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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION
C/PO BOX 145/17
VIENNA
31 May 1963

ORIGINALS FILED IN

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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

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1. DESCRIPTION OF THE EXISTING PLANTS

A. CEYLON STEEL CORPORATION

The Ceylon Steel Corporation was established in September 1961 as an entirely State-owned enterprise primarily for the purpose of implementing the first stage of a proposed fully integrated steel works in Sri Lanka. This consisted initially of setting up a Rolling Mill and a Wire Mill. The most suitable site for the location of the steel works was considered to be a village known as Oruwela, approximately fifteen miles from Colombo and situated in a rural agricultural area.

A 307-acre extent of land was acquired and construction work commenced in 1962. The total capital investment amounted to U.S. \$ 18,400,000. Of this, the foreign cost amounting to U.S. \$ 6,500,000 was granted by the U.S.S.R. on a line of credit over 12 years and at a low rate of interest.

ROLLING MILL

The Rolling Mill is designed to produce 90,000 tons of finished products per annum on 3 shifts per day. Raw materials used are billets of cross-sections 100x100 mm, 80x80 mm, 60x60 mm and of length 5 to 6 metres.

Products manufactured are :-

| | |
|---------------------|-------------------------------|
| M.S. Round Iron | 10 sizes 6.3 to 40 mm |
| M.S. Equal Angles | 7 sizes 25x25x3 to 75x75x10 |
| M.S. Flats | 12 sizes 12x6 to 50x12 mm |
| M.S. Unequal Angles | 3 sizes 65x50x6 to 75x50x7 mm |
| M.S. Hoop | 1 size 25x1.40 mm |

WIRE MILL

The Wire Mill is designed to produce 12,000 tons of drawn wire per annum on 3 shifts per day. Basic raw material used is 6.3 mm wire rod. The Mill consists of six units:

Pickling Unit
Wire Drawing Unit
Galvanizing Unit
Barbed Wire Manufacturing Unit
Hexagonal Mesh Weaving Unit
Welded Mesh Manufacturing Unit

Products manufactured are :-

| | |
|-----------------------------|------------------------|
| Barbing Wire | 1 size 2.0 mm |
| Barbed Wire & Staples | 1 size of each |
| Black Annealed Binding Wire | 8 sizes 1.25 to 5.6 |
| Hard Drawn Wire | 12 sizes 0.9 to 6.0 mm |
| Galvanized Binding Wire | 9 sizes 0.9 to 5.6 mm |
| Welded Mesh | 8 sizes |
| Hexagonal Mesh | 3 sizes 12, 20 & 25 mm |

STEEL FOUNDRY

The Corporation in 1970 commenced production of steel castings in a pilot foundry located at one end of the Rolling Mill. This presently caters for requirements of plain carbon steel, manganese steel and low-alloy steel castings. A 500 kg. electric arc furnace is in operation and the present output is about 4,000 kg. finished steel castings per month. This is the only steel foundry in the country.

MACHINE TOOLS

The Corporation in 1972 commenced on the production of simple Machine Tools in technical collaboration with an Indian manufacturer. The first product consists of Pedestal Grinders. Work on the next product consisting of Bench Drills is now being programmed. There are no other machine tool manufacturers in the country.

STRUCTURAL WORKSHOP

A structural workshop was set up in 1970 for the manufacture of Roof Trusses, Purlins and other fabricated structural items making use of steel from the Rolling Mill.

B. CO-OPERATIVE STEEL INDUSTRIES LTD.

A simple Re-Rolling Mill was established in 1967 by a private company in outer Colombo for rolling small sizes of steel rounds from steel scrap. It was designed to roll only about 3 sizes of such rounds. Many of the items of equipment such as the Roll stands which are manually fed, were obtained in a used condition from India and the other items were fabricated locally. The operation and maintenance of this plant is relatively simple, excepting that the operatives have to contend with sustained physical effort and exposure to heat. The present capacity of this Mill is about 1,000 tons per annum, on one shift per day and a personnel strength of approximately 20 employees.

In 1972, due to its inability to obtain a sufficient quantity of raw materials and to compete with the Ceylon Steel Corporation, the Mill was shut down. This has now been re-constituted as a Co-operative Industry on an experimental basis, with shares being owned by the Ceylon Steel Corporation, three other Co-operative Organisations and the previous employees also owning shares. Production is expected to re-commence in May 1973 with the technical and commercial collaboration of the Ceylon Steel Corporation.

2. OPERATION OF THE CEYLON STEEL CORPORATION

Production

Production in the Rolling Mill commenced in January 1967, while that in the Wire Mill commenced in April 1967. Initially, apart from the Soviet Specialists present for supervision of Site Work and installation of plant and machinery, several other Soviet Engineers and technicians were present to train Corporation personnel and commence production in these two Mills.

The Total production has been as indicated below (in Metric tons)

| <u>ROLLING MILL</u> | | | <u>WIRE MILL</u> | | |
|---------------------|---|--------|------------------|---|-------|
| 1967 | = | 13,784 | 1967 | = | 4,284 |
| 1968 | = | 29,115 | 1968 | = | 6,293 |
| 1969 | = | 22,364 | 1969 | = | 5,074 |
| 1970 | = | 23,422 | 1970 | = | 5,126 |
| 1971 | = | 26,415 | 1971 | = | 7,006 |
| 1972 | = | 32,541 | 1972 | = | 7,757 |

Several Engineers and Senior Technicians were sent on training to the Soviet Union to make it easier for Ceylonese personnel to take over the operational activities from the Soviet Technicians after commissioning of the Mills. There are at present approximately 1,200 permanent employees of which about 50 constitute Technical Managerial personnel. The training of such personnel has been found to be necessary as a continuous process. The need for training of more persons in these categories has been mainly due to personnel leaving the Organisation within a comparatively short period after commissioning of the plant. Training facilities for personnel at these higher levels have to be obtained abroad, since the only recognisable Steel Plant in the country is that of the Steel Corporation itself. The middle grades such as supervisory and other skilled personnel can be trained within the plant.

A training centre is in the process of being established with the assistance of the Ministry of Industries & Scientific Affairs of the Government of Sri Lanka, within the Corporation's premises. This is one of several being established throughout the country, mainly to serve the needs of a newly established National Apprenticeship Scheme. Apart from providing facilities for training of persons for the expansion projects of this organisation, it will also provide a spill-over for the anticipated needs of the country in general.

One of the continuing problems that is not satisfactorily solved consists of the productivity of labour. Several reasons contribute to this such as absenteeism, lack of motivation, insufficient experience and orientation to industrial activity, particularly so in a rural area and a largely agricultural country. Within this Corporation itself, in order to meet these problems, several measures have been adopted such as incentive schemes and initial organisations for worker participation in management from the shop level.

Commercial

The sales of rolled and wire products have increased since the commencement of indigenous production in 1967. This has been mainly through the process of import substitution. The Corporation's Rolling Mill is producing only at about 33% of its capacity due to lack of demand in the domestic market. The major portion of the country's requirements is produced in this Mill and only a negligible quantity of special items is imported at present. Similarly the Wire Mill too is working at about 60% of its capacity, the main constraint here too

being that of the lack of demand. It has also not been possible so far to compete with the export prices of developed countries.

The total sales have been as indicated below : (in U.S. Dollars)

| | <u>ROLLING MILL</u> | <u>WIRE MILL</u> |
|------|---------------------|------------------|
| 1967 | 9,600 | 1,798 |
| 1968 | 25,930 | 3,788 |
| 1969 | 22,268 | 5,380 |
| 1970 | 24,812 | 5,531 |
| 1971 | 27,353 | 6,338 |
| 1972 | 31,935 | 6,515 |

The Total Sales Revenue and Profits are indicated below: (in U.S. Dollars)

| <u>PERIOD</u> | <u>Total Sales Revenue</u> ===== | <u>Profit before Taxation</u> ===== |
|----------------------------|-------------------------------------|--|
| April 1967 to March 1968 | 4,203,639 | 453,825 |
| April 1968 to March 1969 | 4,157,866 | 401,170 |
| April 1969 to March 1970 | 6,300,744 | 245,757 |
| April 1970 to March 1971 | 7,520,813 | 315,434 |
| 1971 - April to December | 7,084,984 | 852,701 |
| 1972 - January to December | 12,240,937 | 1,109,000 |

The net Foreign Exchange savings of the project have been estimated as indicated below: (in U.S. Dollars)

| | |
|---------|-----------|
| 1967/68 | 89,444 |
| 1968/69 | 373,626 |
| 1969/70 | 1,235,831 |
| 1970/71 | 809,151 |
| 1971/72 | 642,299 |

The supply of most of the raw materials, consisting of billets and wire rods, comes from abroad. This raises several problems for a country like Sri Lanka being faced with a severe foreign exchange crisis. A considerable proportion of imports is therefore required by Government to be made on the basis of specific Trade and Commodity Aid Agreements between Sri Lanka and other developed countries which indicate the items that could be supplied and the terms of re-payment. Due to this it is difficult to maintain a control of inventories as management would desire and obtain the best prices in the world market. The Corporation thus

often has to carry very large stocks. In at least three cases, production has to be curtailed due to a lack of raw materials.

Research & Development

A Research & Development Department and an Industrial Engineering Department were set up recently and have been able to commence on useful activities. Several modifications have been made in the Rolling Mill, one of the most important being the use of 80x60 mm billets for rolling rounds from 16 mm downwards and smaller sizes of angles and flats. The existing mill was designed to use 60x60 mm billets for these products. This will save the Corporation considerable capital investment too, which was earlier recommended as necessary in the Rolling Mill when the Steel Melt Shop is established, since it would be possible to cast billets only from 80x80 mm upwards. Another new product consisting of baling hoops has been manufactured experimentally. With further modifications it is hoped to produce the country's entire requirements of these products. Among other items it has also been possible, for example, to manufacture the Corporation's entire requirements of drawing lubricant, which was previously imported, and commence manufacture of its own welding rods.

3. EXPANSION SCHEMES

Second Stage of the Steel Project

A detailed Project Report was received recently from the Soviet Union, in respect of Stage 2 of the Corporation's expansion to provide for Steel Making facilities. The views of the Corporation's Consultants consisting of a Consultant Firm in the United Kingdom have also been obtained. Negotiations have commenced to enter into an Agreement for the implementation of this Project. It has been generally considered that the most feasible would be the installation of an electric arc furnace and a continuous-casting plant to use both domestic and imported steel scrap as well as pre-reduced pellets or sponge iron, which are expected to be available in the international market soon. It is hoped to commence production by about 1977 with an output of approximately 45,000 tons per annum, increasing to about 60,000 tons in 1980.

The main problem at present consists of attempting to reduce the capital investment, particularly that of foreign cost, and to obtain the best terms of re-payment. The total estimated cost of this Project is approximately U.S. \$ 15,000,000.

Steel Foundry

A new Steel Foundry with a capacity of 1,000 tons of castings per annum is being set up within the premises of the Corporation. An Agreement was entered into with an organisation in India for the supply of the Foundry equipment. Due to the need to make payments for this on a Government to Government Loan Agreement, considerable delays were encountered in implementing the terms of the Contract. However, it is hoped to commence commercial production during the early part of 1974.

Manufacture of Ribbed and Twisted Steel

An Agreement was entered into for the manufacture license of Ribbed and Twisted Steel for use in reinforcement work instead of ordinary steel rods.

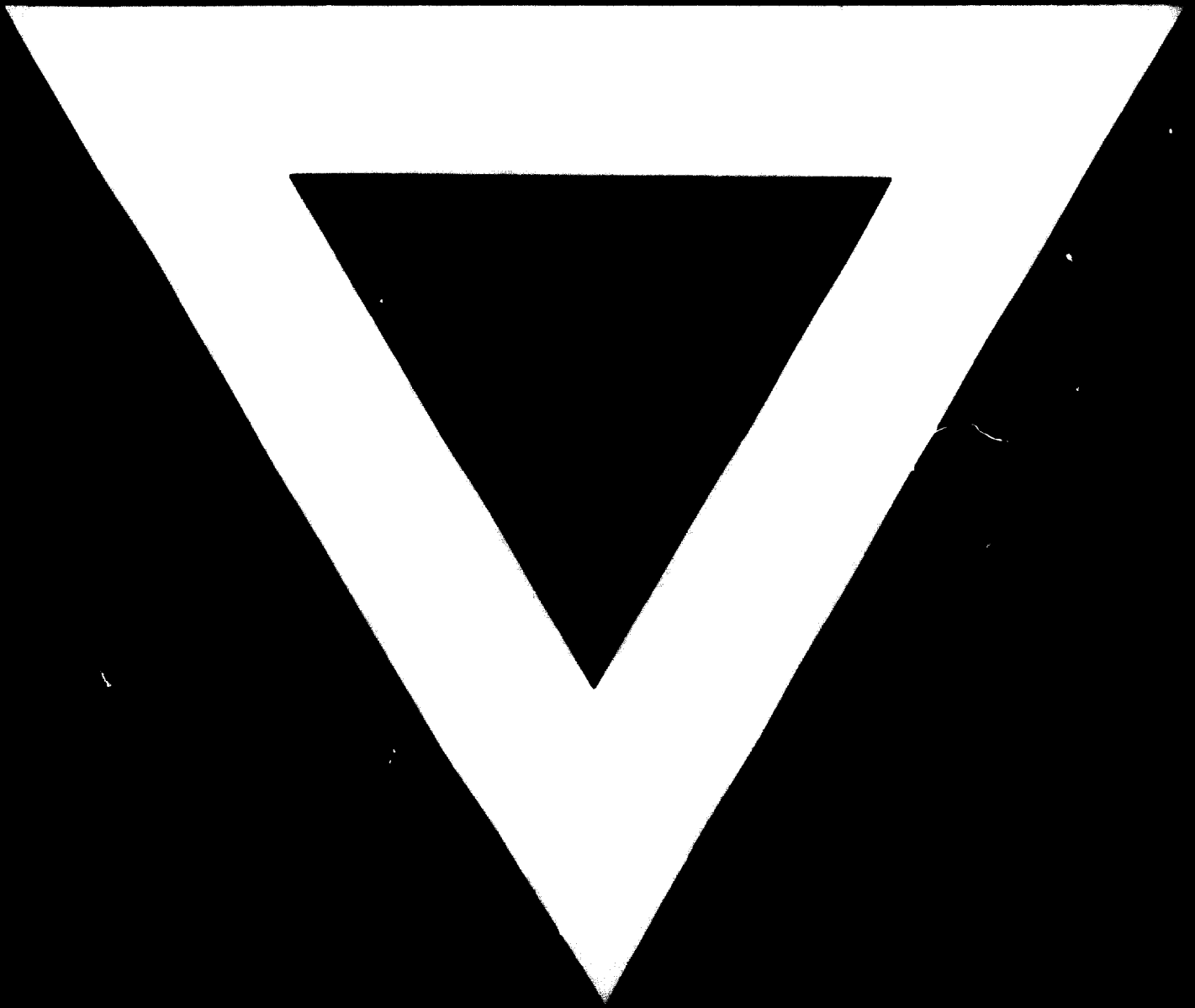
The use of this product would result in a greater economy in the use of steel for constructional work and would result in considerable foreign exchange savings, by reducing the import of raw materials. The equipment has been ordered from Austria and the Technical Collaboration is with an Indian-based Belgian organisation. It is expected to commence production by the third quarter of 1973.

Sheet and Plate Mill

Negotiations have commenced with an Eastern European country for the establishment of a small steel sheet and plate mill. In view of the country's limited requirements it had been not able until recently to interest any foreign organisation to consider the possibility of manufacturing and supplying the requisite equipment for the production of the range and quantity of finished products required.

Table 1. Iron and Steel Production and Consumption, 1972-1980

| | PRODUCTION (thousand metric tons) | | | CONSUMPTION (thousand metric tons) | | |
|---|--------------------------------------|-------------------|-------------------|---------------------------------------|-------------------|-------------------|
| | 1972 Actual | 1975 Projected | 1980 Projected | 1972 Actual | 1975 Projected | 1980 Projected |
| Iron ore | - | - | - | - | - | - |
| Manganese ore | - | - | - | - | - | - |
| Coking coal | - | - | - | - | - | - |
| Non-coking coal | - | - | - | - | - | - |
| Pellets or sinter | - | - | - | - | - | - |
| Coke-oven coke | - | - | - | - | - | - |
| Pig iron | - | - | - | - | - | - |
| Crude steel | - | - | 60 | - | - | 60 |
| Total rolled products | 32 | 40 | 60 | 32 | 40 | 60 |
| | Proved | | | Estimated | | |
| Iron ore reserves (million metric tons) | a) LIMONITE | | 2.23 | Negligible | | |
| | b) MAGNETITE | | 5.63 | | | |
| Coking coal reserves (million metric tons) | Nil | | | Nil | | |
| Natural gas reserves (million metric tons) | Nil | | | Nil | | |



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