a major aspect of storage and [illegible] retrieval of data for [illegible] analysis & capital restructuring decision & manpower etc.
9.	LOI Monitoring System	This monitors the LOI's till they get converted into Industrial Licence. Software is developed and fully operational.
10.	Import of Iron & Steel Monitoring.	This monitors the import of Iron & Steel through major Indian Ports. Software developed and fully operational.

Computer Cell at Department of Steel



C. Steel Supply

System/software packages under operation:

	[illegible]	[illegible] provides a weekly report of market prices of scrap and finished steel. Highlights shortage as well surplus areas for corrective action
2.	[illegible] Analysis & Tracking System	Keep track of Import duties, basic import prices, port charges, Marine insurance and related stock yard prices for various items of steel. Identified items needing duty revision based on landed cost vis-a-vis stock yard prices
3.	Scrap Prices Monthly Monitoring	Monitors Import Price & Landed Cost at four major Ports on monthly basis

D. Projects

System/software packages under operation:

1.	Project Monitoring	VIZAG Steel Plant is a major project which is under implementation stage. System to monitor performance w.r.t milestones have been evolved and stabilized.

E. Finance, Budgeting & Accounts

System/software packages under operation:

1.	Pay Roll & Pay Bills GPF computerisation	Pay roll and schedules have been computerised. GPF computerisation has been completed.
3.	Loans and Advances to PSUs.	Computerised statements for financial year 1986-87 were completed by 1.4.87 This will enable tracking of payment of interest as well the repayment of loans and will act as decision support while granting new loans. Software is ready and fully operational.
4.	Plan Expenditure & Continuing Schemes	This generates monthly statements for Plan Expenditure and continuing schemes to PSUs. Software developed and fully operational.

System/software packages under operation:

1.	Data base on Mini Steel Plant.	Once created will cater to production, capacities norms of consumption of Mini Steel Plant in the Country. Input formats developed and sent for data collection.
2.	Project Monitoring of SAIL Plants.	Software developed and input formats sent for data collection.
3.	INfrastructure & Raw material	Input formats developed and sent for data collection.

Computing Facilities & Training

Existing facilities:

The computer Centre as a central facility has been established and is equiped with following Hardware.

A.	1.	IBM PC/AT compatibles with 3MB main memory and 40 MB Hard disk.	3 Nos.
	2.	Dot Matrix Printer	4 Nos.
	3.	Plotter	1 No.
	4.	Line Printer 600 LPM	1 No.
		Terminals	1 No.
B.		Steel & Mines Minister	1 No.
		Secretary	3 Nos.
		AS&FA	
		Joint Secretaries	

C. Connection to NIC Super computer is available for Central facility.

Computer Professionals:

Team of 5 computer professionals from NIC has been dedicated to Department for developing/evolving/Implementing MIS. Efforts are being made to develop an integrated team of users and computer professionals.

9. Organisational Structure

1. The Department of Steel has a Secretary, four Joint Secretaries, four Directors, four Deputy Secretaries, eight Under Secretaries, one Senior Analyst and one Deputy Controller of Accounts. In addition, the Department of Steel shares with the Department of Mines one Financial Adviser in the rank of Additional Secretary, and a Chief Controller of Accounts eqivalent m rank to a Joint Secretary. There is also a Technical Wing comprising of an Industrial Adviser, four Development Officers and three Assistant Development Officers to assist and advise the Department of Steel on technical matters. The total strength of the Secretariat of the Department of Steel is 312. A list of items of work allocated to Department of Steel is given in Annexure I A. The statement showing the representation of women scheduled castes, and scheduled tribes, ex-servicemen and physically handicapped persons is given in Annexure IB

2. There is a vigilance Cell to look into the vigilance cases of the employees of the Department of Steel. One of the Joint Secretaries in the Department of Steel functions as the Chief Vigilance Officer of the Department. Separate vigilance units exist in the Public Sector Undertakings under the Department of Steel. Vigilance inspections of the offices of the Development Commissioner for Iron and Steel and its six Regional Offices are conducted by the Department from time to time. The Director incharge of Establishment acts as the Liaison Officer for looking after the interests of SC and ST employees in service matters. One of the Under Secretaries functions as Welfare Officer of the Department. For receipt and redressal of all complaints and grievances received from public a separate Complaint Cell has been set up and an officer of the rank of Under Secretary has been nominated as the Complaints Officer.

3. In keeping with the special emphasis being laid by the Prime Minister on the launching of an ideological battle against communalism, the Minister for Steel and Mines held a meeting of all officers and staff of the Department of Steel in celebration of the Quami Ekta Week. In this meeting held on 19.11.1987, a pledge was taken by all employees to work towards the strengthening of the freedom and integrity of the nation.

4. The Department of Steel has 16 public sector undertaking under its administrative control. A list of these undertakings is given in Annexure I-C. There is also an autonomous registered Society called the Mineral Development Board under the administrative Control of the Department of Steel. This Board is proposed to be wound up by 31.3.1988.

5. The Department of Steel has only one attached office viz., the office of the Development Commissioner for Iron and Steel at Calcutta. The Development Commissioner for Iron and Steel has six subordinate offices, each headed by Regional Development Commissioner for Iron and Steel, at Bombay Calcutta, Hyderabad, Kanpur, Madras and New Delhi respectively. In the Head Office at Calcutta, the Development Commissioner for Iron and Steel, who is in the rank of a Joint Secretary to Govt. of India, is assisted by two Joint Development Commissioners, four Deputy Development Commissioners and seven Assistant Development Commissioners. In addition, one Industrial Adviser, two Development Officers and one Assistant Development Officer assist him in technical matters.

6. A Research Assistant looks into the work relating to the Statistical division attached to the Head Office. The organisational structure of the Development Commissioner for Iron and Steel and its Regional Offices is given at Annexure I-D. The statement showing the personnel, group-wise and category-wise, male/female, SC/ST, physically handicapped, ex-servicemen, in each category as on 31.12.1987 is given at Annexure I-E.

7. The erstwhile Iron and Steel Control Organisation has been redesignated as the Organisation for the Development Commissioner for Iron and Steel in May, 1987, keeping in view the shift in emphasis from the regulatory and control functions to the developmental functions of tthe organisation, occasioned by the growing importance of secondary producers who now represent 25% of the country's steel production.

The Organisation for the Development of Iron and Steel is a field organisation of the Department of Steel, with its functions broadly divided as regulatory and developmental. The feed-back furnished by the Development Commissioner for Iron and Steel is utilised for the formulation of policies and taking executive decisions. Holding of meetings to identify the gap between the demand and supply of iron and steel materials, recommending import and export polices, investigation of complaints received from the public, and redressing grievances of various iron and steel consumers are some of the important activities of the organisation.

8. The organisation for the Development of Iron and Steel has made good progress in the implementation of the Official Language policy of Government. During the year two meetings of the Official Language Implementation Committee were held in which important decisions were taken for accelerating the use Hindi in Official Work.

Annexure I—B

Statement showing the number of employees, number of SC/ST, Physically handicapped, ex-servicemen, men and women as on 31.12.87 in respect of the Secretariat of the Department of Steel

Group of posts	No. of employees	Men	Women	SC	ST	Physically handicapped	Ex-servicemen
Group 'A'	32	31	1	1	—	—	—
Group 'B'	93	87	6	10	1	—	2
Group 'C'	116	85	31	13	4	1	2
Group 'D'	71	68	3	26	10	2	93

Annexure I—C

List of Public Sector Undertakings Under the Department of Steel

1. Steel Authority of India Limited, Ispat Bhavan, Lodi Road New Delhi-110003.
2. Metallurgical & Engineering Consultants (India) Limited, MECON, Building, Ranchi-834 002 (Bihar).
3. National Mineral Development Corporation Limited Castle Hills Masab Tank Hyderabad-500 028
4. Bharat Refractories Limited, Sector IV-3 Quarter No. 56 Bokaro Steel City-827 001.
5. Kudremukh Iron Ore Co. Ltd. 11 Block Koramangala Bangalore-560 034.
6. Manganese Ore (India) Ltd. 3 Mount Road Extension Nagpur-440 001.
7. Hindustan Steel Works Construction Ltd. No. 1 Shakespeare Sarani, (8th Floor) Calcutta-700 001.
8. Sponge Iron India Limited NMDC Complex, Khanij Bhawan 10-3-3 11/A Castle Hills Hyderabad-500 028.
9. Rashtriya Ispat Nigam Limited Project Office 'A' Block Visakhapatnam-530 031 (AP)
10. Neelachal Ispat Nigam Limited, IPICOL HOUSE (4th Floor) Bhubaneswar-751 007.
11. Metal Scrap Trade Corporation 225 F, Acharya Jagdish Bose Road Calcutta-7000 20
12. Vijayanagar Steel Limited, Blue Cross Chambers, III Floor, 'B' Wing, Infantry Road, Bangalore-560 001
13. Ferro Scrap Nigam Limited Building No. 54 Old Admin. Office Complex Bhilai-490001
14. India Fire Bricks and Insulation Company Limited Rly. Station Ranchi Road, PO. Marar-820 177 District Hazaribagh Bihar.
15. Indian Iron and Steel Co Limited Burnpur 713 325
16. IISCO Stanton Pipe and Foundry Co. Ltd. IISCO House, 50 Chowringhee Calcutta-700 071

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1. The Department of Steel has a Secretary, four Joint Secretaries, four Directors, four Deputy Secretaries, eight Under Secretaries, one Senior Analyst and one Deputy Controller of Accounts. In addition, the Department of Steel shares with the Department of Mines one Financial Adviser in the rank of Additional Secretary, and a Chief Controller of Accounts eqivalent in rank to a Joint Secretary. There is also a Technical Wing comprising of an Industrial Adviser, four Development Officers and three Assistant Development Officers to assist and advise the Department of Steel on technical matters. The total strength of the Secretariat of the Department of Steel is 332. A list of items of work allocated to Department of Steel is given in Annexure I A. The statement showing the representation of SC, women scheduled castes and scheduled tribes, ex-servicemen and physically handicapped persons is given in Annexure I-B.

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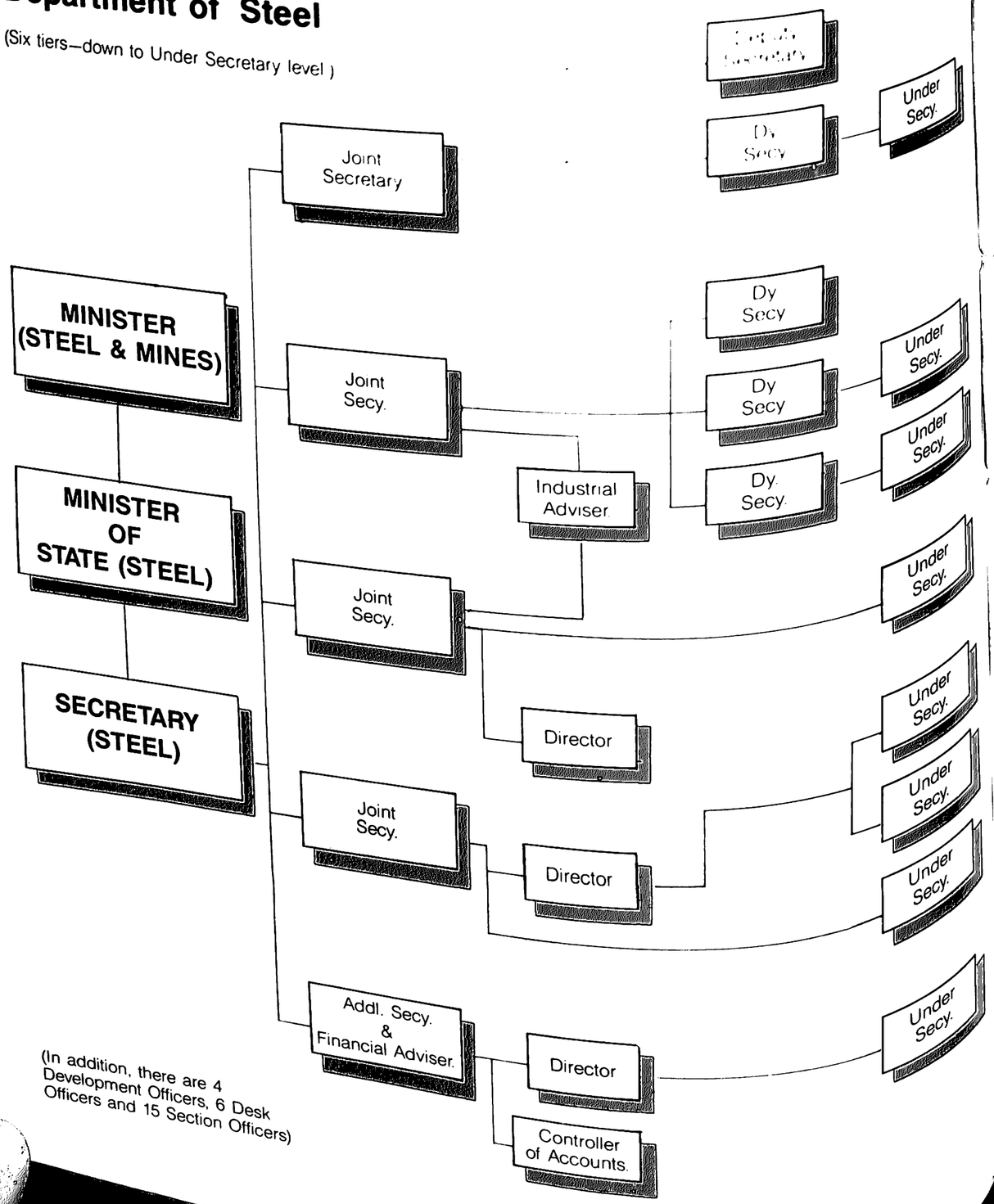
Organisational Chart of the Department of Steel

(Six tiers—down to Under Secretary level)

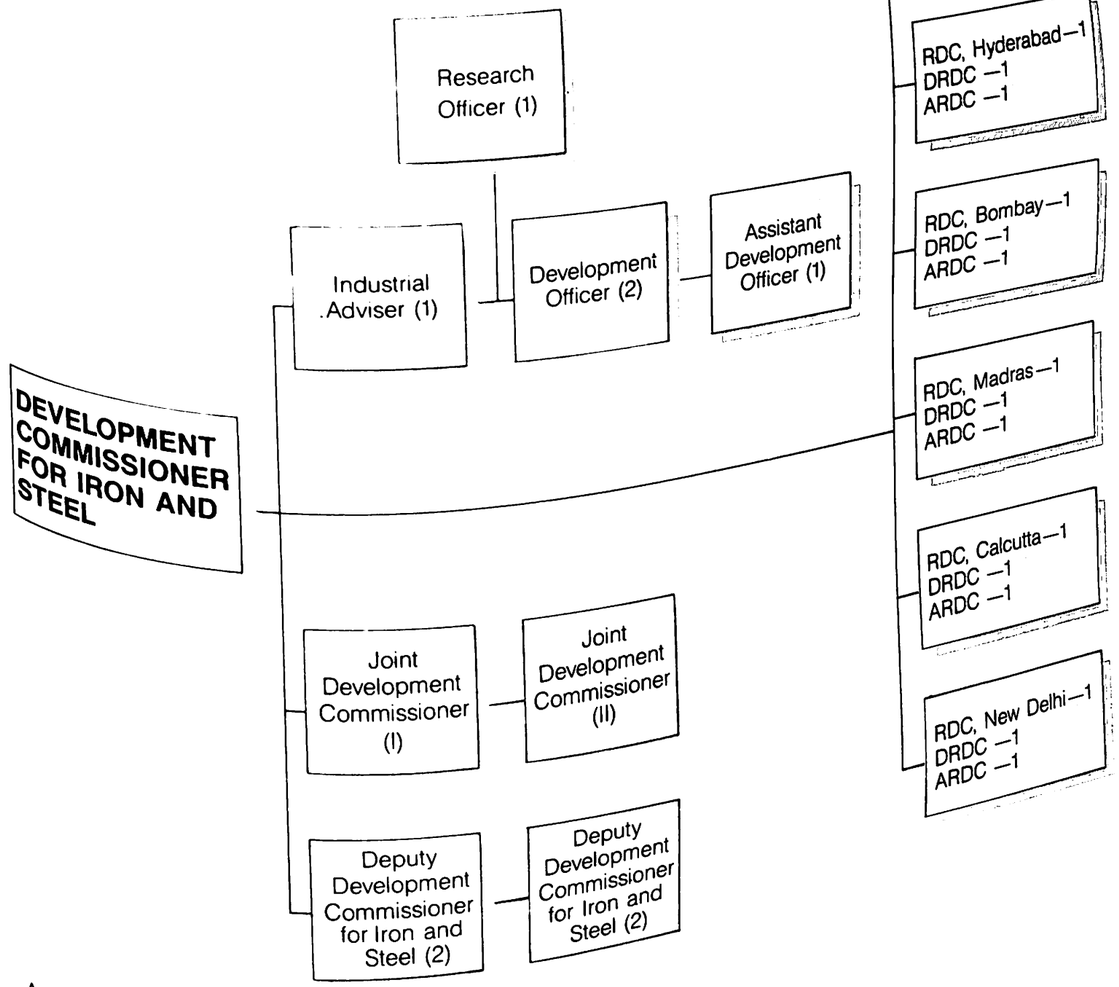


(In addition, there are 4 Development Officers, 6 Desk Officers and 15 Section Officers)

Annexure-ID

Organisational Chart of the office of the Development Commissioner for Iron and Steel alongwith subordinate offices

(Position on 31.12.1987)



Abbreviations

RDC— Regional Development Commissioner for Iron and Steel

DRDC— Deputy Regional Development Commissioner for Iron & Steel

ARDC— Assistant Regional Development Commissioner

Annexure I—A

List of items of Work allocated to the Department 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 minerals 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 and assistance to, all iron and steel industries.
6. Prod[illegible] and [illegible] manganese ore, chrome ore, [illegible] silica sand, fluorspar and other minerals and [illegible] steel industry, excluding grant of 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 Visvesvaraya Iron and Steel Company Limited
   ii) The Bolani Ores (India) Limited.
9. [illegible] Manganese Ore (India) Limited
[illegible] Metals Scrap Trading Corporation
[illegible] Public Sector Enterprises or undertakings falling under the subjects included in this list except such as are specifically allotted to any other Department.
10. All attached or subordinate offices or other organisations concerned with any of the subjects specified in this list.

Annexure—IE

Statement showing number of personnel groupwise and categorywise male, female, SC/ST, physically handicapped, ex-servicemen etc in each category as on 31.12.1987, (1987) in the office of the Development Commissioner for Iron and Steel

Group/ Category	Male	Female	SC	ST	Physically handicapped	Ex-servicemen	Total
Group 'A'	28	—	4	—	—	—	28
Group 'B' (Gazetted)	11	—	5	—	—	—	11
Group 'B' (Non-Gazetted)	17	1	9	—	—	—	18
Group 'C'							
Assistant	33	12	4	1	2	—	45
Head Clerk	5	1	2	—	—	—	6
Inspector	8	—	1	—	—	—	8
Hindi Translator	3	2	—	—	—	—	5
PA	2	3	—	—	—	—	5
Sr. Stenographer	3	1	1	—	—	—	4
Jr. Stenographer	8	—	1	—	—	—	8
UDC+UDC cum Cashier	37	—	1	—	—	—	43
LDC	40	6	—	—	—	—	45
Staff Car Driver	8	5	7	3	1	5	8
Group 'D'			13	2	1	1	1
Roneo Operator	1	—	2	—	—	—	20
Daftry	19	—	—	—	—	—	44
Peon	41	1	—	—	—	—	4
Watchman	4	3	3	—	—	—	
Farash cum Chowkidar	6	—	13	—	1	1	6
Safaiwala	10	—	—	3	1	—	11
	96	1	—	—	—	—	320
			10	1	—	—	

10. Welfare of SC/ST and Minorities

In addition to an officer already designated in the Deptt as Liaison Officer to look after matters relating to representation of Scheduled Castes and Scheduled Tribes in the Department of Steel and subordinate Offices, an officer of the rank of Director has been appointed part-time Liaison Officer in respect of matters relating to representation of SC/ST and also physically handicapped persons in Public Sector Undertakings under the administrative control of the Department of Steel. A full time assistant has been attached to him for this purpose. The officer scrutinises the annual reports received from Public Sector Undertakings regarding recruitment of Scheduled Castes and Scheduled Tribes against the vacancies reserved for them

Performance of various Public Sectors in Welfare of SC/ST during 1987-88

Steel Authority of India Limited

Intake of Scheduled Castes and Scheduled Tribes Candidates was 17.94 and 9.88 per cent respectively of the total recruitment. The share of Scheduled Caste and Scheduled Tribes employees in promotion was 10.5 and 11.59 percent respectively. As on 31st March, 1987 scheduled Caste and Scheduled tribes candidates was 12.82 and 8.28 percent respectively of total manpower.

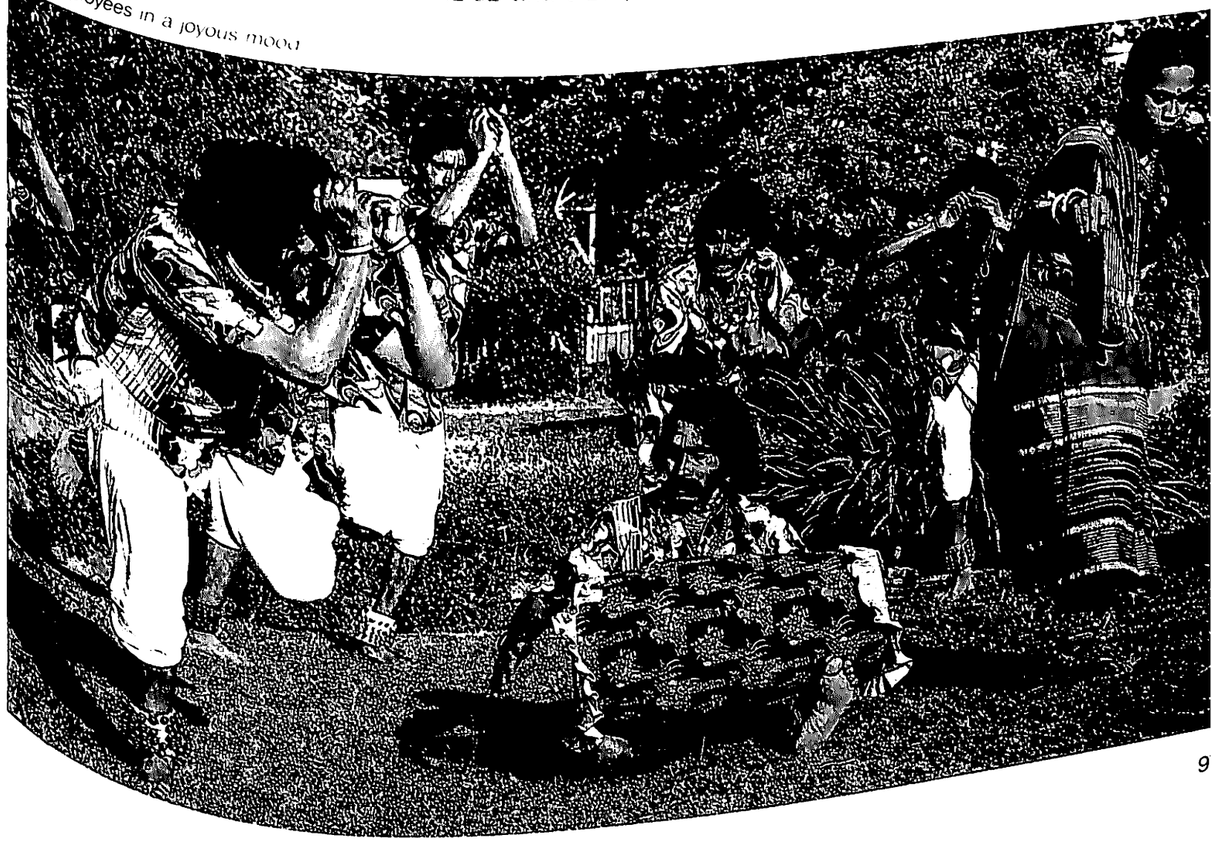
Visveshvarya Iron & Steel Limited

There are 1151 scheduled cas 78 scheduled tribe and 162 Ex-serviceman employees amongst 9788 employees of the Corporation. In percentage term the percentage of scheduled caste, scheduled tribe and ex-serviceman is 11.5, 0.8 and 1.7 respectively.

Spong Iron India Limited

The number of scheduled cas scheduled tribe, ex-serviceman, physically handicapped and women employees in Sponge Ir India Limited is 73,39,5,6 and 23 respectively out of a total of 481 employees, which in percentage terms will be 15.2, 8.1, 1.0, 1.2 a 4.8.

SAIL employees in a joyous mood



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Statement showing number of personnel groupwise and categorywise male, female, SC/ST, physically handicapped, ex-servicemen etc in each category as on 31.12.1987, (1987) in the office of the Development Commissioner for Iron and Steel

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SAIL employees in a joyous mood

Kudremukh Iron Ore Company Limited

The total number of employees in KIOCL is 2178, of which scheduled caste, scheduled tribe, ex-serviceman and woman are 238,50,134 and 142 respectively. In percentage terms the SC, ST, Ex-serviceman and woman employees are 10.9, 2.3, 6.1 and 6.5 percent respectively.

Manganese Ore (India) Limited

The total number of employees of MOIL is 9975 and out of these 1754 belong to scheduled caste, 2866 belong to scheduled tribe and 2353 are women. In percentage terms the scheduled caste are 28.8 per cent, scheduled tribes are 17.7 per cent and women from 23.8 per cent.

Bharat Refractories Limited

Out of total number of 4347 employees of Bharat Refractories Limited, 378 belong to scheduled castes, 629 belong to scheduled tribes, 170 are women and 28 are physically handicapped. The percentage of scheduled caste is 8.8, scheduled tribe 14.5, women 3.9 and physically handicapped 0.7

National Mineral Development Corporation

The total number of employees in NMDC is 6801 and out of these 1015 belong to scheduled castes, 1008 to scheduled tribes and 367 are women. The scheduled castes, scheduled tribes and women are 14.9 14.8 and 5.4 per cent respectively of the total persons employed.

Vishakhapatnam Steel Project

The total persons employed in VSP is 4186 and out of these 557 are scheduled castes, 86 scheduled tribes, 214 Ex-servicemen, 32 physically handicapped and 114 women, which in percentage terms will be 13.3, 2.0, 5.1, 0.8 and 2.7 respectively.

11. Progressive use of Hindi

During the year under report efforts were continued towards better implementation of the Annual Programme for the Progressive use of Hindi for the year 1987-88.

The work relating to the progressive use of Hindi in the Department of Steel is under the Administrative control of a Joint Secretary, and is looked after by a Director. A Hindi Section consisting of an Assistant Director (OL), a Senior Translator, three Junior Translators, one Hindi Stenographer and One Typist (Hindi) assist in this work. 11 Devnagari Typewriters, one bilingual electronic typewriter, Hindi reading material etc. are available in the Department. A number of measures are being taken for the promotion of progressive use of Hindi in the Department, its attached offices and the Public Sector Undertakings under the administrative control of the Department of Steel.

Some of the note worthy items in regard to the use of Hindi in the working of the Department and the PSUs under its control are indicated below:

1. House Journals

All the Public Sector Undertakings under the Administrative control of this Department are publishing their house journals in Hindi also. In addition, Hindi magazines and books are kept in all libraries.

2. Inspections

An Inspection Team has been constituted to oversee the status of implementation of the provision of the Official Languages Act/Rules in attached offices and the Public Sector Undertakings under the administrative control of the Department. In the year under report this Inspection Team has inspected the following offices:

a) Maganese Ore India Ltd. (MOIL), Nagpur.
b) Balaghat Mine of MOIL.
c) SAIL's Branch Sales Office, Bombay.
d) SAIL's Regional/Zonal Office, Bombay.
e) SAIL's Branch Sales Office, Pune.
f) Office of the Regional Develolpment Commissioner for Iron and Steel, Bombay.

3. Committees Relating to Official Language

There is an Official Language Implementation Committee under the Chairmanship of Joint Secretary in the Department. This Committee reviews the progress made in the use of Hindi in the Department, its attached office and Public Sector Undertakings under the administrative control of the Department of steel. Meetings of the Committee are held regularly, four such mettings have been held in 1987. In these meetings, representatives of two undertakings are invited by rotation and the position of the progressive use of Hindi in their offices is reviewed.

4. Hindi Salahkar Samiti

The Hindi Salakhar Samiti attached to the Ministry of Steel and Mines functions under the chairmanship of Minister for Steel and Mines for monitoring and promoting the use of Hindi. The present Samiti was constituted in November'85 and has already met 5 times since then. As per the recommendations of the Members of the Hindi Salahkar Samiti, some of the non-official members of the Samiti have been *nominated to the* various Official Language Implementation Committees of the Department of Steel and also various undertakings, as 'Observers'.

5. Rajbhasha Shield/Trophies

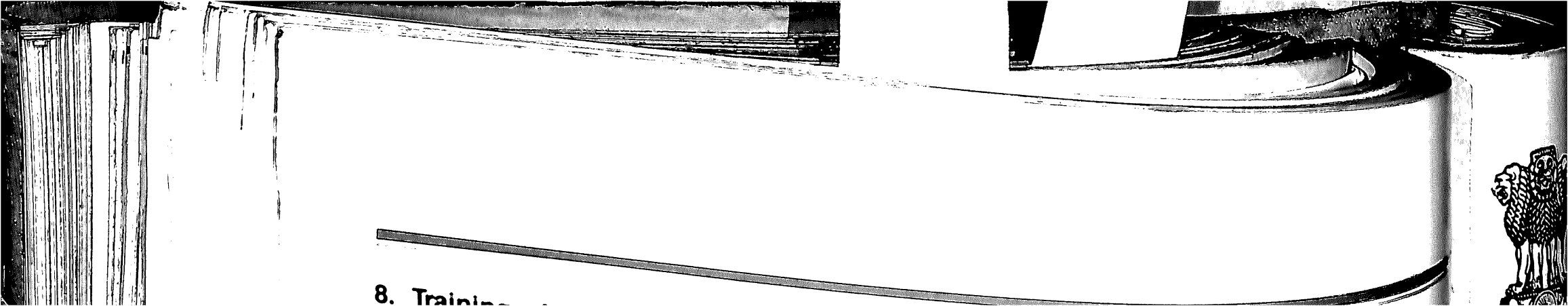
In order to encourage the use of Hindi in the working of the Offices/undertakings under the Department of Steel, a Rajbhasha Shield and other Trophies have been instituted which are awarded each year to offices/undertakings whose performance is outstanding in this field.

6. Implementation of Section 3(3)

In pursuance of the language policy of the Government, all agreements, contracts etc. are prepared both in Hindi as well as in English. Standard forms in use in the Department are all bi-lingual. General orders, postings, transfers etc. are issued both in Hindi and English. There are about 41 proformae being used in different sections of the Department. All these proformae have been prepared in Hindi and English.

7. Noting and Drafting in Hindi

All Sections of the Department have started writing short/routine notes in Hindi. Some officers have also started writing short notes in Hindi, others have been requested to use Hindi to the extent possible so that it may serve as an encouragement to the staff working under them. All communications received in Hindi are replied to in Hindi. As far as possible, correspondence with offices located in Region 'A' is done in Hindi.



8. Trainin

8. Training of Staff in Hindi/Hindi Typewriting/Hindi Stenography

A time-bound programme has been drawn up for imparting training in Hindi/Hindi Typewritting/Hindi Stenography to all the employees for whom in service training is obligatory. The position regarding training of Government servants in Hindi/Hindi Typewriting/Hindi Stenography in this Department is as under:

Officers and staff of the attached office and Public Sector Undertakings are given training under Hindi Teaching scheme of the Ministry of Home Affairs, whereever such facilities exist. In other places, employees are encouraged to learn Hindi through correspondence courses conducted by the Central Hindi Directorate; the expenditure incurred on it, is borne by the concerned offices.

Hindi Training:

Total number of employees (Group A,B & C)	237
Total number of employees possessing working knowledge of Hindi.	226
Total number of employees under training	11
Total number of employees yet to be trained in Hindi Typewriting/Hindi Stenography	24

	Trained	Under training	Yet to be trained
Hindi Typewriting	03	06	16
Hindi Stenography	13	11	08

9. Hindi Essay COmpetition

To encourage both Hindi speaking and non-Hindi speaking officials of this Department to work in Hindi, a Hindi Essay Competition was conducted in the month of November, 1987. Prizes of Rs. 200/-, Rs. 100/-, and Rs. 75/- are being awarded to officials who have ranked 1st, 2nd and 3rd in this competition.

10. Award for Writing of Hindi Books

Under the scheme for awarding cash awards for writing technical books in Hindi prizes are being awarded to selected authors.