COMMITTEE ON PUBLIC UNDERTAKINGS
(1969-70)

(FOURTH LOK SABHA)

SIXTY-EIGHTH REPORT

BOKARO STEEL LTD.

MINISTRY OF STEEL AND HEAVY ENGINEERING

LOK SABHA SECRETARIAT
NEW DELHI
April, 1970/Chaitra, 1892 (Saka)
Price : Rs. 1·45

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SIXTY-EIGHTH REPORT OF THE COMMITTEE ON PUBLIC UNDERTAKINGS ON BOKARO STEEL LTD.

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COMMITTEE ON PUBLIC UNDERTAKINGS

(1969-70)

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3. Shri Bal Raj Madhok
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Shri S. C. Mookerjee—*Deputy Secretary.*
Shri M. N. Kaul—*Under Secretary.*

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*Appointed Chairman from 10-12-1965 *vice* Shri G. S. Dhillon resigned.

**Ceased to be Member w.e.f. 3-4-1970 consequent on his retirement from Rajya Sabha.

STUDY GROUP I ON STEEL AND HEAVY ENGINEERING UNDERTAKINGS

COMMITTEE ON PUBLIC UNDERTAKINGS

(1969-70)

Study Group on Steel and Engineering Undertakings

1. Shri N. K. Bhatt—*Convener*
2. Shri K. Ananda Nambiar—*Alternate Convener*
3. Shri Bal Raj Madhok—*Member*
4. Shri Vishwa Nath Pandey—*Member*
5. Shri G. S. Reddi—*Member*
6. Shri P. M. Sayeed—*Member*

INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, present this Sixty-eighth Report on Bokaro Steel Ltd.

2. This Report is based on the examination of the working of the Bokaro Steel Ltd. upto the year ending 31st March, 1969.

3. The Committee took evidence of Dr. M. N. Dastur and the representatives of Indian Refractory Makers Association on 15th July, 1969; the representatives of All India Manufacturers Organisation on 16th July, 1969, the representatives of Bokaro Steel Ltd. on 6th and 7th August, 1969, the representatives of Heavy Engineering Corporation and Hindustan Steelworks Construction Ltd. on 13th August, 1969 and of the representatives of Bokaro Steel Ltd. and the Ministry of Steel and Heavy Engineering on the 17th, 18th and 19th December, 1969.

4. The material relating to the Bokaro Steel Ltd. was processed at various stages by the Study Group I of the Committee on the Steel and Heavy Engineering Undertakings.

5. The Report was considered by the Committee on 7th, 8th, 14th and 23rd April and adopted on the 23rd April, 1970.

6. The Committee wish to express their thanks to the Ministry of Steel and Heavy Engineering, public undertakings and non-official organisations for placing before them the material and information that they wanted in connection with their examination. They wish to thank in particular the representatives of the Ministry/public undertakings/non-official organisations who gave evidence and placed their considered views before the Committee.

7. The Committee also place on record their appreciation of the assistance rendered to them in connection with the examination of Audit Paras pertaining to the Bokaro Steel Ltd. by the Comptroller and Auditor General of India.

NEW DELHI;
April 27, 1970
Vaisakha 7, 1892(S)

M. B. RANA,
Chairman,
Committee on Public Undertakings.

I

INTRODUCTORY

A. Historical Background

In 1948, the Government of India commissioned three feasibility studies for the development of iron and steel works in India. In evaluating the sites the consultants were guided by considerations of raw materials, water power and traffic, location, products and profitability, etc. All the three consultants—Koppers of West Germany, Mckee of U.S.A. and I.C.C. of U.K. agreed that Madhya Pradesh and Orissa should be the site for the two new plants, which formed the basis for selection of Bhilai and Rourkela sites.

1.2. When Government decided to set up a third steelworks in the public sector, the choice for location was either in Bihar or in West Bengal. The Colombo Plan Mission which studied this problem in 1955 found that all the sites suggested to them—two at Sindri, two at Bokaro and one at Durgapur—were adequate in area for a steelworks and a township. They, however, rejected the western site at Bokaro which presented difficulties in site preparation. The eastern site (the present Bokaro site) was not considered favourable for development at that stage because it was the remotest from existing means of communication. Lack of adequate water and difficulties in transport led to rejection of Sindri and thus location of the third steelworks at Durgapur was accepted.

1.3. Having chosen Durgapur as the site for the third steelworks, Government decided in September 1955 to develop the eastern site at Bokaro which but for difficulties in communication, afforded excellent facilities that could be taken advantage of for the location of any steel plant that might be set up at a later stage. The Ministry of Iron and Steel, therefore, proposed a provision of Rs. 3.75 crores in the Second Five Year Plan to develop the Bokaro area, including a railway bridge across the river Damodar at Bokaro and adequate road communication.

1.4. Bokaro was, in fact, selected because in raw material assembly and in distribution costs, it is comparable to Sindri, which the feasibility studies of 1948 and the Colombo Plan Report of 1955, considered attractive. Since 1955, the Bokaro site has, with the construction of Muri-Chandrapura railway line and the road bridge across the river Damodar, become accessible. The site finally selected for the steelworks is bounded on the north by the river Damodar; on the west, by the Muri-Chandrapura railway line; on the south, by Chas-Ramgarh highway; and on the east, by the Garga river. Bokaro, like Durgapur is a coal-based plant.

B. Establishment of Bokaro Steel Ltd.

1.5. The Bokaro Steel Ltd. was incorporated on the 29th January, 1964 as a private limited company under the Indian Companies Act, 1956. The Company has undertaken the setting up of the Bokaro Steel plant including the development of ancillary facilities namely, the township, water and power facilities, development of sources of supply of raw materials including opening of lime-stone mines at Bhavanathpur in Palamau district of Bihar and at Quteswar in Madhya Pradesh. Before the formation of the Company, the affairs of Bokaro Steel Project were being handled by Hindustan Steel Ltd.

C. Project Reports

Preliminary Project Report

1.6. In 1957, Government asked Hindustan Steel Limited to take preliminary steps for the installation of the new steel works at Bokaro. As a result of this decision, Hindustan Steel commissioned M/s. M. N. Dastur & Co. (Dastur Co.) to prepare a preliminary project report. In their report submitted in 1959, Dasturco estimated that the demand for flat products by 1965-66 would be of the order of 3.3 million tonnes and considering the capacities established and in the process of establishment, there would be a shortfall of 1.6 million tonnes. They, therefore, suggested a 2 million tonne integrated steel works at Bokaro to produce 1.37 million tonne of flat products. They also suggested an alterative product mix consisting of 0.8 million tonne of flat products and 0.7 million tonne of billets. The capital cost was estimated at Rs. 2,150 million. The report was generally accepted by HSL and the Government.

Detailed Project Report

1.7. On the basis of the preliminary report and further discussions with the Government of India and Hindustan Steel Limited, M/s. Dastur & Co. were commissioned in May, 1962 to prepare the Detailed Project Report. This report was submitted in July, 1963. According to Dasturco's report, the estimated cost of the Plant for Stage I (1.5 million onne) was Rs. 3,577 million with a foreign exchange component of Rs. 1,516 million. The capital outlay for the 4 million tonne plant was estimated at Rs. 5,586 million with a foreign exchange component of Rs. 2,276 million. The above estimate did not include the cost of off-site facilities, which was estimated at Rs. 432 million. Stage I construction was expected to be completed by 1967-68 and Stage II (4 million tonnes) by 1970-71, on the assumption that the work would commence from October, 1963. The

annual capacities for the first stage of 1.5 million tonne and the second stage of 4 million tonnes were proposed as follows:

	1st stage (1·5 M/T)	2nd stage (4 M/T)	Alternative (with plate mill)
	(Figures in thousand tonnes)		
Hot-rolled Sheet and Strip	265	575	514
Cold-rolled Sheet and Strip	370	1,060	760
Galvanised Sheet	210	410	410
Light Plate	250	655	550
Tin-Plate	—	—	220
Heavy Plate	—	—	420
	1,095	2,920	2,874

1.8. The rated capacity of Stage I was expected to be reached by 1969. After attaining its full rated capacity under Stage II, the plant was expected to reach the profitability stage by 1976.

1.9. The total labour force was estimated at 9,300 men and 16,000 men at Stage I and Stage II respectively. The break-up of these totals was as follows:

	Stage I	Stage II
Production Departments		
Coke Oven	572	1,093
Sinter Plant	—	2,36
Blast Furnaces	460	809
LD Steel Melt Shop	682	1,188
Rolling Mills and Finishing	2,290	3,979
Auxiliary Departments		
Mechanical Services	1,699	2,995
Electrical Services	838	1,260
General Services	1,325	1,874
Central and Area Laboratories	360	730
Administration and other services	1,077	1,392
	9,303	15,556

1.10. The project report submitted by M/s. M. N. Dastur & Co., was scrutinised by a Technical Committee appointed by the Government of India. However, no further work could be done on this report in the absence of any foreign aid. M/s. Dastur & Co. were paid Rs. 3 lakhs for the preliminary project report and Rs. 60 lakhs for preparation of the Detailed Project Report.

U.S. Steel Corporation Report

1.11. Meanwhile following the Government of India's proposal that U.S.A. should assist technically and financially in the Bokaro Steel Plant the U.S. Agency for International Development asked the U.S. Steel Corporation in 1962 to undertake a feasibility study of the project. The U.S. Steel Corporation submitted its report to A.I.D. in 1963.

Salient features of the U.S. Report

1.12. This report envisaged a 1.4 million tons plant at Bokaro rising in two stages over a period of 10 years to 4 million tons. The product-mix proposed for the three stages was as follows:

	Stage I (1·4 M/T)	Stage II (2·5 M/T)	Stage III (4 M/T)
	(Quantities in thousand tons)		
H.R. Sheets, strips and skelp	300	500	860
C. R. Sheets and strip	250	600	1,000
Galvanised sheets	130	130	300
Plates	360	570	750
TOTAL	1,040	1,800	2,910

1.13. The report further envisaged that the first blast furnace would go into operation in January, 1968 and construction of Stage I would be completed six months later. It was indicated that it would take 30/36 months from the starting up of the first blast furnace to achieve rated steel production capacity of Stage I *i.e.* by 1971. Stage II capacity was expected to be ready in 1975 and Stage III capacity in 1980.

1.14. The total capital investment in Stage I was estimated at $919.428 million including a foreign exchange element of dollars 512.588 million. It was anticipated that a long-term loan would become available from the U.S.A. for meeting the foreign exchange cost. The additional investment in Stage II and Stage III was estimated at $245.155 million and

$340.183 million respectively. Corresponding additional foreign exchange investment was estimated at $162.367 million and $216.597 million. The facilities outside the perimeter of the plant such as Tenughat Dam, canal to Bokaro, township etc. was expected to cost an additional $134 million in Indian currency. The cost of production of the different products was estimated as follows:

Product	Cost including excise duty and depreciation (million $)	
Coke	10.45	These figures exclude excise duty and depreciation.
Hot Metal	22.50	
Ingot average	36.53	
Plate light gauge	105.43	
Hot rolled sheet and strip (18 G.)	112.84	
Hot rolled sheet cut strip (10G.)	108.58	
Cold rolled sheet cut deep drawing	144.08	
Cold rolled sheet cut commercial	129.69	

1.15. Stage I was not expected to be profitable largely on account of the heavy burden of excise duty and other imports and interest on loan. The 'break-even' point was expected to be reached with full production in Stage II.

1.16. Construction of the plant was expected to involve about 20,000 men. For operation and maintenance of the Stage I Plant the number of Indian employees required was expected to be about 8,200 as shown in the following statement:

Production Labour	2,235
Departmental service labour	189
Operating departmental maintenance and roll shop s	1,131
Central maintenance shops and gangs	1,375
General plant transportation	458
General plant service labour	312
Management Staff	1,137
Non-Management Staff	1,339
TOTAL	8,176 or 8,200

1.17. It was estimated that the management of the steel plant would be entrusted to an American team for a period of 10 years and maximum number of 670 American technicians would be required during this 10 years periods.

Soviet Project Report

1.18. Due to the opposition in the U.S. Congress, the Government of India, however, withdrew the request for aid. In May, 1964, the Soviet Government offered financial and technical aid for the setting up of the Plant.

1.19. An agreement was signed on 25th January, 1965, between the Government of India and the Government of USSR for financial aid and technical collaboration for the establishment of the Plant. The Government of USSR also extended a credit upto 200 million Roubles, equivalent to Rs. 1,666 million for the purpose of meeting the foreign exchange cost of the Plant, bearing an interest of 2.5 per cent and repayable in twelve years. In pursuance of the Inter-Governmental agreement a contract was signed between the representatives of Tiazhpromexport and Bokaro Steel Limited on the 6th February, 1965 for preparation and supply of the Detailed Project Report to suit Soviet technology and equipment. A team of 12 Indian engineers went to Moscow in June, 1965 to participate in the preparation of he Detailed Project Report.

1.20. In this connection the Committee were informed by Dr. M. N. Dastur that it was a mistake on the part of the Government and wastage of public funds to have agreed to the preparation of new DPR by the Soviets. On 5th May, 1964, only a few days after the acceptance of the Soviet offer of aid, the then Steel Minister informed the Informal Consultative Committee of Parliament that Dasturco's DPR will be the basis for Soviet assistance and that it might be modified marginally in the light of Russian aid, and that such modification was envisaged by the Indian Consultants themselves. All that was necessary was to make the marginal changes necessary to suit the Soviet equipment supply.

1.21. The Chairman BSL however stated that "there was undoubtedly Russians insistence that they would do the Detailed Project Report themselves and we accepted their position". The Secretary of the Ministry also stated that "from the notes and records which I have seen it is quite clear that the Russians continued to maintain that they must be allowed to go on with the Project Report themselves."

1.22. The Detailed Project Report was submitted on 22nd December, 1965. The cost of the works as per that report was Rs. 7,712 million

including Rs. 3,200 million for cost of imported equipment for 4 million tonne stage. The corresponding figures for 1.7 million tonne stage were Rs. 5,400 million and Rs. 2,200 million respectively.

1.23. The Report provided for built-in capacity in the different units for continuous expansion of the Plant to 4 million tonne capacity in Stage II and, with a view additional units, to 5.5 million tonne stage, thus fully utilising the built-in capacity of the primary mill units.

1.24. The Report was examined by a Technical Committee which submitted its Report towards the end of January, 1966. On the basis of the Report of the Technical Committee the D.P.R. was accepted on the 29th March, 1966.

II

CONSULTANCY AND COLLABORATION

2.1. An agreement was signed with M/s Tjazhpromexport on 3rd May, 1966 for suply of equipment and materials from USSR , rendering of technical assistance in the construction and erection of the plant and deputation of Soviet Specialists to Bokaro for the purpose. Another contract was signed for the supply of working drawings.

2.2. On 25th February, 1967 a contract was signed with M. N. Dastur & Company under which they were engaged to work as 'Indian Consulting Engineerres' in respect of 1.7 million tonne stage of Bokaro for a period of 7 years from 1st January, 1966 at a fee of Rs. 18.35 million.

2.3. Prior to the establishment of this Company in 1955 Dr. M. N. Dastur, Managing Director of the Company was practising as a Consulting Engineer in U.S.A. Explaining the circumstances under which he came to India Dr. Dastur informed the Committee as follows:

> "When I was in the States, in 1954—I said I was an American citizen then—I was sent to India on a TCM assignment to help the Mysore Iron & Steel Company, Bhadravati on their expansion programme. In that connection I came to Delhi and I happened to meet Shri T. T. Krishnamachari. When he found that I was an Indian working in the States on the designs and building of steel plants—I was working on the steel plant in PERU and one in Brazil and one in Italy at that time—he said why don't you come back and set up a consultancy firm here, because we have a big steel programme in hand. So I came here in 1955 and started Dastur & Company, Consulting Engineers."

2.4. Dr Dastur also submitted a photostat copy of the D.O. letter No. 136 S.S./54 dated the 6th November, 1954 addressed to him by Shri S. Bhoothalingam the then Secretary of the Ministry of Commerce and Industry in which it was stated as follows:

> "....India badly needs one or two consulting engineering firms and I feel confident that if you set up an organisation in India, there would be considerable scope for it. My Minister to

whom I showed your letter is of the same view. As you say, there are quite a number of excellent engineers in India and if some one like you takes the initiative, it should not be difficult to get together a first class team."

2.5. The Committee were also informed that in the next three years the Company successfully handled various projects in the private sector such as a ferro managanese plant for Tatas secured against severe international competition and completed 8 months ahead of schedule. However, the Company did not receive any work on the steel programme initiated by Government in the Second Five Year Plan.

2.6. The Estimates Committee (1958-59) in their 33rd Report on Hindustan Steel Ltd. observed as follows:

"The Committee consider it unfortunate that Government have not so far found it possible to utilise for the steel plants as well as for the ancillaries such as ore mines, limestone quarries etc., the services of an Indian Consultancy Organisation which according to the representatives of Government was the only one existing in the country."

2.7. In October, 1958 M/s Dasturco were asked to prepare a Preliminary Project Report for Bokaro Steel Plant, for which they were paid Rs. 3 lakhs.

2.8. This report was submitted in 1959. In May, 1962 M/s Dasturco were commissioned to prepare a Detailed Project Report for which they were paid Rs. 60 lakhs. This Report was submitted in July, 1963 and was scrutinised by a 'Technical Committee' appointed by the Government of India under the Chairmanship of Shri Suku Sen, Technical Adviser of Hindustan Steel Ltd.

2.9. The Technical Committee recommended the acceptance of the Report. The Technical Committee included Mr. S. I. Malyshev, the top Soviet Steel Export at Bhilai. In a letter dated 7th October, 1963 written by him to the Chairman of the Technical Committee he stated as follows:

"On going through the project report though in not much of the detail I feel that the design organisation (Dasturco) which prepared these materials are having all the potentialities to work out the final working drawings and also to supervise the progress of construction of the steel plant which must be built incorporating the last word in development of steel technology...."

2.10. In April, 1964, a draft agreement was initialed with M/s. Dastur & Co. for their engineering and consultancy services for the setting up of Bokaro Steel Plant. According to this draft agreement M/s Dastur & Co. were to be appointed as Consulting Engineers for 1.5 million tonne stage at a total fee of Rs. 68 million for six years from April, 1964. The scope of work included the normal consulting engineering services such as:

(i) To generally advise the Company on Planning of all necessary preliminary work at site;

(ii) Preparation of general layout of the works;

(iii) Preparation of the layout of each main and ancillary departments with requsite plant and machinery;

(iv) Preparation of an overall schedule for construction and erection of the plant and facilities;

(v) Preparation of Tender Documents for plant machinery and equipment and to examine, scrutinise, recommend as to suitability and reasonableness of price;

(vi) Preparation of all drawings required for the establishment of the works;

(vii) Overall supervision of construction and erection;

(viii) Arranging guarantee tests for the different plants units;

(ix) Arranging guarantee test for the integrated operation of the plant; and

(x) To demonstrate within a period of 18 months of commissioning of the last unit of the works that the works have the full capacity at the rated annual output.

2.11. The then Minister of Steel also announced in Parliament on 9th April, 1964 that they had decided to award the further engineering of the project to the Indian engineering firm M/s. Dastur & Co., who had prepared the detailed project report. The contract for consultancy had been agreed upon and the firm will continue to engineering work they had already initiated in anticipation of this settlement.

2.12. The Committee were also informed by Dr. Dastur that:

"When trouble was experienced in getting assistance from the U.S. on Bokaro and India withdrew its request for aid, it was

planned to call world tenders on separate plant departments from U.K., Germany, Japan etc. who were not able to finance the whole project but were interested in providing limited aid. This was considered the best approach as it would not tie the whole project to any one country, thereby gaining the advantage of competitive bidding and also securing the best equipment. At this stage, U.S.S.R. was also approached and Dasturco's detailed project report was given to the Russians early in March, 1964. A few meetings were arranged between the Soviet and Dasturco (as the Indian Consultants) in Delhi. It was then that U.S.S.R. decided to take on the whole project."

2.13. In July, 1964 a delegation was sent to Moscow to hold discussions with the Russians. According to M/s Dasturco "It was in the capacity of Indian Consultants on the Bokaro Project that Mr. Dastur was asked to follow the Indian Delegation which went to Moscow in July, 1964. During the crucial discussion in Moscow on the scope of Indian engineering a positive stand could have been taken. The absence of such a clear stand perhaps encouraged the Soviets to dictate terms later. During the Moscow meetings it had been agreed that a Soviet Technical Team would visit India for detailed discussions with the Consultants on the project. To its surprise, Dasturco was completely kept out of the discussions with the Soviet Team which visited India in August, 1964. It was unfortunate that Dasturco was not associated with any of the technical discussions with the Soviet thereafter which had important technical implications and ultimately resulted in a high cost project."

2.14. On 25th January, 1965, an agreement was signed between the Government of India and the Government of USSR for financial aid and technical collaboration for the establishment of the Plant. The Government of USSR also extended a credit upto 200 million Roubles, equivalent to Rs. 1,666 million at post devaluation exchange rate of rupee for the purpose of meeting the foreign exchange cost of the plant, bearing an interest of 2.5 per cent and repayable in twelve years. In pursuance of the Inter-Governmental agreement a contract was signed between the representatives of Tiazhpromexport and Bokaro, Steel Limited on the 5th February, 1965 for preparation and supply of the Detailed Project Report to suit Soviet technology and equipment. The D.P.R. which was submitted on 22nd December, 1965 was examined by a Technical Committee. The composition of the Technical Committee was as follows:

1. Shri K. M. George
2. Shri R. P. Sinha (HSL—CEDB)
3. Shri R. D. Lalkaka (Dasturco)

4. Dr. A. N. Mukherjee (HSL—Bhilai)
5. Shri K. C. Mohan (HSL—CEDB)
6. Shri P. K. Chatterjee (Tisco)
7. Shri C. S. N. Raju (HSL—Durgapur)
8. Shri T. V. S. Ratnam (Dasturco)
9. Shri S. V. Raman (HSL—Rourkela)
10. Shri A. Bajekarl (HSL—Rourkela)
11. Shri P. C. Laha (HSL—CEDB)
12. Shri S. F. Braganza (HSCL)
13. Shri Purtej Singh (HSL—Bhilai)
14. Shri P. K. Banerjee (HSL—Durgapur)
15. Shri T. S. Krishnamurthy (HSL—Bhilai)
16. Dr. D. B. Sikka (NMDC)
17. Shri B. B. Engineer (Tisco)
18. Shri B. R. Pai (NCDC)
19. Shri A. K. Mitra (Department of Mines & Metals)
20. Shri G. S. A. Saldanha (S. E. Railway)
21. Shri P. V. Raghava Rao (S. E. Railway)
22. Shri Joginder Singh (DGTD)

2.15. In this connection, Dr. Dastur stated during his evidence before the Committee that when this technical committee was formed "We objected. We said that a report like that—the Soviet report had come in 28 volumes—had to be scrutinised by a competent body which should sit down with the report and take a few months to go over it and to come out with certain meaningful conclusions, but that was not the work of a committee; the Committee could only sit on the conclusions of a body which had worked on the report. But the committee could not scrutinise a report in 28 volumes. However, the purpose was not to have the report scrutinised. The purpose was just to show that there was a committee appointed and have a front."

2.16. The Technical Committee submitted their Report by the end of January, 1966. On the basis of the Report of the Technical Committee the Project Report was accepted on 29th March, 1966. Following the acceptance of D.P.R. submitted by the Soviets, an agreement was signed with M/s. Tjazhproexport on 3rd May, 1966 for supply of equipment and materials from U.S.S.R. rendering of technical assistance in the construction and erection of the plant and deputation of Soviet Specialists to Bokaro for the purpose. Another agreement was signed for the supply of working drawings.

2.17. Inter-Governmental agreement signed between the Government of India and the Government of U.S.S.R. on 25th January, 1965, envisaged that the Indian and the Soviet sides will promote maximum participation of Indian Organisations in the designing of the works and the supply of equipment and materials because in both the fields it was stated that a large capacity existed in the country. On 25th February, 1967 a contract was signed with M/s. Dasturco under which they were engaged to work as Indian Consulting Engineers in respect of 1.7 million tonne stage of Bokaro for a period of 7 years for 1st January, 1966 at a fee of Rs. 18.35 million. Their functions are as follows:

(i) To prepare and submit tender documents in respect of such portions of the plant machinery and equipment as are outside the scope of supplies of Soviet suppliers, and to be procured from private sector companies and also to examine and scrutinise and advise on suitability of the above plant, machinery and equipment and reasonableness of prices.

(ii) To prepare and submit tender documents for construction and erection of works by agencies other than public sector companies in India, to examine and scrutinise the tenders and recommend their acceptance.

(iii) To inspect equipment procured from sources other than Soviet supplier and public sector companies.

(iv) To prepare drawings for units of the plant other than the units for which drawings have to be submitted by the Soviet Consultant.

(v) To submit specifications of equipment to be installed in the units to be designed by them.

(vi) To provide designers' supervision for units for which design will be prepared by them.

(vii) To assist the Company in the discussion with the suppliers on division of equipment and services.

2.18. During evidence Dr. M. N. Dastur informed the Committee that originally the Company was supposed to handle complete engineering work on Bokaro Steel but after the agreement with USSR the major part of the work was taken out of the hands of the company and they were assigned a minor role in the Bokaro Project.

2.19. Quoting the reasons for it, Dr. Dastur stated in his evidence as follows:

"It depends on the stand that our Government takes. Only recently we had been invited by the Ceylon Government to work on a project which the Russians had built for them. That was about the Rolling Mill. The Ceylon Government found that this rolling mill cost them four times of what it should have cost. They were buying the billets from Russia. Then they started buying them from Mysore Steel Works, Bhadravati. They were not very happy. They started buying billets from the Hindustan Steel Ltd. Even then they were not very happy. In fact, last year, for two months their plant was completely shut down as there were no billets supplies from the Hindustan Steel. So, they thought of putting up a billet-making plant of their own. They requested the Russians. The Russians quoted them five times of what we would do for them.

Our Company (Dasturco) is internationally known for this type of work. The Ceylonese people came to know about our work because we have done similar work for a private party in Bombay, and today we are working on this project. Russians objected to it because it was a Russian Project. But when the Ceylon Government was firm, they could not say anything. I will give you another example in India itself. The Madras Government wanted to take up a project and just at the time of Bokaro we had prepared the project report for the Madras Government for a billet making plant. Along with Bokaro we were kicked out of this project also because at time the Government was completely in the hands of Russians and they were feeling that they had to do every thing that they were dictated to from Moscow. After being thrown out of it, we have been brought back into that project only last year, in November, because the plant which should have cost 2½ crores of rupees is costing Rs. 7 crores of rupees. And the poor Madras Government are bearing the entire cost. They could not afford such waste and when they tried to bring us back into the picture as their consultants, the Soviets objected to it. The Madras Government stood firm and told them 'you don't have to worry about it as they are our consultants and we know them.' Today we are there on that project. Our people are at site working with the Russians.

In fact, it was not the fault of the Soviets. This whole thing was engineered by our own people and there is enough on evidence

to show how it was done. Once the Soviets had been put in a position where they had to turn us down, now it is a question of face saving with them and they would not like to go back on what they had done once. However, they have accpted us after that on the project as Indian Consultants."

2.20. The Chairman, BSL, however, stated during the evidence that:

"Dr. Dastur wanted to be the principal consultant for the project. The Soviet authorities who gave 200 million Roubles were not willing to accept this. They said this to the Minister, to me and they said this at all levels. They said that they must remain in full final authority of the project although they would associate Dasturco".

2.21. As to the reasons for not associating M/s. Dasturco with the discussions held with the Soviet Team in August, 1960, he stated that:

"Dr. Dastur was part of delegation to Moscow. The whole object was to see how such of the Consultancy we would get for Dasturco. We discussed it for several days and unfortunately we were not able to persuade the Soviets to give a large chunk to Dasturoo. Therefore it was more or less settled at that time as to what exactly the Dasturco will be getting. Then the August, 1964 meeting was mainly for the purpose of settling certain details and the fact finding mission came from USSR and it was not felt necessary to ask Dastur to associate with that Mission."

2.22. The Secreary of the Ministry also stated during evidence that "my own feeling is that after 1964 there was a change in emphasis so far as Government is concerned in regard to Dastur. But we still continue to treat Dastur with highest considerations. Having accepted the Russians assistance in this matter and having all their experience and expertise I think that Government rightly felt it was not proper to go beyond what they (Russians) actually accepted in regard to Dastur."

2.23. The Committee find that Dr. M. N. Dastur was encouraged by the Government to set up a consultancy service. He was also entrusted with the assignment of preparing a preliminary project report and also later a D.P.R. at a total cost of Rs. 63 lakhs. The D.P.R. was also made use of by the Russian collaborators. In short, M/s. Dastur & Co., were our consultants on steel, as was also stated in the Lok Sabha.

2.24. The Committee find that Dasturco were not associated in the discussions which Government/BSL had with Soviet collaborators after July, 1964. Thus Dasturco who were the General Consultant of the Ministry were completely side-tracked while technical details were settled for the drawing up of the D.P.R. for Bokaro Steel Project. Dasturco's Compaint is that they were kept out of any technical discussion with the Soviets in August, 1964 and thereafter "which had important technical implications and ultimately resulted in a high cost project."

2.25. The Committee were anxious to find out as to why Dasturco was kept out of these negotiations. The Chairman of the B.S.L. and the Secretary of the Ministry explained to the Committee that the Russians were not willing to accept Dasturco as principal consultants. The Chairman, B.S.L. further explained that "we discussed it for several days and unfortunately we were not able to persuade the Soviets to give a large chunk to Dasturs".

2.26. The Committee feel that the Chairman of B.S.L. who was also the Secretary of the Steel Ministry at that time reversed the whole position of Dasturco as a principal steel consultant as was reported to the Lok Sabha on 9th April, 1964. The important point was not to secure enough work for Dasturco, but it was far more important that Dasturco's knowledge and experience ought to have been fully utilised for the establishment of a technically sound and economic steel project to suit the Indian conditions. The whole purpose of getting the design consultancy set up by Dasturco with the Government initiative at the earlier stages was lost sight of and it was not put to good use in setting up the Bokaro Steel Plant for which purpose alone Dasturco was brought to India.

2.27. The Committee find that the Detailed Project Report was submitted by the Soviet collaborators on 2nd December, 1965. It was then examined by a Technical Committee of 22 persons and this Technical Committee took hardly a month to examine this importnt document. on the basis of which the Bokaro Steel Project was taken up and they submitted their report towards the end of January, 1966. The Committee feel that the D.P.R. deserved a far greater scrutiny and that it was not given a proper technical appraisal on the basis of which investment decision of over Rs. 600 crores ought to have been made. Dasturco no doubt had to representatives on this technical committee but that would not amount to a proper technical appraisal by them of the D.P.R. The Committee feel that the examination of the D.P.R. by a Technical Committee can normally provide a second opinion. Effective scrutiny by the nature of work itself can only be made by a closely coordinated, competent, consultancy organisation. D.P.R. has to be reviewed not piecemeal with loose association of pieces but as an integrated project report.

2.28. Dasturco was also asked to make a cost reduction study after signing the Memorandum on the acceptance of the D.P.R. The Committee, however, feel that this ought to have been done before signing the Memorandum of acceptance. It was explained to the Committee that the agreement had to be signed within two months of the submission of the D.P.R. The Committee feel that the Government should have resisted being stampeded into signing such an important agreement without a proper and detailed scrutiny.

2.29. The Committee have found during the course of its examinations of the Public Sector Undertakings during the last two years, namely, I.D.P.L., M.A.M.C., I.O.C. and Bokaro Steel Ltd. that the advice of the Indian experts was ignored in preference to the advice of the foreign collaborators of these undertakings The result in all these cases has not been happy. The foreign experts have a limited knowledge or have practically no knowledge of the conditions prevailing in India. They are generally guided by their own experiences. Therefore, to completely side-track the Indian experts is not a correct thing to do. The Undertakings and the Government will do better in future if they keep this in view. The Committee would also like that in future if the Government decide to overrule the advice of the Indian experts it is better that the reasons may be fully recorded so that at a future date there may be a proper appraisal of the views of the experts and the decisions of the Government.

III

PROJECT ESTIMATES

A. General

3.1. The capital estimates for Bokaro Steel Plant as per D.P.R. submitted by the Soviets on 22nd December, 1965 was Rs. 7,712 million including Rs. 3,200 million for cost of imported equipment for 4 million tonne stage. The corresponding figure for 1.7 million tonne stage was Rs. 5,400 million and Rs. 2,200 million respectively. As against this the D.P.R. prepared by Dasturco in 1963 estimated the capital cost for 4 million tonne plant as Rs. 5,586 million with a foreign exchange component of Rs. 2,276 million. This did not include the cost of off-side facilities which was estimated at Rs. 432 million.

3.2. On receipt of D.P.R. from the Soviets, a Technical Committee, including two representatives of Dasturco was constituted to examine the Detailed Project Report. The Technical Committee submitted its report towards the end of January, 1966. This Committee made certain suggestions as to how the Report ought to be modified.

3.3. The total project cost for Stage I on the basis of the recommendations of the Technical Committee was estimated at Rs. 6,265 million including Rs. 1.1 million for additional spares. The revised estimate for the project as approved on the basis of imported cost of plant and equipment and materials evaluated at the post-devaluation exchange rate of roubles and customs duty taken at the revised rate amounted to Rs. 6,800 million including Rs. 140 million for additional spares.

3.4. The cost estimates were reduced by Rs. 95 million as a result of a cost reduction study. Against the revised project estimate of Rs. 6,710 million, Government issued sanction in November, 1966 for Rs. 6,200 million for the plant, excluding the cost of off-site facilities. In respect of the off-site facilities sanctions are accorded as and when the detailed estimates are submitted.

3.5. Provisional estimated figures for Stage II which would raise the capacity of the plant to 4 million tonnes of steel ingots is Rs. 3,330 million. Thus the total capital cost for 4 million tonne would be Rs. 1,004.00 crores as against an estimate of Rs. 601.8 crores by M/s. Dasturco.

3.6. As regards the reasons for large variations between the estimates of Dasturco and those of USSR, the Managing Director BSL stated during evidence that "the comparison between these two is not like with like. There are certain basic differences in the facilities included in the two Reports." The Soviet Report has provided for a built-in capacity particularly in the rolling mills upto 5.5 million tonnes stage whereas the Dasturco Report is based only at 4 million tonnes capacity. Further Dasturco had based their prices as prevailing in 1963. As against this the USSR Report was based on the prices of 1964 and this accounted for nearly 10 per cent price escalation. The other differences were due to:

(i) variations in estimates of quantities of materials Rs. 40 crores;

(ii) changes in estimates of customs duty—Rs. 26 crores;

(iii) provision of fifth blast furnace for production of pig iron—Rs. 30 crores;

(iv) provision of additional facilities like coal injection, etc.—Rs. 5 crores.

B. Cost Reduction Study

3.7. The Government of India requested Dasturco on 29th March, 1966 to suggest concrete proposals for cost reduction within seven weeks. The fee paid to Dasturco on this account was Rs. 8:5 lakhs.

3.8. M/s. Dasturco submitted their cost reduction study report on 21st May, 1966 suggesting various measures for cost reduction. In a covering letter to this Report Dr. Dastur had stated as follows:

"We would like to mention the following points in relation to the study:

During the very limited time (seven weeks) available only major items of reduction are indicated. Further scope for cost reduction exists and could be realised by continuing study and implementation during the engineering and construction of the plant.

The Soviet proposals on technology and equipment are retained as far as possible. Changes are suggested only where the resulting benefits are substantial, where the modifications will also fully meet the requirements for efficient plant operations and where they are feasible at this stage and will not delay construction."

According to Dasturco's report an overall saving of Rs. 107.5 crores was possible in the First stage of Bokaro Steel Plant.

3.9. The Committee were informed by BSL that:—

> "The cost reduction Study Report submitted by Dasturco on 21st May, 1966 lacked detailed technical design basis, detailed cost calculations and break-up of cost savings. It was not, therefore, possible for BSL to assess the quantum of savings given in the cost reduction study. This was necessary to analyse the technical acceptability of the suggestion and also to judge as to what extent the savings estimated by Dasturco were realistic. As final decision on changes had to be made by 30th June, 1966, to avoid liability for cancellation charges, this report was sent to Soviet Consultants on 24th May, 1966 to give them sufficient time for sudy. They were also informed that the Indian delegation would be in Moscow towards the middle of June to discuss the proposals in detail. Meanwhile, Bokaro Steel Ltd., made its best efforts to get the details of the cost reduction proposals. But in spite of the best efforts to secure this information during the course of two weeks discussion they had with M/s. Dasturco at Calcutta, they failed to secure the required information. They submitted their interim comments on 16th June, 1966, pending receipt of details from Dasturco."

3.10. The Ministry of Iron and Steel decided to have further discussions with Dasturco at Delhi so that suitable instructions to the Indian delegation could be issued on the various points covered by the cost reduction study. The representatives of Planning Commission and the Ministry of Finance were also invited to these discussions on 7th June, 1966. During these discussions also, the Chairman, BSL informed that the study as presented did not give a break-up of the savings though Dasturco had been requested to furnish this information in the meeting held on 28th May, 1966. Although Dasturco had promised to give this break-up in a week's time, in the meeting held on 4th June, 1966 between Bokaro Steel Ltd. and Dasturco, they indicated that they had not worked out these figures as they did not clearly understand what Bokaro Steel Ltd. wanted. The requirements of Bokaro Steel were explained to Dasturco. Dasturco promised to try and give this information during the course of the week.

3.11. However, due to the shortage of time and on the assurance of Dasturco that these working sheets containing details will be put up before the Soviet Consultants at Moscow, the delegation proceeded for discussion on the cost reduction proposals.

3.12 The Committee were informed by B. S. L. that M/s. Dasturco were given free and full opportunity to present their view point to the Soviet side and in this they were fully supported by the experts of Bokaro Steel Ltd. The discussions were, no doubt, handicapped by the Bokaro Steel representatives not being fully conversant with the details of the design data and the cost reduction basis by Dasturco. During the course of discussion, Dasturco produced at Moscow working papers and supporting data with regard to the under mentioned items:

(1) Hot Rolling Mills

(2) Power Plant

(3) Power Distribution System

(4) Water Supply System

These were considered by the Soviet Experts and each point was discussed in detail. Dasturco had 10 of their representatives in the delegation who argued their proposals for the reduction of equipment and reduction of costs with the Soviet agencies, but they were not able to convince the Soviet side. The Soviet side expressed the view that Dasturco's recommendations for the reduction of equipment and cost were unrealistic and technically unacceptable in most cases. Against a reduction of Rs. 1075 million recommended by Dasturco, the net reduction as a result of the delegation's visit to Moscow amounted to Rs. 95 million only. The details of this Rs. 95 million reduction are given below:

		Rs. in million
(*i*)	Deletion of Benzol recovery plant	25·7
(*ii*)	Deferment of stand No. 7 in hot strip mill	10·0
(*iii*)	Reduction of cost in raw material handling	20.0
(*iv*)	Dehydration of conerter plant sludge	2·5
(*v*)	Reduction of cost in strom water drainage	25.0
(*vi*)	Reduction of cost in refractories plant	1·8
(*vii*)	Reduction of cost by reducing storage area	7·0
(*viii*)	Reduction in cost of refrigeration plant	6·0
		98·0
	Additional cost of account of the revised coal handling	3·0
	Net cost reduction accepted by the Soviet party	95·0

3.13. The important recommendations of Dasturco on cost reduction and the reasons advanced for their non-acceptance are discussed in the following paragraphs.

Elimination of the 5th Blast Furnace in Stage II

3.14. Dasturco had recommended elimination of the 5th Blast Furnace for the production of foundry iron in Stage II. One of the arguments put forward by them was that instead of production of foundry iron at Bokaro, the industry should be dispersed to other areas. The Committee were informed that estimates of Dasturco were questioned by the Soviet Experts. The Soviet Experts were of the definite view that the omission of the 5th Blast Furnace would result not only in the loss of foundry iron production at Bokaro, but also a reduction in steel production capacity by 150,000 to 200,000 tonnes at the 4 million tonne stage. It would also result in an adverse gas balance which will necessitate bringing in approximately 1 lakh tonnes of fuel oil as against 75,000 tonnes suggested by Dasturco.

3.15. It was also explained that the proposal did not have a bearing on the Stage I. Therefore, this was not passed by the Indian delegation. In any case, this proposal meant only a reduction in the scope of the Project and was not really related to the cost reduction of the Project, as such.

Modification to the Rolling Mills

3.16. (a) *Slabbing Hill* :—Dasturco's recommendations were for a smaller size mill with smaller motors at a lower speed. In their opinion, with this modification the required production of 4 m/t could be achieved. According to them, the continuous casting process was fast developing and, before long, it would be possible to produce slabs by such a process upto 2 metre width. They had, therefore, considered that the proposed Slabbing Mill was unnecessarily large, and therefore, too expensive.

3.17. The Committee were, however, informed that the Soviet specialists clarified and emphasised that the mill was designed for four million tonne capacity only, and it was wrong to say that it had been over-designed in order to increase the capacity upto 5½ m/t. In deciding the size of the mill, they had adopted the modern trend in mill size viz. to design the mill for heavier ingots which will give heavier slabs, heavier coils and consequently greater yield. They stated that the latest mills in the USA had been designed for ingot weights upto 42 tonnes. Their mill had, however, been designed for maximum ingot weight of 38 tonnes. Dasturco claimed that the mill proposed by them would roll ingots upto 35/36 tonnes. The Soviet side contended that if Dasturco's mill was designed

for a maximum ingot weight of 35/36 tonnes, it could not obviously be very much different from the Soviet mill designed for a 38 tonne ingot weight. Since the mills and the mill tables are designed on the basis of maximum ingot weights, the difference of the weight of the two mills could not on the basis claimed by Dasturco be a great deal, and as such the cost reduction also could not be much. The Soviet side did not accept the size of the mill proposed by Dasturco, as according to them, their mill was not only just the right size for the job, but also the savings expected in the alternate suggested would be very small.

3.18. (b) *Hot Strip Mill*: The proposal of Dasturco was to reduce the size of the mill rolls and also the capacity of the mill motors, and to eliminate the 7th stand in the Strip Finishing Mill. According to them, such a smaller mill will be able to give the required production. With these changes, there would be sufficient savings in the investment of the order of Rs. 400-500 million (later revised by Dasturco themselves to Rs. 250 million). In this case, also the Soviet side did not agree to reduction in the size of the mill rolls nor to the reduction in the size of the capacity of the motors. The Committee were informed that according to the Russians they had selected the size of the rolls in accordance with the latest trends. They illustrated this by indicating the size of the mill rolls adopted for various mills from time to time during the last 10 to 15 years. They also expressed the view that if the size of the mill rolls is reduced, the stiffness of the mill will be impaired, which, in turn, will affect the quality of the products—quality of the strips as well as the yield of the strips. The Soviet side furnished detailed technical reasons for not accepting reduction in the capacity of the mill motors also. They, however, agreed to Dasturco's suggestion to delete the 7th stand for the Fishing Mill in Stage I in view of the fact that Bokaro is being planned for continuous development from 1.7 to 4 million tonne stage.

Modification to the Industrial Water Circulating System

3.19. Dasturco had recommended provding industrial water circulating system with cooling towers as against cooling ponds recommended in the detailed project report. The Indian delegation contended that the initial cost of the cooling tower system was considerably lower than that estimated by the Soviet side. The details of the design basis and working calculation sheets were handed over to the Soviet Experts during the discussions.

3.20. The Soviet side admitted that the capital investment on cooling ponds was more than on the towers, if taken separately—Rs. 113 million as against Rs. 57 million on the condition that the water is cooled to 34° C as provided in the project report. To cool water upto 32° C, the cost

of the tower would go up by another 20 per cent. They said that whilst in the cooling pond system there was one cycle for the whole works, the Indian proposal desired to establish 14 water cycles, in addition to a reservoir with a capacity of 4 million cbm. In their opinion, the additional capital expenditure on Pumping Station alone was Rs. 19 million. According to their estimates, an additional 20 KM of pipeline had to be laid for water supply network. Considering all points, the entire tower system of water supply would be cheaper only by about Rs. 3 million.

3.21. On the operational cost of the cooling tower system, the Soviet Experts stated that electrical power requirements in the pond system was very much lower and the saving would be of the order of 400 KW. In the tower system power required for the fans would be about 8000 KW, if water was to be cooled to 34° C. On the other hand, the pond system was easy to operate, provided better purification of the effluent and also provided better living conditions for the nearby townships. The Soviet side further contended that the tower system was not entirely reliable. Throughout the discussions the Soviet side maintained that—

(i) The performance capabilities of the cooling towers as assumed by Dasturco seemed to be high;

(ii) the Indian estimates of power consumption for the cooling towers were low;

(iii) the savings in capital investment were over-estimated by the Indian side;

(iv) the capacity of the storage reservoir for 20 days make-up water requirement as provided in the Indian proposal was not adequate—the Soviet design provides for 30 days storage; and

(v) the staff required for servicing the tower system would be higher than in the case of pond system (Indian experts agreed with this statement but still maintained that the overall operating costs were lower).

Modification to the Steel Melting Shop

3.22. Another important suggestion made by Dasturco in the cost reduction study was the installation of four 250 ton convertors instead of four 100 ton convertors in Stage I and one 100 tonne and two 250 ton convertors in Stage II as suggested in the Soviet Report. Dastur's Report pointed out that "the world trend is to adopt convertor of 200 to 300 ton capacity for large new plants of the type visualised at Bokaro and there are as many as 17 plants (13 in operation and 4 under installation) in the U.S.A., Australia, Belgium, Germany and Italy with convertors of this

size; by the time Bokaro is commissioned there would be many more. The reasons for adoption of 200 to 300 ton convertors are that investment is lower, operations no more difficult than with smaller vessels, refractory consumption decreases, handling of hot metal scrap, fluxes, slag and ingot moulds is simplified and finally operating costs are lower." The Indian Consultants had estimated that by the adoption of one shop with 4-250 tonne convertors, there would be a saving of nearly Rs. 14 million in the operating costs as a result of lower cost of labour, maintenance, transportation, power, etc.

3.23. During evidence also Dr. Dastur stated that:

> "they (Russians) have given us an antiquated design for the L.D. Plant. These 100 tons L.D. converters are not used for a big plant like this (Bokaro). Not that they are not used. If you want a plant of $\frac{1}{4}$ or $\frac{1}{2}$ million tonne they can be used. But today 300 tonnes L.Ds are absolutely standard and with one L.D. converter you get more than 2 million tonnes of steel. Here to get 1.7 million ingot tonnes they are putting up four or five 100 ton L.D. converters. It increases your capital cost and also your operating cost."

3.24. In Japan, one of the most developed countries in Steel industry, the Committee understand that "over 60 L.D. convertors have been installed and over 60 per cent of the total steel was made this way". In this process pure oxygen is blasted at the metal turning 200 tons at a time into high quality steel. The 'blow' takes up to 25 minutes and cycle times or "tap to tap" time can be as low as 32 minutes. If 'tap to tap' or cycle time is reduced by minutes or so, the output will go up by half a million ton a year as a direct result as has been proved in Japan.

3.25. The Committee were also informed that the total capital costs for the two steel melting shops as currently envisaged for Bokaro and the estimates for a shop of 250 tonne convertors only would be as follows:

	(Rs. in million)
(*a*) As envisaged now—2 shops (five 100 tonne and two 250 tonne convertors)	476·8
(*b*) Dasturco estimate for 1 shop with 4-250 tonne econvertors	289·6

This suggestion of Dasturco was also not accepted.

3.26. As to the reasons for not accepting the suggestions of Dasturco for large convertors, the Secretary of the Ministry stated during evidence that the Soviet said that "our experience has been largely on the 100 tonne

convertors. We ourselves are not very familiar with the 250 tonne convertors and we would not suggest this." In this connection he also referred to the following statement of the Soviet expert who was head of the Diplomatic Mission before the Technical Committee:

> "We can supply to India all the equipments which have been thoroughly checked up in operation in the Soviet Union. We can supply only equipments which can be commissioned straightaway and which can be easily mastered on the basis of our experience at our own steel plants. We are producing 100 ton convertors. Today we are not in a position to supply India other convertors of higher capacities. The 250 tonne convertors are now being installed in some of the steel melting shops and we will be in a position to supply them to India after we have gained enough experience in their operations. For the second stage we will be able to supply you such convertors."

3.27. During his evidence before the Committee Dr. M. N. Dastur stated that "in the discussions held in Moscow, the Chairman, Bokaro Steel Ltd. dominated in the meetings. Whereas from the Soviet side, the head of Design Institute my equivalent was the leader of their team and he used to argue, from our side Mr. Wanchoo was the leader of our team and he used to argue and we were only allowed to have a few words in sideways."

3.28. The Chairman B. S. L. however stated during his evidence as follows:

> "I certainly led the Delegation. We had about a dozen technicians including Dasturs, Hindustan Steel Design Bureau and Bokaro Managing Director, who himself was a technician. I felt that in the opening session of this conference—the conference went on for two to three weeks—I should be the principal speaker, and, therefore, I presented to the other side the case which was Dastur's case, our case, Bokaro's case and the Government of India's case. I presented the case on behalf of the Government of India. They naturally had some technicians and they presented their case. Obviously, we could not discuss the technical details in the main conference of this nature. So, what was decided was that we appointed 5 or 6 panels, consisting wholly of technicians in each of which Dastur was represented. These panels were to discuss technical matters in detail. But, in the opening session, I told Mr. George and Dastur that it would be best to let me present the case on

behalf of the Government and Dastur. Then the panels were appointed, which went on working for about a week. At the end, all the panels reported their agreements or disagreements to the main Committee, of which again I was the Chairman. So, I took the leading part on the first day when we were starting of the discussion, and again on the last day. In fact, I was not present even in the panels, not being a technician myself. But I felt it necessary to present the Government of India's case fully myself on the first day, and of course, to take part on the last day."

"the position was that the Russians were the primary consultants for this project. We were not in a positon to say that whether they liked it or not, we would accept Dastur's line of thinking."

3.29. During evidence, the Secretary of the Ministry also stated that:

"in accepting the suggestions of Dasturco certain practical limitations apart from theoretical possibilities had to be taken into account. We had to accept the Russians aid. Naturally from their point of view they had to take the line that we could only get their aid provided they were also technically satisfied about the construction having accepted the Russians assistance in this matter and having all their experience and their expertise, I think that Government rightly felt that it was not proper to go beyond what they (Russians) actually accepted in regard to Dastur."

3.30. The Committee find that Dasturco, the Indian Consultants of BSL had pointed out that there was a good scope of cost reduction amounting to about Rs. 107.5 crores even if the basic assumptions of the Soviet DPR were accepted. In spite of that no worthwhile effort was made to bring down the capital investment. The Government was aware of the capital cost per ton of steel plant in India. The Committee has been told that the capital cost would be Rs. 2474 (now revised to Rs. 2725 as stated in Rajya Sabha on 16th March, 1970) in Bokaro Steel plant in its second stage i.e. when the production will be 4 million tons but in the first stage when the production will be 1.7 million tons the capital cost per ton of steel at Bokaro would be Rs. 4000 per ton. In view of this very heavy investment in Bokaro, the Government ought to have given a more serious consideration to the question of the cost reduction study.

3.31. The Committee however regret to note that as against the suggestions of M/s. Dasturco for cost reduction amounting to Rs. 107.5 crores in 1st Stage of Bokaro Steel Project, suggestions to the extent of Rs. 9.5

crores only could be given effect to. As the suggestions for cost reduction are highly technical the Committee are not in a position to examine them from technical point of view. They, however, find that in the case of steel melting shops the Soviet Consultants themselves recommended the installation of 250 ton convertors in the II Stage of BSL. As pointed out by M/s. Dasturco in their cost reduction study, the world trend including Japan, U.S.A., West Germany is to adopt convertors of 200 to 300 tonnes capacity for large new plants of the type visualised at Bokaro. The reasons for having 200 to 300 tonnes convertors are that investment is lower, refractory consumption decreases, handling of hot metal scrap, fluxes, slag and ingot moulds is simplified and operating costs are lower. It was estimated by Dasturco that there could have been a saving of Rs. 1.4 crores in operating cost per year by installing converters of 250 tonnes. There would have also been a saving of about Rs. 18.7 crores in the caiptal cost. The Committee are, therefore, of the opinion that Government should have more thoroughly examined his matter and the idea of obtaining 250 ton convertors from other sources ought to have been examined in order to bring down both capital and operating costs.

3.32. The following features also stand out rather conspicuously while reviewing the whole course of the finalisation of the agreement with the U.S.S.R. :

(i) Messrs Dasturco were asked to make a cost reduction study on 29th March, 1966. But without waiting for their Report on that very day Government communicated to the Soviets the acceptance of their D.P.R. Contracts were also signed on 3rd May, 1966 for the preparation of working drawings and for rendering technical assistance including supply of equipment. Thus the negotiations with Soviets were rushed through and there was little chance of acceptance of any major changes in the designing of Bokaro Steel Project by the Soviets. Government should ensure that the agreements do not have the effect of foreclosing issues of crucial importance in particular those which have a bearing on the efficiency and economics of the plant.

(ii) The Memorandum of acceptance of DPR provided that the Soviet consultants would give due consideration to concrete technical suggestions for cost reduction which might be made to them by the Indian side within three months, M/s. Dasturco were therefore, asked to give concrete proposals for cost reduction within seven weeks. The Committee are informed that the report submitted by M/s. Dasturco lacked detailed technical design basis, detailed cost calculations and break-up

of cost savings.' As these were not readily forthcoming Government had to send the delegation to Moscow to discuss the proposals with the Soviets without the study of the details of the suggestions of Dasturco. The delegation was not in a position to argue fully and convince the Soviet Consultants with the proposals. It was admitted by B.S.L. that the discussions (at Moscow) were no doubt handicapped by the Bokaro Steel representatives not being fully conversant with the details of the design data and the cost reduction basis by Dasturco.

The Committee feel that all the discussions with Dasturco ought to have taken place in India and all the points should have been sorted out before going to Moscow. The Committee have not been able to appreciate that as the agreement had to be signed in a short time on a particular date, therefore, proper consideration to the whole matter was not feasible. The Government ought to have insisted on having enough time for the consideration of the report and other connected matters before signing the agreement.

(iii) The Committee also feel that it would have been better if the leader of the delegation which was to discuss highly technical matters had been a technical person especially when on the other side the head of the team was a technical man. They desire that the delegations for such technical negotiations either with foreign companies or Governments should as far as possible be headed by technical chiefs.

(iv) Dr. Dastur stated in his evidence that 'Mr. Wanchoo dominated in the meetings (at Moscow). Whereas from the Soviet side the head of the design Institute, my equivalent, was the leader of their team and he used to argue, from our side, Mr. Wanchoo was the leader to our team and he used to argue and we were only allowed to have a few words in sideways.' On the other hand the Chairman, BSL stated that 'we appointed 5 or 6 panels consisting wholly of technicians in each of which Dastur was represented.' B.S.L. also informed the Committee that Dasturco had ten of their representatives in the delegation who argued their proposals but they were not able to convince the Soviet side.' The Committee are left with the impression that there was lack of cooperation and proper understanding among M/s. Dasturco, Bokaro Steel Plant and the Government of India. Had there been a greater understanding and cooperation, probably the results would have been better in the interest of the country

(v) The Committee feel that because the Chairman of B.S.L. also happened to be the Secretary of Steel Ministry who led the delegation, the Ministry was denied an opportunity to have a second look at the negotiations and to the agreement of reduction of only Rs. 9.5 crores in the capital cost of the Project in place of suggestions to the extent of Rs. 107.5 crores by Dasturco.

C. Revision of Estimates

3.33. The Committee enquired during evidence in August, 1969 whether the estimates for 1st Stage had been revised or would it be possible to adhere to the original estimates. They were informed by the Chairman, B.S.L. that the estimates had not been revised so far. They were engaged in revising the estimates in the light of latest information that they had got about various supplies. At the moment it was difficult to tell the extent of increase in estimates. Subsequently (September, 1969) in a written reply also the Committee were informed that the estimates for Stage I had not undergone any revision so far. But the whole position was under review and was likely to be finalised shortly. Revision to a certain extent might become necessary due to escalation of indigenous prices on labour and materials. The actual price being paid to HEC was also much higher than what was included in the estimate sanctioned by Government. Similarly certain adjustments will have to be made due to variation in the actual quantities of work on detailed engineering in comparison to the figures given in Detailed Project Report. A detailed exercise had been undertaken to review the project estimates. It was only after this exercise was completed that it will be known whether the original estimates could be adhered to. It was not possible to forecast at this stage the ultimate cost of construction of Bokaro Steel Plant in 1st Stage.

3.34. During the evidence the Committee enquired as to how is it that the Management was not in a position to give the estimated ultimate cost of project. The Chairman, BSL stated that in the light of the subsequent developments, the management of Bokaro Steel Ltd., put up to the Board of Directors some time ago a revised estimate on the basis of latest expectations. This estimate was for Rs. 764 crores *i.e.* about Rs. 93 crores more than the original estimates. There were three elements, in particular where the estimates had shown an increase *viz.* Rs. 60 crores on plant and equipment, Rs. 26 crores for future escalation and Rs. 7 crores on other items. When these estimates came to the Board of Directors they questioned the necessity of providing an escalation factor of as much as Rs. 26 crores. Till the Board finally agreed or disagreed with it, they felt it might not be proper to give an estimate which had not been approved by the Board.

3.35. Subsequently in a note furnished to the Committee it was stated that the project estimates as sanctioned by Government excluding off-site facilities and the revised estimates showing the variations under each head are shown below:

(Rs. in millions)

S. No.	Item	Sanctioned Estimate	Revision			Revised
			Increase	Decrease	Net Inc./ Decr./	
1.	Land	10·40				10·40
2	Site levelling and investigation	97·09				97·09
3	Plant and Equipment as erected	4,643·37	604·31	5·73	(+)598·58	5241·95
4	Engineering and construction					
	(a) Construction Equipment	155·00				155·00
	(b) Administration during construction etc. @7½% on 2 & 3	355·54			(+)44·89	400·43
5	Customs duty	476·68			(—)1·57	475·11
6	Contingencies @5% on items 2 to 5	286·39			(+)32·10	318·49
7	Escalation				(+)200·0	200·00
	Plant cost	6,024·47			(+)874·00	6,898·47
8	Deferred charges	42·80				42·80
9	Capitalised interest					
10	Spares	139·00				139·00
11	Off-site facilities	503·75				503·75
	TOTAL COST	6,710·02		—	(+)874·00	7,584,04

Say Rs. 7,584 million

3.36. The revised project estimates have increased by a sum of Rs. 874 million as explained below:

(i) *Indigenous equipment*:

Based on the contracts finalised or the quotations received from public

sector undertakings, there is an overall increase of Rs. 604.31 as per details below:

Sl. No.	Name of Supplier	Contracted amount	Estimated amount	Difference
1	Mining and Allied Machinery Corporation .	71·27	67·32	3·95
2	Instrumentation Limited	85·60	23·48	62·12
3	Hindustan Cables	1·91	3·60(—)	1·69
4	Indian Telephone Industries	2·20	1·08	1·12
5	Bhatat Electronic Limited	0·17	0·05	0·12
6	Heavy Engineering Corporation . . .	957·70	505·45	452·25
7	Bharat Heavy Electricals Ltd., Trichy . .	16·67	8·42	8·25
8	Bharat Heavy Electricals Ltd., Hyderabad .	60·41	11·70	48·71
9	Bharat Heavy Electricals Ltd., Hardwar .	7·35	2·26	5·09
10	Heavy Electricals Ltd., Bhopal . . .	17·90	11·11	6·79
	TOTAL	1221·18	634·47	586·71
	Increase	Rs. 586·71 million		
	Add Sales Tax on above . .	Rs. 17·60 „		
	Total Increase	Rs. 604·31 „		

(ii) *Imported Equipment*

During the course of detailed engineering and preparation of drawings for the project, there is a decrease in the supply of equipment and structurals. This has resulted in a net reduction of Rs. 5.73 million in the cost of imported equipment.

(iii) *Administration during construction contingencies etc.*

The provision under this head has been revised adopting the same percentage as in the approved estimates.

(iv) *Customs duty*:

Due to decrease in the supply of equipment from the USSR, there is a net reduction in customs duty amounting to Rs. 1.57 million.

(v) *Escalation*:

(a) The cost of steel has increased by about Rs. 400 per tonne over the base price assumed in the project estimates approved by the Govern-

ment. As a result, the cost of structures and equipment has escalated by Rs. 103.45 million. The wage of unskilled worker has increased from Rs. 1.75 to Rs. 2.50 per day in the State of Bihar. Due to this increase in the minimum wage, an additional amount of Rs. 5.16 million is payable to Hindustan Steel Works Construction Ltd. against the Civil Engineering contract entered into with them. Therefore, the total known escalated cost amounts to Rs. 108.61 million.

(b) *Future*: There has been a general increase in the wages of workers consequent to the implementation of wage awards and other governmental action. The effect of this rise in wages will not be known until the claims are preferred against Bokaro Steel. It is considered necessary to provide for this and other unforeseen eventualities. For the present, escalation at 2½% amounting to Rs. 91.74 million, has been provided for. In working out this, commitments on which there is no escalation have been excluded.

The total provision for escalation would thus work out to Rs. 200.35 million (*i.e.* Rs. 108.61+Rs. 91.74 or say Rs. 200.00 million). The revised estimates were stated to be under the consideration of Government.

3.37. In reply to USQ No. 429 dated the 2nd March, 1970 the Minister of State in the Ministry of Steel and Heavy Engineering informed Rajya Sabha that the total investment on Bokaro Stage I was now estimated to be of the order of about Rs. 760 crores out of which foreign exchange component was Rs. 195 crores.

3.38. It would be seen from the above that there was likely to be an increase of about Rs. 90 crores over sanctioned capital estimates of Rs. 670 crores for Bokaro Steel Plant. It is, however, surprising that until recently the management of Bokaro Steel Plant was not aware of the extent of increase in the capital estimates. The Committee were informed as late as September, 1969, that the fact whether the original estimates could be adhered to or not will be known only after the review of project estimates undertaken by the management was completed. One of the important tools of management is proper accounting and reporting system which records the variations from the original estimates under various heads and enables the management to know at any point of time the total expenditure likely to be incurred on a project, the extent of variations from the original estimates and the reasons therefor.

3.39. Bokaro has a Finance Division. It is the primary function of this Division to keep track of financial provisions, progress of expenditure and Revised Estimates, etc. The Committee are unable to appreciate why Bokaro Steel did not assess in time the ultimate cost of the project and variation from the original estimates.

3.40. The Committee also find that in the Demands for Grants for 1967-68, it had been stated that after taking into account the effects of devaluation and proposals of cost reduction agreed upon by the Soviet side the revised cost of 1st Stage of the plant as sanctioned by Government is Rs. 620 crores (excluding off-side facilities which are estimated to cost about Rs. 50.4 crores approximately). Having obtained the approval of Parliament to specified figures, the management was committed to complete the 1st stage of Bokaro within that amount unless Parliament had approved of the revised estimates. The Bokaro Steel Ltd., should have taken the first opportunity of informing Government and Parliament about the extent of revision in the estimates stating also clearly as to how it would affect the economics of the plant. They, however, find that even the Demands for Grants for 1970-71, made no definite mention about the extent to which the increase in estimates was likely to be. The Committee highly deprecate the complacent attitude of the Government towards the escalation of estimates to such a magnitude (Rs. 90.0 crores) and they recommend that in future earliest opportunity should be taken to inform Parliament about major increases in estimates of a project.

3.41. The Committee recommend that along with the Demands for Grants each year Government should present to Parliament a review on each public undertaking giving a true picture about its working. In the case of public undertakings under construction such a review should also include the original estimate of capital expenditure, the expenditure incurred so far and the percentage of work completed, the estimated increase, if any, from the original estimates and the reasons for variations, etc.

3.42. The Committee find that the Minister for Steel in reply to a question No. 429, dated 2nd March, 1970, in Rajya Sabha and in reply to a question 708, dated 31st March, 1970 in Lok Sabha had stated that the total investment on Bokaro on Stage I was now estimated to be of the order of Rs. 760 crores which means the Government considers that the total investment on Bokaro will go up by about Rs. 90 crores above the earlier estimates of Rs. 670 crores as reported to the Parliament *vide* Demands for grants 1967-68 on the basis of which approval for the establishment of Bokaro Plant was taken. From the examination of the Bokaro Steel and the data that have been furnished to the Committee, they are convinced that even this figure of Rs. 760 crores as reported to the Parliament by the Minister may not be a firm figure.

3.43. Wide variations between the estimated cost and the actual expenditure has become a common feature in the public sector projects. The Committee would, therefore, watch with considerable anxiety as to how in the ultimate analysis the actual cost compares with the estimated cost in the case of Bokaro Steel Plant both for Stage I and II.

IV

CONSTRUCTION AND COMMISSIONING

A. Delays in Construction

4.1. The major units of the Bokaro Steel Plant are:—

(i) Raw materials storage and blending plant.

(ii) Coke Oven Plant.

(iii) By-Product Plant.

(iv) Sulphuric Acid Plant.

(v) Sinter Plant.

(vi) Blast Furnace Plant and ancilliary facilities.

(vii) Oxygen converter shop and auxiliary facilities.

(viii) Steel melting shop, Hot Rolling Mills, and

(ix) Cold Rolling Mills.

4.2. According to the construction schedule prepared in November, 1966 based on the assumption that civil construction work could commence from January, 1967, the first blast furnace, along with two batteries of coke ovens, by-product and sulphuric acid plant, one band of sintering plant, auxiliary shops and laboratories, power plant, related utilities and a cooling pond was to be commissioned by the end of fourth quarter of 1969 and the entire programme for Stage I including cold rolling mills by the end of first quarter of 1971. However, the civil engineering work could be started only in October, 1967 *i.e.*, after a delay of about 9 months. Therefore, the revised schedule provided for the commissioning of the first blast furnace by September, 1970 and the entire plant by December, 1971. Again in February, 1969 it became apparent that an overall delay of 6 months in the commissioning of the first blast furnace and consequently the entire Stage I of the plant was inevitable due to anticipated delays in deliveries of different items of equipment and material delays on the Heavy Engineering Corporation. Thus construction schedule was again reviewed by the Bokaro Steel Board in July, 1969 and it was decided that a realistic schedule for the completion of erection of first blast furnace would be March, 1972 and the entire Stage

I by June, 1973. The precise reasons for the slow progress of construction of various units of the plant are stated to be as follows:—

(i) delay in submission of data by the suppliers for preparation of civil drawings such as in Raw Materials Plant by MAMC, non-receipt of equipment foundation drawings from the Soviet Consultants as in Cold Rolling Mills, delay of almost one year by the Soviet Consultants in supply of drawings for the units to be designed by Dasturco due to delay in supply of technical data by the equipment suppliers in India as well as in the U.S.S.R.

(ii) non availability in time of anchor bolts to be supplied by HEC and HSCL mainly in Hot and Cold Rolling Mill areas;

(iii) lack of resources in manpower, equipment and shuttering material on the part of the contractors of HSCL;

(iv) non-availability of steel plates to specification ISS-226 and ISS-2062, in time and in quantity from indigenous sources;

(v) slow progress in general of supply and erection of building structurals covered by HSCL contracts;

(vi) shoftfall in supplies of steel structures by HEC in matching sets and in the sequence required for erection;

(vii) slow progress by various contractors on whom orders have been placed for supply and erection directly by BSL;

(viii) the private sector industries on whom orders have been placed, have also expressed difficulties in making supplies of equipment in time due to non-availability of steel and imported components;

(ix) non-availability of refractories in time; and

(x) difficulties in land acquisition.

4.3. The Committee were informed that even the revised second schedule of completion of 1st stage by June, 1973 was still subject to various uncertain factors and in particular; (i) timely furnishing by MAMC of technical data to enable Dasturco to complete the civil drawings of Raw Materials Plant by 15th January, 1970 (ii) substantial stepping up in the rate of concreting in the Hot and the Cold Rolling Mills areas by HSCL (iii) timely supply of cranes by HEC and other suppliers without which most of the items of equipment cannot be erected, particularly in the Steel Melting Shop and the Rolling Mills.

4.4. It will thus be seen that even if the present schedule of construction is maintained there will be a delay of 27 months in the completion of 1st Stage of Bokaro Steel Plant as compared to the original schedule prepared in November, 1966. The Committee were informed during evidence that the loss of production due to the delay of about two years in construction would be about Rs. 32 crores. Besides, the additional expenditure on establishment and interest on borrowed capital would be about Rs. 20 lakhs per month.

4.5. In reply to a question (No. 506) in Lok Sabha on 17th March, 1970, the Minister of State for Steel and Heavy Engineering, however, informed that the approximate loss on account of delay in commissioning of the plant calculated on the basis of administrative and other overheads is estimated at Rs. 25 lakhs.

4.6. It is noticed that in October, 1966 when negotiations were resumed with Dusturco for finalising their contract, Dasturco represented to Bokaro Steel and Steel Ministry that assistance in construction scheduling, progress reporting, project cost control preparation of specifications, co-ordination, expediting and inspection of equipment etc. which had already agreed to earlier and which were normally undertaken by consultancy must be included in the Dasturco scope. But this was not agreed to. During evidence, the Secretary of Ministry of Steel and Heavy Engineering stated that "there have been so organisational failures on the part of B.S.L. These have been gone into and the organisation has since been strengthened. Recently, they have decided to adopt a system of network analysis by M/s. Dasturco which will show up the deficiencies at various points and will also show how particular deficiencies can be by-passed if necessary".

4.7. The Committee are distressed to note that the date of completion of the Bokaro Steel Plant has been revised twice and as a result of these revisions the completion of the construction has definitely been delayed by 27 months from the date of the original schedule of completion of construction. It has been stated now that Stage I is expected to be completed according to the revised schedule by June, 1973. But the Committee find that even this date will not be adhered to because of the various uncertain factors pointed out by RSI (*vide* paragraph 4.3—page 62). The Committee has been unable to ascertain even the tentative date as to when the construction of the first stage is likely to be completed. The Committee recommend that this matter should be properly examined and a firm date of completion of the Stage I should be reported to the Committee.

4.8. As a result of the delay in the completion of the Stage I even by 27 months, the Committee very much regret to note that the losses amounting to Rs. 32 crores on account of production and establishment cost at the rate of Rs. 25 lakhs per month which will in 27 months amount to Rs. 6.75 crores have become unavoidable. It may, however, be noted that if the target date of completion of June, 1973 is not adhered to the loss will be still more. The main reasons for these losses are primarily due to the belated submission of technical datas, drawings, cranes, delay in civil engineering work and supplies from private and public undertakings. Apart from these the Secretary of the Ministry has also admitted during evidence that "there have been some organisational failures on the part of B.S.L." which failure is also responsible for the above-mentioned losses. The Committee were informed that steps have now been taken to remedy those organisational failures by adopting a system of net-work analysis by Dasturco which will show up the deficiencies at various points and which will also show how particular deficiencies can be by-passed, if necessary. In spite of the fact that Dasturco advocated the adoption of the modern-techniques of planning by B.S.L. as early as 1966, the Committee regret to note that the management at that stage ignored his advice and as a result the avoidable organisational failures crept into the management of B.S.L.

4.9. The Committee have found that the price of many of the supplies to Bokaro from indigenous sources and also their time of delivery have not yet been decided upon particularly with regard to the supplies from Public Sector Units. The Committee would like that this matter should receive most immediate attention and should be settled as early as possible.

4.10. The Committee further desire that Government should ensure that other public undertakings who have to supply machinery and equipment to Bokaro Steel Ltd. adhere to the time schedule. It should also be ensured that they do not keep on escalating prices which would inflate greatly the cost of the product and upset the economics of the Bokaro Steel Plant.

B. Civil Engineering Works

4.11. On 3rd August, 1966 the Bokaro Steel Ltd. awarded to Hindustan Steel Works Construction Ltd. the Civil Engineering Works at a cost of Rs. 1064·54 million. This Company was incorporated on 23rd June, 1964 as a wholly owned Government Company mainly for the purpose of undertaking the construction work later on. According to the terms and conditions of the contract, the construction work was to commence by January, 1967, but it could be started only in October, 1967 *i.e.* after a delay of about 9 months. In September, 1967, the Management informed the Bokaro Steel Limited that the main reason for delay was that power line, land and water were not made available by the latter in accordance with the original schedule.

4.12. The Bokaro Steel Ltd. did not, however, accept (September, 1967) the above contention on the following grounds:

(i) The Bokaro Steel Limited was in a position to supply the temporary construction power for the initial requirement within two to three weeks of the Company's request, but no such request was made.

(ii) The land where the construction was to be done was already in the hands of the Company.

(iii) The Bokaro Steel Limited had adequate number of pumps installed at the river pump houses both at the Garge and Damodar rivers from where the water required could have been supplied to the Company, if demanded.

(iv) All materials required for inviting tenders both for the civil engineering work and structural steel work had already been issued to the Company months ahead of issue of letter of intent on 3rd August, 1966.

(v) The construction work could not be started in time primarily because the company did not call for tenders sufficiently in time and even after receipt of tenders there was delay in starting the work at site due to organisational and financial difficulty arising out of resignation and retirement of the Managing Director and Chief Engineer respectively.

4.13. Instead of executing the works departmentally. H.S.C.L. had sub-divided the works awarded to it into small units and allotted these to various sub-contractors on the basis of tenders/negotiations as it found departmental execution of work extremely wasteful. As a result the Company has undertaken the role of middle men contractor only and it maintains staff necessary for supervising the work of the private contractors. The objective of doing all major construction works departmentally by avoiding the contractors and building up the necessary technical skill and expertise in the construction of steel works does not therefore appear to have been achieved by the Company.

4.14. As a result of execution of work of the Bokaro Steel Ltd., by sub-contractors appointed by this Company, the work of sub-contractors is supervised by both the Companies, *viz.*, the Hindustan Steel Works Construction Ltd. as well as the Bokaro Steel Ltd. The suggestion of the Hindustan Steel Works Construction Ltd. made in August, 1966 to dispense with the supervision to be exercised by the Bokaro Steel Ltd. was not accepted by the letter on the ground that it would have no means of ensuring the quality and speed of construction or exercising any control over the expenditure to be incurred. Consequently, the Bokaro Steel Ltd., is

maintaining an elaborate Civil Engineering Organisation for supervising the works executed by the Hindustan Steel Works Construction Ltd., through its sub-contracts, and the Hindustan Steel Works Construction Ltd., has also to engage to a large number of engineers and technical personnel for the same work. The result is duplication of supervision and consequent unnecessary extra expenditure.

4.15. The Progress of civil engineering works (R.C.C. and concreting) as on 31st August, 1969 was as follows:—

	Shop/Plant	Estimated Qty	Target up to August, 1969	Progress upto August 1969
			c.l.m.	c.l.m.
1.	Auxiliary Shop	122,600	52,281	52,282
2.	Thermal Power Plant & Turbo Blower Station	108,000	89,608	70,309
3.	Blast Furnace	200,000	140,091	114,350
4.	Coke Oven & By-Product Plant	166,620	144,560	76,108
5.	Sintering Plant	89,618	82,678	55,176
6.	Steel Melting Shop	131,000	82,418	48,548
7.	Hot Rolling Mills	432,815	88,042	57,870
8.	Cold Rolling Mill	236,539	48,175	25,381
9.	Refactory Materials Plant	70,634	21,150	19,070
		1,557,826	753,003	519,094

Thus the backlog of R. C. and concrete work as compared to the target upto 31st August, 1969 was 233, 909 c.b.m.

4.16. The reasons for the slow progress in the civil engineering works were stated to be (i) delay in submission of date by the suppliers for preparatoin of civil drawings such as in Raw Materials Plant by MAMC, non-receipt of equipment foundation drawings from the Soviet Consultants as in Cold Rolling Mills delay of almost one year by the Soviet Consultants in supply of drawings for underground communciations, delay in preparation of working drawings for the units to be designed by Dasturco due to delay in supply of technical data by the equipment suppliers in India as well as in USSR, (ii) Non-availability in time of anchor bolts to be supplied by HEC and HSCL mainly in Hot and Cold Rolling Mill areas, (iii) lack of resources in manpower, equipment and shuttering material

on the part of the contractors of HSCL, (iv) frequent Labour trouble amongst the workers of the contractors.

4.17. During evidence also, the Managing Director of BSL stated that the main reason why the work was not started by HSCL by January, 1967 was that HSCL did not call for tenders sufficiently in time and even after receipt of tenders there was considerable delay in deciding on the award of the work due to the fact that the contractors were not organised. On the other hand the Managing Director of HSCL stated that the letter of intent given in August, 1966 did not contain the details of the works. These were finalised by the end of October, 1966. After that, tenders were called which were received in January, 1967 and it took a few weeks to decide about the tenders. The work could have been started in April-May, 1967; but it was not possible to do so during the monsoon period. Therefore, the work had to be started in October, 1967.

4.18. The Committee were also informed that the figures of backlog of work based on the schedule drawn up in July, 1967. This schedule was drawn up by BSL on the advice of the Soviet Consultants in keeping with the over-all time schedule for the completion of the project and it was passed on to HSCL. At that time more than 50 per cent of the drawings had not been received. The underground communication drawings were received after one year in June, 1968. About the cooling pond the State Government could not arrange the land till November, 1968. Under these conditions the whole construction schedule which had been drawn in 1967 had to be reconsidered. After detailed discussion with the Managing Director of B.S.L. a detail scheduling had been done month to month for every item of work in July, 1969 and they were now in a position to go according to a phased sequence of work. Steps were being taken to increase the man-power as well as resources for construction work.

4.19. As to the reasons for awarding the work to the sub-contractors the Managing Director of HSCL stated in the evidence that it was not necessary for the HSCL to use its skills in items like earth work or simple concreting works. There was enough capacity available and any other organisation could do that. But HSCL had to take and specialise in difficult and complicated items of work. It was on that basis that they were going ahead. In the last two years the method followed was that HSCL had given the work on open tenders basis to small groups of contractors. The HSCL had stepped in deficient areas. They had got work to the tune of Rs. 10—12 crores to be done departmentally. The specialisation of HSCL had to be in the steel plant construction. Therefore they were developing fast and were contemplating to take more and more erection works in the first phase of Bokaro Steel Plant Construction. In the expansion programme of BSL, their contribution would be still more.

4.20. On the other hand the BSL felt that "HSCL as it has organised itself, does not entirely fulfil the object for which a construction organisation for steel plants in the public sector was organised. The object was that this organisation should build itself as a construction agency to undertake the construction work of Bokaro and subsequently move to other public sector steel plants which Government may decide to set up. The work which HSCL has sub-contracted to private contractors could have been directly done by BSL as well. Subsequent experience has proved that in an arrangement under which an intermediary organisation like HSCL exists, progress of work is not as good as could have been when only one organisation existed to control and direct the work. With this experience and in the interest of speedier execution of the project, amalgamation of HSCL and BSL probably could still be beneficial. This is more so when the second stage expansion to 4 million tonne stage concurrently with Stage I is to be undertaken."

4.21. The Secretary of the Ministry, however, did not agree with the views of BSL. He stated that the basic reason originally for creating HSCL was to have an organisation which would specialise in the construction of Steel Plants. The past experience in regard to the existing three plants had been that when the construction was completed, the construction organization in the plant became superfluous. But it was not practicable to disband this organisation and to retrench the surplus staff. Therefore, it was thought that an organisation should be built up with construction staff who would move from one site to another for construction. This was the underlying basic idea for establishing HSCL. The suggestion that HSCL and BSL should be amalgamated did not fit in with this idea.

4.22. The Committee have found that B.S.L. are very unhappy by the imposition of the contracting firm HSCL on them. They feel that there has been unnecessary duplication of supervision work and consequent employment of duplicate supervisory staff. This has also resulted in delay in the execution of the work. B.S.L. pleads helplessness in the situation to get the work executed according to their time schedule.

On the other hand the Committee have found that Hindustan Steel Works Construction Ltd. has mostly sub-contracted the work and are not doing the work themselves. The original idea was that H.S.C.L. would do the job themselves and not sub-let the work.

The Committee feel that this experiment has not worked well, on the other hand it has worked to the detriment of B.S.L. B.S.L. should have freedom to get their work done in the most expeditious and economic

manner as they deem fit so that the management of B.S.L. may be held responsible both for the completion of the Project within the time schedule and for getting the work done on estimated costs. This was not possible if a Public Sector contractor like H.S.C.L. is forced upon B.S.L. Therefore, the Committee feel that B.S.L. may be allowed to get their civil and other works done themselves either departmentally or through a contractor of their choice.

4.23. The Committee appreciate the objective with which the H.S.C.L. was formed, namely to take the construction of steel plants, to solve the problem of the constructional staff and also to develop experience and expertise in civil and engineering work of this nature. But the Committee feel that this cannot be allowed to be done at the cost of a project, in this case at the cost of Bokaro. The primary objective should be to get the project completed in time and according to the cost estimates and if that is put in jeopardy, H.S.C.L. has to be withdrawn.

C. Plant and Equipment

4.24. The total quantities of equipment structures and refractories required for BSL 1st Stage are as follows:—

Equipment	276,800	tonnes
Structures	235,841	tonnes
Refractories	212,086	tonnes

The break-up indicating the source of supply as on 31st July, 1969 is given below:—

Equipment

Source of Supply	Tonnage	Value (Rs. in million)	Remarks
1. U.S.S.R. .	101,502	1,547·80	Notional figure
2. Czechoslovakia	1,400	24·06	
3. *Public Sector*			
HEC . . .	72,415	959·30	
M.A.M.C.	10,491		Rate not yet finalised.
Others .	7,423		Do.
4. *Private Sector*			
(*i*) Ordered . .	26,381	243·99	Notional figure
(*ii*) To be ordered .	32,034	..	
5. B.S.L. Workshops .	25,149	..	
	276,795		

Source of Supply	Tonnage	Value (Rs. in million)	Remarks
Structures			
1. U.S.S.R.	21,443	47·27	Notional figure
2. Public Sector :			
(i) H.S.C.L.	149,884	362·90	
(ii) H.E.C. . . .	26,656	64·20	
3. Private Sector :			
(i) Ordered	26,432	47·60	Notional figure
(ii) To be ordered . .	15,161		
	239,576		
1. U.S.S.R.	23,138		
2. Private Sector :			
(i) Ordered	171,923	75·2	
(ii) To be ordered	17,026		
(a) *U.S.S.R. Supplies*	212,087		

4.25. Under the terms of contracts entered into by B.S.L. with M/s. Tjazhpromexport, the latter were required to furnish certain equipment and material as well as working drawing and technical documentation for the manufacture of equipment in India.

4.26. The Committee were informed by M/s. Dastur & Co. that 'there is no provision in the Bokaro Steel-Soviet contracts for a phased programme for the delivery of working drawings by the Soviet Union and for the supply of Soviet technical documentation for the manufacture of equipment in India. Incomplete Soviet design assignments and data have held up the work in many cases. Some of the Dasturco drawings had been held up again and again because of non-availability of Soviet design assignments and information on time as well as data from equipment suppliers in India'.

4.27. During evidence the Managing Director, B.S.L. informed that the total tonnage for which design documentation were to be furnished by the Soviet Consultants under the contract was 93,000 tonnes approximately. Out of this, design documentation for 42,000 tons *i.e.* for first blast furnace was to be supplied within nine months. The tonnage for which design documentation were received within this period was 31,000.

The design documentation supplied within 24 months of the date of contract was 91,800 tons and the outstanding at present was only about 70 tons.

4.28. It was, however, admitted by BSL that in some cases there was delay in receipt of drawings from Soviet Consultants. One of the reasons for slow progress in the civil Engineering Works was "non receipt of equipment foundation drawings from the Soviet Consultants as in Cold Rolling Mills, delay of almost one year by the Soviet Consultants in the Supply of drawings for under ground communications and delay in preparation of working drawings for the units to be designed by Dasturco due to delay in supply of technical data by the equipment suppliers in India as well as in U.S.S.R."

4.29. As in the case of drawings, there were also delays in supply equipment by the U.S.S.R.

The tonnage of material to be received from U.S.S.R. (Category-wise) the material received so far and the percentage to total, as on 31st July, 1969 was as follows:—

	Tonnage to be received	Tonnage received upto 31st July, 1969 at Calcutta Port	Percentage to total
Equipment	101,502	59,156	58·2
Steel Structurals	21,443	7,432	34·7
Refractories	23,138*	1,139	4·9
Pipes and other goods	23,929	10,586	44·2

*The contract for supply of 18,347 tonnes of refractories was entered into on 9-7-69.

4.30. The contract with U.S.S.R. stipulated that all items of equipment would be supplied within a period of fifty months from the date of signing the contract *i.e.* by 31st July, 1970. The contract not include a phased delivery schedule. However, forecast of shipment for every year and break-up thereof quarter-wise on a tonnage basis was furnished by the Soviet Suppliers. In relation to this, the shortfall in supplies as on 31st July, 1969 was 26,220 tonnes.

4.31. In a subsequent communication, B.S.L. has informed that against 1,01,502 tonnes of equipment, 17,708 tonnes of steel structures to be

representing 69 and 39 per cent respectively, of total quantity ordered. It is, however, noted that there is a discrepency between figures now given and figures given in the written replies earlier in regard to supply of steel structures.* The B.S.L. has also informed that they have requested the Soviet suppliers to defer shipment of 5,000 tonnes of electrical equipment and those items of mechanical equipment of rolling mills which have not yet been shipped from the Soviet Union, because they are not required for erection immediately.

4.32. The Committee were also informed that the supplies of the equipment was not done in the proper sequence to match the construction schedule. This has resulted in delay of the construction programme. The supplies were deficient till June, 1969 to the extent of 10,000 tonnes for the first blast furnace complex while a large number of items of rolling mills required much later have already been supplied. As to the steps taken to clear the backlog and speed up the supplies the Committee were informed that M/s. Tjazhpromexport have recently upgraded the appointment of their representative at Bokaro Steel by deputing one of their Vice-Presidents. The matters that need to be referred to Moscow had been considerably reduced and most of the problems solved expeditiously. Constant liaison was also maintained by BSL Liaison Office at Moscow with the supplier.

4.33. The Committee regret to note that there had been delays in the supply of drawings and equipment by the foreign collaborators. The inordinate delay in the supply of drawings has caused serious delays and upsets both in the civil construction programme and also in the manufacture of machinery and equipment in India.

4.34. It is also surprising that in respect of equipment supply, the contract with USSR stipulated only an overall period of fifty months for the supply of equipment, from the date of signing the contract and did not include a phased delivery schedule. The result was that while on the one hand the supplies were deficient to the extent of 10,000 tonnes for the first blast furnace complex, a large number of items of rolling mills required much later have already been supplied.

In order to ensure the supply of equipment in time and in the proper sequence required for construction and erection it was essential to include component-wise phased delivery schedule in accordance with the needs of the project. The Committee could get no satisfactory explanation for this omission in the contract entered into with the Soviet suppliers and would like it to be investigated into and responsibility fixed for such a vital omission which has caused considerable loss.

*At the time of factual verification, the Ministry informed that total tonnage of structurals received at the end of January, 1970 was 10643.

4.35. The Committee feel that such a vital and technical contract document ought to have been either drawn up by competent qualified technical men or vetted by them before signing. The Committee find that Dasturco has made comments on such omissions in the contract. If the Government had made use of their experience in drawing up the contract, probably this omission could have been avoided. The Committee recommend that this should invariably be borne in mind in entering into cnotracts in future with the suppliers of plant and machinery.

(b) *Supply of equipment from public sector undertakings.*

4.36. In the case of public sector undertakings, the Committee were informed that upto 31st July, 1969, as against the target of 11.672 tonnes, the equipment received was only 6,101 tonnes (52 per cent) H.E.C. & MAMC were the principal suppliers in the public sector. There had been delay of 6 months in the completion of the project so far due to the delay in the receipt of supplies from H.E.C.

(i) *Supplies from H.E.C.*

4.37. The Committee were informed by H.E.C that the letter of intend for supply of 99445·81 tonnes of equipment was received in July, 1967 and the delivery schedule received on 30th June, 1967 which was prepared by Bokaro Steel Limited taking into consideration their erection schedule and not the HEC's manufacturing capacity. After considerable discussion a revised schedule was finalised in November, 1968 indicating details of deliveries to be effected quarter-wise for each year.

4.38. In accordance with the contract concluded between Bokaro Steel Limited and Heavy Engineering Corporation on the 9th April, 1969 Heavy Engineering Corporation have to supply approximately 72,000 tonnes of equipment and 27,210 tonnes of steel structurals by the end of December, 1971. According to the phased schedule of deliveries nearly 19,200 tonnes of equipment and 23,600 tonnes of structurals should have been supplied by the end of January, 1970. The actual deliveries up to the end of January, 1970, have been 10,840 tonnes of equipment (57 per cent) and 20,520 tonnes of structurals (87 per cent).

4.39. The H.E.C. had also not been able to make supplies even in sequence as desired by B.S.L. out of supplies made upto January, 1970, supply of 1,235 tonnes of equipment were out of sequence. It was explained that due to non-receipt of materials and completing parts from USSR, certain items could not be manufactured strictly in sequence as per schedule. In order to utilise available materials and machines, other

4.40. The Committee enquired during evidence as to how is it that it took H.E.C. and B.S.L. a period of 1½ years to finalise the delivery schedule after placing the letter of intent in July, 1967. They were informed that most of this period was taken up in clarifying the specifications, giving working drawings and so on.

(ii) *Mining and Allied Machinery Corporation*

4.41. As per contract signed with M.A.M.C. in December, 1968 they are to supply about 10,484 tonnes as per schedule envisaging supply of about 9,100 tonnes by the first quarter of 1970. Later at M.A.M.C's request this schedule was revised in July and the revised schedule lay down a target supply of about 4,650 tonnes of equipment by the first quarter of 1970. As against this target, only about 700 tonnes have been received upto 25th February, 1970.

(iii) *Other Public Undertakings*:—

4.42. The position in respect of other Public Undertakings is as follows—

Name of Undertaking	Total quantity ordered	Total supplies
BHEL, Trichy	22,000 valves	1400
Instrumentation Ltd.	1,227 tonnes	210 tonnes
BHEL, Hyderabad	1,334 tonnes-turbo-blowers & turbo compressors	533 tonnes
	180 tonnes-132-KV Switchgear	87 tonnes
HEI, Bhopal	1,600 tonnes-large capacity transformers	400 tonnes
I.T.I., Bangalore	60 tonnes	20 tonnes
BHEL, Hardwar	260 tonnes motors	134 tonnes
B.E.L., Bangalore	Very high frequency transreceiver sets.	All equipment ready for despatch.
Hindustan Cables Ltd.	263 tonnes of communications cables	Nil

4.43. Except in the case of communication cables from Hindustan Cables Ltd., the supplies from these undertakings have been keeping in line with requirements and according to schedule.

(c) *Supplies of equipment from private sector*

4.44. Out of 63,000 tonnes of equipment to be procured from private sector for the 1.7 million tonne stage orders have already been placed for 41,000 tonnes. About 3,364 tonnes have been received/despatched/ inspected against a target of 14,737 tonnes. Against 42,113 tonnes of steel structure 34,907 tonnes have been ordered and 1,070 tonnes of structures have been received against a target of 3,349 tonnes.

(d) *Position of supply of cranes*

4.45. 351 cranes have been ordered till date and they have been distributed as follows:—

Source of supply	Number of cranes
U.S.S.R.	21
H.E.C.	96
Other Public Undertakings (Garden Reah Workshops and Tunghabhadra Steel Products Ltd.)	26
Private Sector	208
H.E.S. has further sub-contracted the cranes as follows :—	
Garden Reach Workshops Ltd.	61
U.S.S.R.	5
Private Sector	7
To be manufactured by H.E.S.	23

Against the promised delivery of 210 cranes by the first quarter of 1970, only 24 cranes have been received/dispatched.

4.46. The Committee were informed that important causes leading to delay in procurement of equipment and materials were non-availability of steel plates to specification IS-226 and IS-2062 and in quantity from indigenous sources in time, difficulties experienced by private sector suppliers in making supplies of equipment in time due to non-availability of steel and imported components.

4.47. The Committee regret to note that it took B.S.L. and H.E.C a period of 18 months from the date of placing of letter of intent, to clarify the specifications, to give the working drawings and to settle the delivery schedules. The Committee fail to get a satisfactory answer from B.S.L. and H.E.C. for this inordinate delay. During this period the Secretary of

the Ministry of Industrial Development and Company Affairs was also the Chairman of B.S.L. It was expected that such a combination of posts would lead to better coordination and expeditious disposal and settlement, but instead it took so long for these two public sector undertakings to settle these matters.

The Committee cannot help expressing their distress that the concerned Ministries failed to take any effective steps and to provide necessary leadership to streamline the work of these two corporations so that the loss of time and money could be avoided.

4.48. The Committee regret to note that as against the target of 11,672 tonnes of equipment to be supplied by the public sector undertakings upto 31st July, 1969 the equipment actually received was only 6,101 tonnes *i.e.*, 52 per cent. of the target fixed. In the case of H.E.C. as against 72,415 tonnes to be supplied in all, the actual deliveries up to the end of January, 1970 have been only 10,840 tonnes.

4.49. The Committee also view with concern that there had been delays in supplies from H.E.C. even with reference to the revised schedule prepared in November, 1968. During evidence the Secretary of the Ministry of Steel and Heavy Engineering admitted that "the delays in H.E.C. were due to their own organisational deficiencies. There are some instances where supplies from USSR were delayed but the major portion of delays has been due to their own faults. Unfortunately that is true".

The Committee were, however, assured that in pursuance of the recommendations of the Committee on Public Undertakings (1967-68) in their 14th Report on H.E.C., a study of the working of the Corporation was made by a technical team comprising officers of the Bureau of Public Enterprises. Corrective measures were being taken to remove the deficiencies pointed out in their report. The Committee trust that effective steps will be taken by the H.E.C. to ensure that the supplies to Bokaro Steel Plant are made in accordance with the sequence and schedules desired by them.

4.50. The Committee have noted with concern that M.A.M.C. have failed to keep up even their revised and scaled down delivery schedule. As against 4,650 tonnes to be supplied by the 1st quarter of 1970, they have supplied only 700 tonnes upto 25th February, 1970. The Committee have examined this year the working and performance of M.A.M.C. They have an impression that M.A.M.C. will not be able to make supplies according to their commitments. Therefore, B.S.L. will be better advised to seek alternative sources of supply in order to ensure that their own construction schedules do not get delayed on account of failure of M.A.M.C.

4.51. The Committee find from the information received from B.S.L. that the position of the supply of cranes is very precarious. As against 210 cranes which were to be received in the first quarter of 1970 only 24 cranes have been received/despatched. This is bound to effect adversely the construction programme at the site.

4.52. The Committee would like that it be examined and reported to the Committee whether orders for the supply of cranes were placed in time and if there were delays in placing of orders what were the reasons therefor.

4.53. The Committee would also like to be informed the reasons for delays in deliveries by the suppliers and who are the suppliers who have failed to honour their commitment of delivery.

4.54. The Committee find that the deliveries from the private sector suppliers are also not according to the schedule of delivery. B.S.L. has generally explained that this is due to non-availability of steel and imported components. The B.S.L. and the Ministry should ensure that the private sector companies who are to supply equipment/material to B.S.L. get timely releases and the import licences as the case may be so that the programme of construction of Bokaro may not be held up.

D. Supply of refractories

4.55. Against a total requirement of about 198,000 tonnes of refractories for Stage I, it was originally estimated to procure 96 per cent of the same from indigenous sources. Order was accordingly placed for the requirement of refractories for three blast furnaces and four batteries of coke ovens on various manufacturers in the country with definite delivery schedule. However, the deliveries are most unsatisfactory and far behind schedule.

4.56. Against a total tonnage of 162,888 ordered on indigenous suppliers supplies, received till the end of January, 1970 were 13,003 tonnes; against 4,791 tonnes originally ordered on USSR supplies received upto the end of January, 1970 were 2,316 tonnes. Due to the failure of indigenous suppliers, an additional import of about 18,000 tonnes was ordered from USSR in December, 1969, and import of a further quantity of 962 tonnes and 24,063 tonnes of refractories from USSR is also to be ordered shortly. This was found inevitable in order to keep to the required construction schedule.

4.57. The main reasons advanced by the Indian members for delay in delivery are as follows:—

(a) strikes and lock-outs in the works;

(b) non-availability of alloy steel moulds;

(c) frequent breakdown in the plant;

(d) stringent GOST specifications;

(e) too rigid visual inspection in regard to iron spot (melt-outs) hairline cracks, lamination, crizzles voices, pin holes, etc.

(f) non-availability of raw materials like superior grade keyspite and fused alumina.

4.58. The specifications adopted by Bokaro Steel Plant are stringent, but the requirements of Bokaro in respect of temperature, pressures and other factors are more stringent as compared to those of other steel plants and therefore the specifications of the refractory will have to conform to these requirements. Rigid inspection had to be resorted to because the variations in the test results from sample to sample are too high. It has been the experience that there is a lack of control on the manufacturing operation in some of the refractory plants.

4.59. With a view to adhering to the present construction schedule and easing the supply position of refractories the following steps have been taken;

(a) A Committee under the Chairmanship of Director of Central Glass and Ceramic Research Institute Calcutta was appointed to see whether the method of visual inspection could be streamlined. The refractory manufacturers have been associated in the deliberations of this Technical Committee. When the final recommendations are received, a detailed inspection procedure based on the recommendations would be issued. However, wherever technically feasible, specifications are relaxed without compromising on the quality.

(b) The manufacturing process as well as the supply position of the refractory manufacturers has been kept under constant review through discussions with individual refractory plant managers as well as with the Indian Refractory Makers Association.

4.60. In a meeting with the Indian Refractory Makers Association on 23rd December, 1969, Bokaro Steel Ltd. have obtained firm commitment of suppliers from the refractory manufacturers.

4.61. The Committee were, however, informed by the representative of Indian Refractory Makers Association that even since the Bokaro Steel Plant was planned they had been asking for the specifications of refractories that might be required and the drawings of bricks to examine the shapes,

sizes, etc. But these details were not made available till the last momment when the orders were going to be placed. When these were ultimately made available it was found that the specifications were much more stringent than were being used hitherto by the other steel plants. As a result of experiments, physical and chemical properties of bricks were achieved. Before inviting tenders, a team of experts of Russian Collaborators visited the plants of various refractory makers to examine their capacity and capabilities to manufacture various types of bricks required for Bokaro. At that time they had occasion to examine the type of bricks being made in different plants for use in the HSL, Tatas and other Steel Plants. The Representative of the Association also informed that "we were greatly surprised to know that the Russian experts were not satisfied with the looks of the bricks. For the first time we had that experience. German expert, no American expert, no British expert-even discussed the looks of bricks. These bricks were meant for constructing furnaces not for architectural building". "All Chemical and physical properties were all right and they were completely satisfied. We were taken by surprise when the bricks were rejected on the ground of looks".

Because of heavy rejections the effective capacity of the plants was reduced. The manufacturers required more time to supply the same quantity of bricks due to higher rejections. These higher rejections, were because of reasons which the manufacturers never anticipated and which even at present they consider as unjustified. According to the representatives of the Association they were quite confident that Indian bricks would compare in quality with bricks manufactured anywhere in the world.

4.62. The Secretary of the Ministry however, stated during evidence that in these matters the Bokaro management is necessarily to be guided by the Russian advisers. They go on visual inspection as it is called. They reject a comparatively substantial portion of these bricks on the ground that there are hair line cracks as they call it. It is very difficult for the management to go against the expert advice of the designers'. The Ministry had however appointed a Committee which included the Russian experts also to see if to some extent the specifications could be modified. On the recommendation of this Committee some changes in the specifications had been made. But they did not wish really to press the Russians too much on this point for the reason that if later on there was a refractory failure the Russian's might attribute it to the changes in specifications and disown their responsibility in the matter.

4.63. In reply to a question the witness stated that "our feeling is that with the exception of one or two, there is not much attempt on the part of the refractory manufacturers either to set a high standard or to develop research in the field of manufacture".

4.64. The Committee pointed out that the Indian Refractory Manufacturers Association had raised several other points like extremely short time allowed for submission of tenders, and dalays in (i) finalisation of orders, (ii) issue of technical clarification, (iii) inspection for giving clearance for bulk manufactures etc. The Secretary of the Ministry stated that I must say we are very dissatisfied with the performance of the refractory owners as also even the attempt they make with one or two exceptions. After having submitted the tenders and after having accepted certain orders, it is no use saying that the original tender time was not enough. Our only remedy to this—I do not know if it would be possible for the Government to accept it—is to have the refractory capacity in the public sector and that we are now proposing. A Technical Committee had been appointed with the Senior Industrial Adviser of the Ministry as Chairman and they were once again looking into this matter.

4.65. The Committee have noted with distress the supply position of refractories. We have now long experience in the manufacture of refractories required by the Steel Plants. The decision to make India self-sufficient in regard to refractories was taken long ago. They regret to note that for our fourth steel plant we had to depend upon imports of refractories for 46,854 tonnes against the total requirement of 198,000 tonnes for Bokaro's first stage, *i.e.*, for about 24 per cent of the total requirements although originally it was estimated that 96 per cent of the refractories will be procured from indigenous sources.

The main point that has been urged to justify import of refractories is that the stringent specifications required for Bokaro could not be met from indigenous supplies. The Committee feel that these specifications were known from the very date the decision was taken to build Bokaro. It is evidently a failure of proper planning in time and lack of fore-thought on the part of BSL and of initiating action early enough to get the stringent specifications refractories manufactured in India, that has resulted in their importation. Refractory is not to be used once but has to be replaced periodically. Therefore, their manufacture in India according to the specifications is a must in the long run. If action was initiated in years 1965-66 for their manufacture there is no reason why they could not have been manufactured in India according to the specifications.

4.66. The Indian Refractory Makers Association have represented that they were not apprised of the specifications and quantity of refractories required sufficiently in advance. They were told about the specifications only at the time of inviting tenders. BSL ought to have conducted a survey of the manufacturing capacities and the competence the refractory manufacturers quite early enough 1966-67 in order that the neces-

sary remedial actions could be taken to ensure timely supplies of requisite quantity and quality.

4.67. India has enough experience and expertise in the manufacture of refractories which industry has now been in existence for a large number of years. The total dependence upon Russian expert advice even in the matter of refractories does not speak well of our long standing in this industry and also of our experience in the steel industry. The Committee would have better appreciated if we had depended on our own steel experts in the matter of rejections or acceptance of refractories. The Committee deprecate this tendency to blame the foreign collaborators for our own failures and shortcomings.

4.68. The Committee would also like that the department/Ministry concerned dealing with refractory industry should take note of the complaints and the observations made by the BSL in the matter of certain shortcomings and failures on the part of the refractory manufacturers. The technical wings of the concerned Ministry should appoint a committee to look into these matters to focus the weaknesses and to take necessary remedial measures so that the needs of the steel industry is fully and adequately met through indigenous sources of supply.

4.69. The Committee were informed that due to the failures of the Indian refractory Manufacturers to meet the demands of Bokaro, the Government was considering of putting up a refractory plant in the public sector. The Committee do not understand why this was not considered early enough to obviate imports. On the other hand, the Indian Refractory Makers Association represented to the Committee that the industry has adequate total installed capacity to meet the requirements of the steel industry based on the present pattern of demand for different qualities. All that they want is that operational and constructional requirements should be planned well in advance to enable them to organise production. The Committee feel that before the Government takes a decision to put up a refractory unit in the public sector, a proper enquiry must be made about the existing surplus capacity and the technical competency of the existing units and only after making a thorough study of the economics of the project they should go in for a refractory project in the public sector.

V

ORGANISATION AND PERSONNEL

A. Board of Directors

5.1. Section 95 of Memorandum of Association of Bokaro Steel Ltd., provides that the number of Directors shall not be less than three nor more than twelve. Section 96(b) *ibid.* also provides that the President may from time to time appoint a Chairman and Deputy Chairman of the Board of Directors and one or more Managing Directors from among the members of the Board.

5.2. The Board of Directors of the Company at present consisted of the following eight members including the Chairman and the Managing Director till 31st December, 1969.

1. Shri N. N. Wanchoo, Chairman
2. Shri N. M. Wagle
3. Shri K. Sreenivasan
4. Dr. A. K. Bose
5. Shri J. C. Luther
6. Shri N. R. Reddy
7. Shri S. N. Singh
8. Shri M. Sondhi, Managing Director.

5.3. It had however been reconstituted with effect from 1st January, 1970 as follows:

1. Shri M. Sondhi, Chairman-cum-Managing Director*

Directors

2. C. Chellapeti Rao, Chairman, Heavy Engineering Corpn.
3. Shri R. P. Billimoria, Director (Hindustan Steel Ltd.)
4. Shri B. Appa Rao, Technical Adviser, Hindustan Steel Ltd.

*Appointed as Chairman cum-Managing Director from 26th February, 1970.

5. Shri S. S. Mukherjee, General Manager,* South-Eastern Railway, Calcutta.

6. Shri V. V. Ramanadham*, Director, Institute of Public Enterprises, Hyderabad.

7. Shri N. R. Reddy, Joint Secretary, Ministry of Finance.

8. Shri S. N. Singh, Chief Secretary, Government of Bihar.

9. Shri J. C. Luther, Director, Ministry of Steel and Heavy Engineering.

10. Shri N. M. Wagle, Non-official.

Attendance of Board of Directors

5.4. During the last four years 1964-65 to 1969-70, 48 meetings of the Board of Directors of the Company were held. A statement showing the number of meetings attended by each Director year-wise is given in Appendix I. It was noticed that out of three non-official Directors, one Director was Director of 24 other private companies and another was on the Board of six other private companies. These Directors hardly attended 50 per cent of the meetings of the Board.

5.5. During evidence, the Committee enquired as to that were the factors that were kept in view in appointment of Directors. The Secretary of the Ministry stated that "I suppose the factor is to have persons of standing who have experience of number of industries and therefore their advice is regarded to be very valuable." He, however, agreed that a person appointed on the Board of Directors must have time to attend the meetings of the Board.

5.6. In this connection, the Committee find that in their 14th Report on Heavy Engineering Corporation, the Committee had observed as follows:—

> "The Committee, however, note that some of the Directors have continued to be on the Board of Directors of the Corporation for the last three years although they had not been attending majority of the meetings of Board. The success of any undertaking largely depends on the interest taken by the Board of Directors. The Committee, therefore, recommended that at the time of reappointment of the Directors each year, only those who have shown interest in the affairs of the Company should be considered for re-appointment."

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*Appointed as Director on 8-1-70.

5.7. In their reply, Government had stated as follows:

"Government accept the view that members of Board of Public Enterprises should be regular in their attendance of Board Meetings and should take interest in the affairs of the enterprises of which they are Directors. A sample survey is being conducted to ascertain the regularity of attendance of Board members in public enterprises.

One of the reasons why some of the Board members, particularly Government officials who have been put in the Boards of Public Enterprises, are not very regular in their attendance is that they are members of too many Boards and they cannot do justice to all the Boards of which they are members. In order to eliminate this difficulty, Government have decided that Government officials should normally serve as part time Directors in not more than two Boards. As regards non-official Directors also Government have decided that those who have not been regular in attending Board Meetings or have not shown interest in the affairs of the enterprises of which they have been Directors should not be retained as Directors at the time of reconstitution of the Board.

The whole policy regarding selection of right persons to serve as part-time Directors in Public Enterprises is under review at the moment."

5.8. The Committee are surprised to note that although we have spent nearly Rs. 3500 crores on public enterprises and even after a lapse of 20 years, the Government have not yet evolved a clear concept about the constitution and composition of the Board of Directors for public enterprises. The Government have said that "the whole policy regarding the selection of right persons to serve as a part time directors in the public enterprises is under the review at the moment." To a question as to what are the factors that are kept in view for the appointment of Board of Directors, the Secretary of the Ministry stated at the time of evidence "I suppose that factor is to have persons of standing who have experience of a number of industries and therefore their advice is regarded to very valuable."

5.9. The Committee consider that the Board of Directors of a project of the dimensions of Bokaro should include a team of functional Directors, which team may be jointly held responsible for the proper execution of the project. Then, there should be an element of heirarchy in this functional team included in the Board of Directors so that the Government does not get at the loose-end whenever the Chief Executive of the project (Managing Director and/or Chairman) retires or resigns.

5.10. There is still another element in the constitution and functioning of the top management like the Board of Directors which is now being

increasingly adopted and that is that the functional Directors operate as a constellation, i.e., as a closely integrated and a knit team.

The Board of Directors should be so constituted that if the top man goes for any reason, a person from within the project, who has the necessary experience and background of the project and who is conversant with the problems immediately steps in to take the place. In a project of the dimension of Bokaro to import a new man whenever a vacant occurs will always result in set backs because the new incumbent will take his own time to get familiarised with the problems.

5.11. The Committee find that the Board of Directors of Bokaro, whether the present one or the previous one, were constituted of directors who may be called 'birds of passage.' Excepting the Managing Director none of them has got responsibilities of execution and the career of none of them is dependent upon the success or the failure of the Bokaro. The Committee consider that the concepts of (i) making the fortunes (career) of Directors fully identified with the failure of success of a project (ii) including in the Board a team of the top functionaries at the project instead of havnig only the Managing Director and (iii) importing an element of heirarchy in that functional team should be properly examined and given effect to in the constitution of the Board of Directors for public enterprises.

5.12. As regards non-official element in the Board of Directors, the Committee find that their number was three in the previous Board out of a total of eight which has now been reduced to one in the existing board of 10 directors. The Committee feel that it is useful to have non-officials on the Board but only one such director is not sufficient.

The Memorandum of Association provides that the maximum of directors of the Board would be twelve. The Committee feels that it will be useful to have at least fairly good proportion of the members of the Board from among non-officials.

5.13. The Committee are not happy at the selection of the non-official directors firstly purely from the angle that they have not been taking interest in the affairs of the Company as is evident from the fact that the two non-official directors (Shri N. M. Wagle and Shri K. Sreenivasan) attended only about 50 per cent of the meetings during the last three years. One of them Shri Wagle appears to be a professional directors being on the board of 24 companies. It is also understood that he is retired member of the Indian Civil Service. The Government will do better if they give more thought to the selection of the non-official directors and make sure that only such persons are nominated who have the time to take interest in the affairs of the Company and who have really a wide sweep of expe-

rience of industrial management of really big concerns of the type and the magnitude of Bokaro, the criteria, which the Secretary of the Ministry has himself stated, ought to be in the nomination of the directors. The Committee find to their regret that this criteria as stated by the Secretary has not been taken care of while making the nominations to the Bokaro Board.

5.14. The Memorandum/Article of Association of Bokaro Steel Limited may be suitably amended to provide that any director who has absented himself for more than two consecutive meetings without taking leave of absence ceases to be a member of the Board.

B. Appointment of Chairman

5.15. Shri N. N. Wanchoo, Secretary of the Ministry of Iron and Steel was appointed as Chairman, Bokaro Steel Ltd. on 4th February, 1964. Shri Wanchoo ceased to be the Secretary of the Ministry of Iron & Steel from 1st August, 1966 when he was appointed as Secretary of the Ministry of Industrial Development & Company Affairs. He continued as Chairman uptill 25th February, 1970, *i.e.* till his retirement from civil service when Shri M. Sondhi was appointed as Chairman-cum-Managing Director of Bokaro Steel Ltd.

5.16. Government decided in November, 1961 that 'no Secretary of Ministry/Department shall be a member of any Board. The practice of appointing the Secretaries of the Ministries even as members of a Board what to say as Chairman of a Board of a Public Undertaking is also contract to the recommendation of Estimates Committee. In their 52nd Report of the Estimates Committee (1963-64) had observed as follows:—

> "The Committee have expressed themselves clearly on many occasions about the inadvisability of the practice of associating senior secretariat official with the Boards of Directors of Public Undertakings. They have pointed out that (i) the practice leads to blurring of responsibilities of the Secretary of the Ministry who has to advise the Minister on matters of policy while at the same time, as the Members of the Board, has to share responsibility for the execution of those policies and;
>
> (ii) It is not possible for such an official to give efficient attention to the affairs of the undertakings in addition to performing his normal duties. The Committee would like to add that decisions at the Board meetings are arrived at by concensus of opinion. It may well happen that if the Secretary is out-voted, he can be embarassed if he was to fight the recommendations before his Minister.

The Committee do not understand why the Secretaries or Additional Secretaries have been appointed a Chairman in six undertakings some of which were set up as far as back as 1950. It is unfortunate that this arrangement is being continued despite Governments decision against it. Once a decision is arrived at and communicated to the Parliament, the Parliament expects that it would be acted upon".

5.17. In their 23rd Report, (1965-66) the Committee on Public Undertakings also deprecated the practice of appointing Secretary as Chairman of a Corporation. The Administrative Reforms Commission also recommended in their Report on Public Undertakings in October, 1967 as follows:

"No Officer of a Ministry should be made Chairman of a Public Undertaking nor should the Secretary of a Ministry be included in its board of management".

5.18. The Government accepted the above recommendations but decided that the restriction about Secretaries to Government not being included in the Board of Management should apply only to industrial and commercial Undertakings.

5.19. The Committee enquired during evidence as to why the Secretary of a Ministry was appointed Chairman of Bokaro Steel and continued to be so, inspite of the Governments decision against such appointment and in violation of the recommendation of Parliamentary Committees. The Chairman, B .S. L. stated as at the time of evidence in August, 1969, as follows:—

"In the Steel Ministry when I was Secretary and the Bokaro Steel Board was being constituted it was felt that since in the initial stages the main work was of negotiating agreements with the foreign Governments namely, the U.S.S.R. Government, we would have an advantage if the Government officer negotiated the agreements rather than a non-Government person. Therefore, a special order of the Government was passed that the then Secretary of the Steel Ministry, which I happened to be myself, should also be a Chairman of the Board of Directors (of BSL) particularly to facilitate negotiations and singing of contracts with foreign Governments. The whole idea of combining these responsibilties was that if the Chairman of the Corporation carries on detailed negotiations with foreign Governments and if ultimately some sort of Government sanction has to be obtained then it becomes extremely difficult for the Government of India to make any

alternations at a later stage to what the Chairman of the Corporation may have agreed to. It was understood that this appointment was to be of a temporary nature and was to terminate as soon as the major contracts with the foreign Governcents (which was a sign for the combination of the appointment) have been signed. These major contracts were signed by 1966 and thereupon, since I was aware of the circumstances in which I had been specially appointed to be Chairman of Bokaro Steel Ltd., I submitted my resignation to the Government from the Chairmanship of the Bokaro Steel Ltd. Shortly after that I was transferred to the Ministry of Industry. Even when I was in the Ministry of Industry I had repeatedly submitted my resignation from the Chairmanship of the Board of Bokaro to the Government as lately as October and November last and again I submitted my resignation in writing. I had spoken several times to the Ministers concerned to relieve me of Chairmanship because I feel that way. Why Government did not accept my resignation, I am afraid, I am not in a position to say. All that I can say is that at least a dozen times I had spoken to the Secretaries of the Ministry concerned and Ministries concerned asking them, pressing them to relieve me of this particular post. I cannot do more than that. After all I am a Government officer and if I am asked to continue I cannot say, I refuse to continue".

5.20 As regards the reasons for not accepting the resignation, and the effect on work of the Company due to combination of the two posts, the Chairman, B.S.L. stated as follows:—

"As regards, the reasons for not accepting my resignation, I am afraid no special reasons were given to me. I was just asked to continue and I continued. As regards the effect on work, my view is that while in the earlier stages of a project when negotiations with a foreign Government are carried on, we save a great deal of time by combining the duties, but this arrangement should always be a temporary thing and this should be abandoned as soon as the principal contract agreements with the foreign Governments are signed. This was in fact the reason for appointing me as the Chairman of Bokaro and at that stage combination was useful and justified. Beyond that I do not think there is any advantage. In fact there is a disadvantage of the Secretary continuing as Chairman. As regards adverse effect, my feeling is that I tried to do the best under adverse circumstances. Though I had lot of other work I have tried to minimise the adverse effect with the combination of duties".

"I have been devoting a great deal of time sometimes to the detriment of my other duties. If there are two important charges one has to fulfil then things become very difficult and to that extent this has meant terrific strain on me. In principle it could have been better to appoint as Chairman some body who has less burden than I have".

5.21. The Committee also enquired from the present Secretary of the Ministry of Steel and Heavy Engineering as to why Shri N. N. Wanchoo continued to be the Chairman of Bokaro Steel Ltd. He stated as follows:—

"All that I can say is that Government have been—I can at least say from my own experience of several Departments—trying and thinking of finding a suitable successor. But the difficulty has always been that at a time when the work at Bokaro has been gathering momentum it is extremely difficult to find a person who would have anything like the same experience, knowledge and competence which Mr. Wanchoo has had among other reasons for his long association with this project.

We also felt, if I may say so, I am not saying in extenuation of something which has been done against the recommendation of the Estimates Committee, one of the basic reasons why it has been decided in principle that Government should not appoint Secretaries and Addl. Secretaries as Chairman or Directors is that Secretary of a Ministry or Addl. Secretary an officer is principal Adviser of the Minister and therefore it is embarassing and wrong in principle that he should have to advise the Minister on his work. He is responsible to the Ministry on behalf of the public undertaking and he has to advise the Minister as to the performance of that public undertaking. These two functions cannot be combined. It causes embarassment and that I think is the basic reason why this decision in principle has been accepted. In this case, this basic principle has not been infringed because Mr. Wanchoo is Secretary in another Ministry and had no part in advising the Minister for Steel in judging the performance. So my only reason for mentioning this ground is that though Government has not been able to implement so far this decision of the Estimates Committee, and that of course, is certainly a matter for criticism and we will do our best to implement but perhaps the basic reason on which this accepted principle is based has not been infringed because Mr. Wanchoo is not the Secretary of the same Ministry to which this undertaking belongs.

5.22. Asked whether there was any evidence of efforts made by the Ministry during the last five years to find a substitute, the Secretary of the Ministry stated that:

> "It will be difficult for me to give you any sort of written evidence of the efforts. To the best of my knowledge there is little evidence. These things are normally not noted upon. I do not think I will be able to discover any written evidence in this direction but as I said I am speaking from my own experience. For the last 8 or 9 months we have been thinking on this matter because Mr. Wanchoo has himself been writing to us for being relieved. We have been finding it extremely difficult to find a successor. Obviously the successor should be a man of stature and seniority to carry weight because of the fact that very senior and technical and other personnel are working there".

5.23. The Committee regret to note that the Secretary of the Ministry of Iron and Steel was appointed as the Chairman of B.S.L. on 4th February, 1964 contrary to the decision of the Government taken as early as November, 1961 that "no Secretary of the Ministry/Department shall be a member of any Board", and in disregard to the recommendations of the Estimates Committee (referred in para 5.16) and accepted by the Government. The Committee do not agree with the explanations offered by the Chairman of B.S.L. (referred to in paragraph 5.19) justifying the appointment of the Secretary as Chairman of B.S.L. The Committee are of the view that by combining the two posts in one person namely that of the Secretaryship of the Ministry and the Chairmanship of the Board of Directors the Government were denied of an independent review of the whole negotiations and agreements between B.S.L. and the Soviet collaborators. By appointing the Secretary as the Chairman, the Ministry got indirectly committed by the agreement arrived at by the Chairman of the B.S.L. and thus the Government of India lost a valuable opportunity to improve the terms of the agreement with the foreign collaborators. In the opinion of the Committee if these two posts were not combined in one person and the advice of the Parliamentary Committee was followed and not disregarded, the Government might have had an opportunity both to improve the terms of the agreement and to say no to such of the terms which on second review could have been found not to the advantage of the country. The negotiating parties lost a second tie of reference and final approval. The Committee feel that many of the defects discovered in the agreement and contracts with the foreign collaborators probably would have been rectified had these been given a second look by the Secretary of the Ministry, if he were not also the Chairman of B.S.L.

5.24. The Committee are further amazed and distressed that in utter disregard of the accepted principles for the appointment of Chairman of

Public Undertakings, and also in utter disregard of the interest of the B.S.L. itself, Government continued to have Shri N. N. Wanchoo as the Chairman of B.S.L. while he was also the Secretary of the Ministry of Industry Development and Company Affairs. Even Shri Wanchoo told the Committee that he was dissatisfied with this arrangement of dual responsibility—Secretary of the Ministry of Industrial Development and Company Affairs and the Chairman of B.S.L. He was frank enought to state before the Committee "in fact there is disadvantage of the Secretary continuing as Chairman. As regards adverse effects, my feeling is that I tried to do the best under adverse circumstances. Though I had lot of other work, I had tried to minimise the adverse effects with the combination of duties.....In principle it would have been better to appoint a Chairman some body who had less burden than I have."

5.25. Shri Wanchoo thus admitted that one or the other duties assigned to him did suffer. This fact should largely explain the lack of proper supervision and coordination and delay in decision making in many vital matters which has resulted in delayed construction and loss of money.

5.26. Shri Wanchoo stated before the Committee that he submitted his resignation from the Chairmanship of BSL not once but several times and he pleaded to the relieved. The Committee are surprised that the Ministry could not find a suitable incumbent for this post as stated by the present Secretary of the Ministry of Steel and Heavy Engineering for the last 5 years. The least the Committee could say is that this does not speak well of our earnestness and efficiency if Government could not find a suitable incumbent for this post in 5 years time and Shri Wanchoo was relieved only when he retired from service.

5.27. The Committee do not agree with the plea advanced by the Secretary of the Ministry of Steel and Heay Engineering when he says that on Mr. Wanchoo's transfer from the Ministry of Iron and Steel to the Ministry of Industrial Development and Company Affairs, the spirit of the Estimates Committee's recommendations was fulfilled and the basic principle had not been infringed because Shri Wanchoo is Secretary in another Ministry and had no part in advising the Minister for Steel in judging the performance of Bokaro. The Secretary has missed the other important principle enunciated by the Estimates Committee at paragraph 5.16(ii) wherein it is stated "it is not possible for such an official to give efficient attention to the affairs of the undertaking is addition to performing his normal duties." Shri Wanchoo has conceded this point of view from his own experience when he stated the work under his charge did suffer. The Committee feel that if the Secretary of the Ministry of Steel felt that he could not relieve Shri Wanchoo from the Chairmanship of the B.S.L. on account of his vast experience and knowledge and long standing his normal duties." Shri Wanchoo has conceded this point of view relieve him from the Secretaryship of the Ministry of Industrial Develop-

ment and Company Affairs in the interest of the proper execution of work at the project.

C. Staff strength.

5.28. The first assessment of the manpower requirement for B.S.L. was made in the preliminary project report on Bokaro Steel Plant prepared by M/s. M. N. Dastur Co. in 1959. They estimated the requirement of manpower for Works Department at 12,174 for a plant with a capacity of 2 million tonnes per annum. This was, however, only indicative and was intended for preparation of an estimate of the labour component of the operating costs. Dasturco in their D.P.R. submitted in July, 1969 estimated the requirement of manpower at 9,303 for stage I of 1.5 million tonne per annum capacity. This was also based on only a preliminary study. They had stated that the standard force of each department would have to be fixed on the basis of systematic industrial engineering studies, taking into account the details of equipment, layout, material handling, instrumentation and automation, as finalised. The Soviet D.P.R. for 1.7 million tonne stage I estimated the requirement of manpower for Works Departments at 13.100 and that for Stage II 19,240. This report contained only the job titles and the number of men required for each job. For the recruitment and training of personnel, the detailed manning lists had to be worked out after categorisation of departments, managerial and supervisory positions, workers wage classification, identification of job requirement and the specifications of qualification and experience level for each position. This work was done by the works study Department of Bokaro Steel Plant.

5.29. The report of works study Department was reviewed by a Manpower Committee consisting of the Director, Institute of Applied Manpower Research, a representative of Dasturco and the work study Manager of Bokaro Steel Plant. The Report of manpower Committee was received in December, 1967. It estimated the number of employees for Works Department at 13,600. for stage I. The Manpower Committee did not estimate the manpower requirements for stage II. This Report was accepted in April, 1968 as a working basis for planning future recruitment and training of personnel.

5.30. The following table gives the staff strength (category-wise) during the last five years:

	As on 31-12-65	As on 31-12-66	As on 31-12-67	As on 31-12-68	As on 31-12-69
Managerial . . .	30	36	39	57	58
Supervisory	140	215	267	450	528
Skilled, semi-skilled, unskilled Office and other staff . .	552	2013	2782	3967	4306
TOTAL . .	922	2264	3083	4474	4892

5.31. As regards the steps taken to ensure that there was no over-staffing the Committee were informed that the proposal for additional staff are initiated by the Heads of Departments concerned and then examine by the Work Study Department. The recommendations of the Work Study Department and comments of the Finance are taken into consideration by the Managing Director before sanctioning creation of posts for additional staff. All appointments are sanctioned personally by the Managing Director. To exercise strict control, powers have not been delegated to any other officer in this regard.

Report of Staff Inspection Unit

5.32. The Management of Bokaro Steel Plant Ltd. invited the staff inspection unit (S.I.U.) of the Ministry of Finance in February, 1968 to make a study mainly of non-technical departments. The Committee were informed that it was felt that study by an independent and specialised organisation like Staff Inspection Unit would be useful to suggest norms and requirements of staff. The pressing problem of the Company at that time was 'determination of the existing work load and the justification for the staff together with the projected need of personnel during the construction stage.

5.33. The Committee were informed that the method of study adopted by S.I.U. was as follows:—

> "Information was obtained from the Management regarding the structure and functions of the organisation, staffing pattern of the constituent units, task assigned to each of hem together with the relative work schedule etc. Discussions were held thereafter with the Heads of Departments and other officers to ascertain the basis on which the staff had been sanctioned and deployed. In many cases, the strength of staff had been fixed on the recommendations of the Work Study Department of the Company. In all such cases, the requirements of manpower for the existing workloads was assessed with reference to the norms recommended by the Work Study Department after obtaining clarification wherever necessary from the Workstudy Officers. In other cases, where workstudy had not been conducted, assessment of the existing workloads and the manpower requirement therefor was made by discussion with the Departmental Officers.
>
> A comparative study of the staff of the Civil Engineering Department of Bokaro Steel Ltd. and the staff employed for the same purpose by Hindustan Steel Works Construction Ltd. was made by obtaining relevant data from the latter.. A similar comparative study was made with respect to the Medical Department. Some members of the team visited

the headquarters of the Hindustan Steel Ltd. at Ranchi to escertain the norms adopted by them for staffing of the steel plants at Rourkela, Bhilai and Durgapur. Discussions were also held with the Chief Engineer, Hindustan Steelworks Construction Ltd., Director, Bureau of Public Enterprises and Adviser (Production), Bureau of Public Enterprises".

5.34. The S.I.U. submitted its report in October, 1968. In their Report, the S.I.U. pointed out *inter-alia* that "The study has revealed that there were pockets of idle or spare capacity in most, if not all of the Departments of the Company. There is obvious duplication and overlapping of functions between BSL and HSCL in the matter of supervision over civil engineering work. BSL has more staff for supervising the work of BSCL than the latter has engaged for supervision over the execution of the same work by several contractors. The existing workload for maintenance of Township does no justify a full fledged maintenance division. The number of staff employed is far in excess of the number of complaints attended to".

5.35. The Committee find that the management of itself invited the staff inspection unit to undertake a study of staffing of the Company as it was felt that a study by an independent and specialised organisation like S.I.U. would be useful to suggest norms and standards for assessment of workload and the requirement of staff. Consequently, the Committee are surprised over the statement by the Secretary of the Ministry and of the Managing Director of B.S.L. that S.I.U. were not competent and experience enough to do the job and therefore they were unable to accept and implement the recommendations of S.I.U. The realisation about the competence of S.I.U. has come to them after the Report was finalised and submitted and when they have found that S.I.U. have adversely commented upon the staff strength and pattern. The Committee do not agree with the view that such a review was not necessary' during the formative stages of a project by an independent authority.' On the other hand the Committee feel that there should be a proper review regarding the employment of staff/workers in all categories by an independent and qualified industrial management expert in order to determine that there is proper utilisation of the working force and there is no overstaffing at any point so that the construction could be completed both economically and efficiently.

VI

FINANCIAL MATTERS

A. Capital Structure

6.1. The authorised capital of Bokaro Steel Ltd. is Rs. 33,50 million. The total capital at the end of the year 1968-69 was Rs. 2029.9 million (including Rs. 350 million against which shares were pending allotment by the Company as on 31st March, 1969). During 1969-70, Government further invested an amount of Rs. 1096.1 million till the end of 31st December, 1969 raising the total share capital to Rs. 3,126 million.

6.2. The total expenditure incurred by the Company on 1st stage of Bokaro Steel Plant till 31st December, 1969 was Rs. 3057.069 million.

B. Profitability

6.3. The D.P.R. prepared by the Soviet Consultants indicated the following estimates of cost of production at full development *i.e.* 4 million tonnes stage.

		In Rupee /tonne
(*i*)	Blast Furnace coke	86
(*ii*)	Fluxed Sinter	44
(*iii*)	Basic Iron	151
(*iv*)	Foundary Iron	163
(*v*)	Steel Ingots	224
(*vi*)	Slabs	261
(*vii*)	Coils from hot strip mill	295
(*viii*)	Hot rolled coils and sheets	345
(*ix*)	Cold rolled coils and sheets	437
(*x*)	Galvanised plate corrugated sheets	618

6.4. The Committee were informed that the figures indicated above for the BSL cost at the 4 million stage were not quite realistic as they did not contain (i) interest on capital, (ii) cost of off-site facilities, (iii) cost of design engineering, technical supervision and administration during construction, and (iv) customs duty, taxes, etc. Moreover, these figures were based on raw materials prices prevailing in the year 1964. Since then,

the price of the two principal raw materials, *viz.*, iron ore and coal have gone up very appreciably.

Further, consequent to devaluation ,the cost of the plant had increased bringing a heavier burden of depreciation charges and other fixed expenses like interest on capital on the cost of production.

6.5. During evidence, the Secretary of the Ministry stated that the present estimates for cost of production for different products at stages I and II and the comparative figures for Rourkela Steel Plant (1967-68) were as follows:—

	(Price Rs. per tonne)		
	Rourkela	Bokaro 1.7 tonne stage	4 millon tonne stage
Pig iron (Foundary Grade)	242	379	277
Steel ingots	394	629	424
Hot rolled sheets and coils . . .	528	860	586
Cold rolled sheets and coils	616	1100	743

6.6. It will be seen from the above that even at 4 million tonne stage the estimated cost of production for different products was higher than the cost of production of similar products in Rourkela Steel Plant.

6.7. As to the reasons for high cost of production, the Committee were informed that the first stage of the project provided for built-in capacity, especially in Steel Rolling Mills, which is considered relatively a sophisticated item. The capacity of the Rolling Mills is 5.5 million tonnes. In the layout, provision has also been made for setting up additional Converters in the Steel Melting Shops No. 1 and 2 for setting up other matching facilities to raise the capacity of the project ultimately to 5:5 million tonnes. In view of the in-built capacities envisaged in the first stage itself, the capital cost of the project is high. The project, therefore, will not be economically viable at the 1.7 million tonne stage. It is, however, expected that on attainment of the ultimate capacity, the cost of the end-products will bear comparison with the other steel plants producing similar products.

6.8. It was also stated that as Rourkela Steel Plant was built five years ago, the Capital Cost was less in Rourkela as compared to Bokaro Steel Plant. The Capital cost per tonne of steel in Rourkela was Rs. 2160 as against Rs. 4,000 and Rs. 2,474 in Bokaro Steel Plant for 1st and 2nd stage respectively.

6.9. In this connection, the Committee were informed that because of high cost of production in the 1st stage the annual loss suffered by the Bokaro Steel Plant would be about Rs. 20 crores per annum. Even if it is decided to take up the expansion programme as a continuous process from 1st stage, the loss suffered would be Rs. 80 crores as it would take about 4 years to reach the four million tonne stage. The Plant management had been pleading with the Government to allow further expansion to cut down these losses. They had provided Rs. 122 crores in Fourth Five Year Plan for the expansion of Bokaro Steel Plant. But this would help the plant to achieve a capacity of 2.5 million tonnes only. The Plant will make a profit only when it reaches four million tonne stage.

6.10. The Committee enquired whether at the time of taking a decision to go in for only 1.7 million tonne production in 1st stage, it was envisaged by Government that they would incur such huge loss in the 1st stage. The Secretary of the Ministry stated that they always knew that 1.7 million stage would have a fairly substantial loss. It was only a phasing in the construction matter because of the strain both on our physical and financial resources. Even if they had from the beginning talked of 4 million stage there would still have to be some phasing. The building up had to be gradual in any case. He did not think it would have made very much difference.

6.11. The Committee also enquired whether it would not have been better to set up a plant of smaller capacity so that the loss due to idle capacity and heavy investment could be cut down. The Chairman, BSL stated during evidence as follows:—

> "The trouble is once you have smaller size, you do not have economies. Economies result in having minimum size of 4 million tons plant. We were advised by the Chief Soviet expert on steel that from the point of view of economies as well as position, optimum size of steel plant is 5-6 million tons."

> "Nevertheless left to myself, I am a believer in conservatism, I would select a smaller plant. But I must however, fall in line, whatever is the tendency all over the world. Here we have not developed sufficient experience just to run huge plant and probably 1 million may be economical. Even for structural plant you should have 2 million. It is purely my opinion and not experts. All experts are against me. They want 4 milion tons."

6.12. The Committee find that in order to take advantage of the economics of the large scale production, the Government decided to have a steel plant at Bokaro with a capacity of 4 million tonnes. However, they decided to put up this capacity in two stages and stage one was of the capacity

of 1.7 million tonnes. The Committee were very much perturbed to find that the benefits of the scale of production will not be available to the country even at 4 million tonnes production. From the comparison of cost of production as shown in paragraph 6.5 of the Report it will be seen that the cost of production per tonne in all categories of the final products at 4 million tonnes stage is higher than the cost of those items produced by Rourkela whose capacity is only 1.8 million tonnes. Thus, the Committee is unable to find what advantage accrues to the Nation by installing a big capacity unit? The ultimate criteria in deciding the size of the unit could only be the cost of production per tonne. If these comparative prices given are correct then the Committee feel there is no justification in having a 4 million tonnes capacity plant in Bokaro. The Committee feel that the economies of scale at Bokaro should compensate even a slightly higher capital investment per tonne of installed capacity. The Committee, therefore, strongly recommend that a proper and a thorough techno-economic study should be immediately made with a view to remedy the situation so that the Nation could have full advantage of the scale of production and get steel at cost comparable to Rourkela if not lower.* This techno-economic study should be made by fully qualified technical men and economists available in the country whether in Government and Public Sector or Private Sector or outside. The Government should also not feel shy to take the advice wherever it may be available whether inside the country or outside the country in order to improve the technology and economics of the Bokaro Project.

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* At the stage of factual verification, the Ministry furnished the following figures of the cost of production at Rourkela Steel Plant for the year 1968-69:—

	Rs. per tonne
Pig Iron	347·53
Steel ingots	411·15
H.R. Coils	647·63
H.R. Sheets	701·24
C.R. Sheets	1,111·93

The Committee have noted that the cost of production at Rourkela has gone up as compared to the cost of production in the year 1967-68 which cost of production of Rourkela has been quoted in para 6.5; page 127. The estimated cost at 4 million tonne stage of Bokaro as given by the Ministry/BSL is reproduced in the same para 6.5. For a proper comparison of the estimated cost of production at 4 million ton stage at Bokaro with the production cost figures of Rourkela during the year 1968-69, the estimated cost of Bokaro need also be revised basing the raw material and other costs at the same figure as have gone into the cost estimates of Rourkela in the year 1968-69. The Committee would like the Ministry/

BSL to make such a comparative statement, for a proper comparison of cost at Rourkela with the estimated cost of Bokaro at 4 million ton stage, and submit to the Committee.

6.13. The Committee have also noted that the Steel rolling mill size at Bokaro has built in capacity for going up to 5.5 million tonnes. This built in capacity should not be put forward another excuse for not having Bokaro in the second stage as a viable commercial unit.

6.14. The Committee have been told that stage one i.e., 1.7 million tonnes production stage will never be viable unit and B.S.L. will continue to incur loss on this stage of production on account of built in capacity with a capital cost of Rs. 4,000 per tonne on the basis of Rs. 670 crores estimate. The Committee are perturbed to learn that BSL will continue to loss Rs. 20 crores per annum during the first stage of production till it reaches 4 million tonnes production. Even if a decision is taken to go in for 4 million tonnes production it will take 4 years to reach the second stage. Thus, the Committee have noted that the project is doomed to incur a loss of Rs. 80 crores. Therefore the compulsion of the situation obliges that Bokaro reaches 4 million tonnes production stage at the earliest in order to contain these losses. The Committee note that the Government have already taken a decision to go in for 4 million tonnes expansion immediately. The Committee, would, however, like to emphasise and caution that there is imperative need for a proper techno-economic reappraisal in order that the 4 million tonnes stage becomes really a profitable venture. The Committee would like the Government to take lessons from first stage of construction so that mistakes committed in the first stage are not repeated. Then alone it is worthwhile taking a decision to go in for expansion for 4 million tonnes.

6.15. The Committee would like to reiterate that there is a need for utmost caution and strict enforcement of economy on expenditure both on construction and operating cost in view of very heavy capital investment per tonne of steel and in view of the heavy losses that are likely to take place in the first stage.

6.16. The techno-economic study suggested by the Committee should also determine the product-mix so that the production at Bokaro will have ready market both in India and abroad and we do not produce items which are not saleable or whose cost may be such that these could not be marketed either in India or abroad.

6.17. The Committee feel that the Parliament ought to have been kept informed about the economics of the Bokaro in the first stage and the Government ought to have taken the Parliament into confidence about the

losses that were likely to be suffered during the first stage. The Committee find that the B.S.L. and Ministry were fully aware from the beginning that Bokaro at the first stage would incur losses. This fact ought to have been brought specifically to the notice of Parliament. The Committee would suggest that in future whenever big plants are set up in stages the financial implications about profit/loss in each stage should be brought to the notice of Parliament while obtaining their approval for setting up such plants.

VII

CONCLUSION

7.1. The Bokaro Steel Plant was conceived in 1957 when Government asked Hindustan Steel Ltd. to take preliminary steps for the installation of the new steel works at Bokaro and it will not be before June, 1973 that the construction of first stage of the plant is expected to be completed. Thus it will take Government more than 15 years to establish a new steel plant with a capacity of 1.7 million tonnes. Out of this period of 15 years, preliminaries like calling for Preliminary Project Report, Detailed Project Report and settling the question of foreign aid and collaboration took about 8 years and the construction is expected to take about 7 years from the date of signing of contracts with the Soviet collaborators for the supply of plant and machinery. Such a long period in establishing a new plant can hardly be justified. The Committee desire that Government should give serious consideration to this matter to reduce the time lag in establishing new projects in future.

7.2. Originally Bokaro Steel was to be financed out of the foreign aid from U.S.A. but this request had to be withdrawn because of the opposition in the U.S. Congress. Then the Government of India received offer from U.S.S.R. for financial and technical aid for setting up the Bokaro Steel. The U.S.S.R. Government offered credit up to Rs. 166.6 crores on a liberal term bearing an interest of only 2.5 per cent repayable in 12 years. As a consequence of this offer a D.P.R. was prepared by the Soviet collaborators and submitted to the Government.

7.3. The Committee find that M/s. Dasturco who were the General Consultant of the Ministry were side-tracked and according to Dastur he was not associated in the technical discussions with the Soviet collaborators in August, 1964 and thereafter which 'had important technical implications and ultimately resulted in a high cost project'. The D.P.R. submitted by the Soviet collaborators was no doubt examined by a big technical committee consisting of 22 persons. But this examination of the 28 volumes of the D.P.R. was done in hardly a month's time. The Committee feel that the D.P.R. deserved a far greater scrutiny and that it was not given a proper technical appraisal on the basis of which investment decision of over Rs. 600 crores ought to have been made.

The Committee feel that the examination of the D.P.R. by a Technical Committee can normally provide a second opinion. Effective scrutiny by

the nature of work itself can only be made by a closely co-ordinated, competent consultancy organisation. D.P.R. has to be reviewed not piecemeal with loose association of pieces but as an integrated project report.

7.4. The Government finding the cost of the project as submitted by Soviet collaborators as very high, commissioned M/s. Dasturco for a cost reduction study. But before even getting such a cost reduction study report from Dasturco the Government signed agreements with the Soviet collaborators for the supply of equipment, drawings and for rendering technical assistance. M/s. Dasturco were given only seven weeks time to produce a cost reduction study on this voluminous report, which they produced suggesting a cost reduction of Rs. 107.5 crores in the first stage. Dasturco however prefaced this report stating that 'due to the very limited time available only major items of reduction are indicated and further scope for cost reduction exists, and could be realised by continuing study and implementation during the engineering and construction of the plant. The Soviet proposals on technology and equipment are retained as far as possible and changes suggested only where the resulting benefits were substantial'. According to B.S.L. this cost reduction study lacked detailed technical designs basis, detailed cost calculations and break-up of cost savings. However, without obtaining the required information from M/s. Dasturco and without studying in detail the suggestions made by them, the Government sent a delegation to Moscow to discuss these proposals with the Soviets. The Committee find that no serious worthwhile effort was made to reduce the cost and ultimately a reduction of only Rs. 9.5 crores was obtained. The Committee have found that the negotiations with the Soviets were rushed through. The Committee feel that the Government ought to have insisted on having enough time for consideration of the D.P.R. and other connected matters and not allowed themselves to be stampeded into entering important agreements without proper and detailed scrutiny.

The Committee are constrained to observe that while on the one hand in the preparation and the execution of the project there has been inordinate delay resulting in burdening the project with considerable increase in the capital cost, on the other hands on critical occasions when through careful scrutiny considerable economy could have been achieved, decisions were arrived at with unconscionable haste.

7.5. The Committee find that the agreement entered into with the foreign collaborators had vital omission like absence of any component-wise phased delivery schedule in accordance with the needs of the project. The result was that while on the one hand the supplies were deficient to the extent of 10,000 tonnes for the first blast furnace a large number of items of rolling mills required much later have already been supplied.

7.6. The Committee feel that had the two posts of Chairman of B.S.L. and the Secretary of the Ministry of Iron & Steel not been combined in

one person, the Ministry could have an opportunity of making an independent review of the whole negotiations and agreements between B.S.L. and the Soviet collaborators.

7.7. The Committee find that in the case of Bokaro Steel Plant, the Government/B.S.L. management depended heavily on the advice of foreign collaborators. It was decided to call for another D.P.R. from the Soviets although Government already had a D.P.R. prepared by M/s. Dasturco because according to the Chairman, B.S.L. "there was undoubtedly Russians insistence that they would do the D.P.R. themselves". It was proposed in 1964 to appoint M/s. Dasturco as principal consultant for Bokaro Steel Ltd. and this was also announced in Lok Sabha on 9th April, 1964. But this position was reversed and the Soviet collaborators were appointed as principal consultants because the Committee were told that 'Soviet authorities were not willing to accept Dasturco as principal consultant for the project and they said that they must remain in full and final authority of the project although they would associate Dasturco, and this fact was told to the Secretary of the Ministry and the Minister concerned' although the Committee could not get any written evidence to confirm this insistence of the Soviet collaborators. Again M/s. Dasturco suggested in their cost reduction study that it was possible to effect savings to the extent of Rs. 107.5 crores in the first stage of Bokaro even if the basic assumptions in the Soviet D.P.R. were accepted. But savings to the extent of only Rs. 9.5 crores could be given effect to because according to the Chairman B.S.L. the position was that 'the Russians were the primary consultants for this project and we were not in a position to say that whether they liked it or not we would accept Dastur's line of thinking'.

7.8. India has enough experience of steel industry. Apart from two steel plants in the private sector set up years ago, the Government had experience of setting up three steel plants in the public sector. The fourth steel plant at Bokaro was to be set up largely on the basis of experience available in India and the bulk of its supplies were also to come from the indigenous sources. Dr. Dastur was brought to India and M/s. Dasturco commissioned as a steel consultant for B.S.L. The Committee, however, find that for setting up Bokaro, the Government had heavily relied upon foreign know-how and expertise which is now being supplied by the Soviet collaborators. Dasturco from being the principal consultant were reduced to doing consultancy work only in respect of indigenous supplies from private sector and the major responsibility for setting up of the Bokaro was taken away from the Indian hands. The Committee are not opposed to having assistance/advice from foreign collaborators but Government should never abrogate its rights of taking final decision in such matters taking into consideration all the relevant factors including the avaliable advice of Indian experts; and having taken certain decisions after examining all pros

and cons they should not feel shy of owning the responsibility for such decisions instead of blaming the foreign collaborators.

7.9. The Committee feel it is the Government's responsibility that the foreign aid available on liberal terms from friendly countries is put to best use. There is no justification for accepting any project report which the Government is not satisfied is in the best interest of the country only on consideration of making use of liberal terms of foreign aid. The Committee, therefore, are not happy to note from the statements of the Chairman B.S.L. and the Secretary of the Ministry that they were more or less compelled to accept the position because they were obliged to do so by the country giving foreign aid.

7.10. The Committee regret to note that according to the revised schedule the first stage of Bokaro Steel Plant will be delayed by about 27 months as compared to the original schedule. Even this revised schedule is subject to various uncertain factors. As a result of delay in construction, the losses amounting to Rs. 32 crores on account of production, and establishment cost amounting to Rs. 6.75 crores have become unavoidable.

7.11. The Committee are not convinced that even the revised target dates of completion of first stage will be adhered to because of the various uncertain factors that have been brought to the notice of the Committee and if the present completion dates are not adhered to the resultant losses will be more than that has been estimated.

7.12. The Committee very much regret to note that the Ministry has failed to set up an efficient administrative set up for BSL which could be equal to the task to construct and erect a Steel plant of such a huge dimension within the stipulated time and within the estimated costs. As a result the target dates of completion have been revised twice and the costs have been increased by Rs. 90 crores.

7.13. The Secretary of the Ministry during the evidence before the Committee admitted that "there have been some organisational failures on the part of BSL" which failure was also responsible for the delay in construction and losses. The Committee were told that in order to improve their management technique they were now introducing a system of network analysis which would be done by Dasturco. The Committee were informed by Dasturco that 'the Bokaro Project is in a mess from the very beginning because there is no proper consulting engineer on the project. It is the function of a consulting engineer apart from drawing up the correct project, an economic project and a viable unit, also to do during the design and construction stages the complete co-ordination, scheduling supervision, follow up and expedition. All these items were a part of our work which

we were supposed to be doing. It was taken out of our work and no body is doing it'. The Committee failed to get a satisfactory answer as to why proper steps were not taken from the very inception to organise the management on such lines.

7.14. The Committee find that there has not been proper thought and urgency shown in the constitution of board of management and to find a suitable incumbent to replace the Chairman of the Company who was also the Secretary of a Ministry and as a result of this dual responsibility, as admitted by the Chairman, B.S.L. himself, one of the duties of his dual charge did suffer.

7.15. There was no team of functional directors on the Board of Directors. Neither there was any hierarchy in Board so that if the top executive retired or resigned someone from the Board who had the necessary experience and background of the problems of Bokaro would step into to take his place. Each time a vacancy occurred the Ministry got at the loose-end and they had to find a new man for the post who was bound to take his own time to acquaint himself with the problems which resulted in temporary setbacks. In the appointment of the Board of Management, the Committee would like the twin principles of functionalism and necessary managerial hierarchy to be organised in the increasingly accepted context of operating as a Constellation.

7.16. The other major failure noticed by the Committee was in matter of supplies of equipment from indigenous sources, largely from the public sector undertakings and also from the private sector factories. The Committee were surprised to find that inordinate delays took place in settling details of drawings, delivery schedules and the prices from the public sector undertakings particularly HEC and MAMC. Even the revised delivery schedules were not being adhered to by them. The Committee very much regret to note that the Government failed to provide the necessary leadership to arrange this co-ordination among the public sector undertakings, so that the supplies to Bokaro could be made in time in order that the schedule of the Bokaro was not upset. The Committee hope that in future at least the Government will see that all the supplies which Bokaro has to get from the public sector units are made in time and according to schedules of delivery and at agreed price, and necessary measures are taken so that the Bokaro is not delayed on that account.

7.17. The Committee are perturbed that the estimates of the cost of construction are not only very high for Bokaro, but also are not being adhered to. As against Dasturco's estimate of about Rs. 600 crores for 4 million tonnes plant, the capital cost for first stage itself for a capacity of 1.7 million tonnes will be Rs. 670 crores. The Committee also find that

inspite of having a plant with a large capacity which should result in economics of scale the cost of production per tonnes at Bokaro Steel Plant even at 4 million tonnes stage will be higher than at Rourkela Steel Plant. This matter deserves serious consideration. The higher cost of production will not only affect the financial viability of Bokaro but high cost steel will adversely affect the entire economy of the country as the production cost of all industries using steel would go up. The Committee, therefore, urge that there is need for a proper techno-economic reappraisal in order that the 4 million stage becomes really a profitable venture. This study should be made by fully qualified technical men and economists available in the country or from outside. The Committee would like that this report together with the Government decisions may be laid on the Table of both the Houses so that the Parliament may get an occasion to express itself.

7.18. The Committee find that Government have already announced a decision to set up three more Steel Plants at Visakhapatnam, Hospet and Salem in the Public sector. Comprehensive details about these proposed steel plants have not been made public. The Committee recommend that Government should without delay bring out a comprehensive White Paper containing essential information about the size of the plants, the capital investment involved, the product-mix and the rationale thereof, and in particular the economics and profitability of each of the plants. The Committee need hardly stress that the White Paper should be prepared most carefully so as to give precise and realistic estimates of vital factors which have a bearing on the working of the steel plants so that Parliament and Public have clear idea of the resources which are being committed to these plants and the benefit which would accrue to the country therefrom. The Committee expect Government to take specific approval of Parliament to the setting up of these plants which are expected to play a crucial role in the development of economy of the country.

M. B. RANA,
Chairman,
Committee on Public Undertakings.

NEW DELHI;
April 27, 1970.
Vaisakha 7, 1892 (*S*)

APPENDIX I

Statement showing the number of meetings attended by the Directors

Name of the Director	Date of appointment on the Board	Date from which he ceases to be Director in case of past Directors	Number of meetings attended during					
			29-1-64 to 31-3-65	1-4-65 to 31-3-66	1-4-66 to 31-3-67	1-4-67 to 31-3-68	1-4-68 to 31-3-69	1-4-69 to 31-3-70
Total number of meetings held			7	8	8	6	6	8
Shri N. N. Wanchoo	4-2-64	26-2-70	6	8	8	6	6	7
Shri K. L. Ghei	4-2-64	20-3-66	7	5	..	..	..	..
Shri N. M. Wagle	4-2-64	24-9-69	3	6	4	4	3	2
Shri K. Sreenivasan	4-2-64	24-9-69	3	3	2	4	4	2
Dr. A. K. Bose	4-2-64	24-9-69	6	5	8	5	6	5
Shri G.D. Khandelwal	4-2-64	13-1-67	5	6	4	..	..	..
Shri T.P. Singh	4-2-64	14-9-65	4	2	..	..	..	..
Shri R. Prasad	14-9-65	20-7-67	..	5	6	1	..	..
Shri K.S. Bhandari	28-3-66	9-10-68	..	1	5	5	3	..
Shri Maheshwar Prasad	2-11-66	14-9-67	..	..	3	3	..	..
Shri Jagjit Singh	13-1-67	12-9-69	..	..	..	4	5	1
Shri S. V. Sohoni	16-11-67	18-6-69	..	..	..	..	5	..
Shri J. C. Luther	5-1-68	continuing	..	..	..	1	6	8
Shri N. R. Reddy	10-10-68	„	..	..	..	3	..	6
Shri K. M. George	4-2-64	8-4-69	7	8	8	6	5	..
Shri M. Sondhi	30-4-69	continuing	..	..	..	..	..	7
Shri S. N. Singh	8-7-69	24-9-69	..	..	..	..	..	4
(Reappointed)	1-1-70	continuing	..	..	..	..	..	1
Shri C. Chalapathi Rao	1-1-70	„	..	..	..	..	..	1
Shri R. P. Billimora	1-1-70	„	..	..	..	..	..	1
Shri Appu Rao	1-1-70	„	..	..	..	..	..	1
Shri N. M. Wagle (reappointed)	1-1-70	„	..	..	..	..	..	1
Shri S.S. Mukherjee	8-1-70	„	..	..	..	..	..	1
Shri V.V. Ramandham	8-1-70	„	..	..	..	..	..	1

APPENDIX II

Summary of conclusions/Recommendations of the Committee on Public Undertakings contained in the Report

Serial No.	Reference to para No. in the Report	Summary of Conclusions/Recommendations
1	2	3
1	2.23 to 2.26	The Committee find that Dr. M. N. Dastur was encouraged by the Government to set up a consultancy service. He was also entrusted with the assignment of preparing a preliminary project report and also later a D.P.R. was also made use of by the Russian Collaborators. In short, M/s. Dastur & Co. were our consultants on steel, as was also stated in the Lok Sabha. The Committee find that Dasturco were not associated in the discussions which Government/B.S.L. had with Soviet Collaborators after July, 1964. Thus Dasturco who were General Consultant of the Ministry till then was completely side-tracked while technical details were settled for the drawing up of the D.P.R. for Bokaro Steel project. Dasturco's complaint is that they were kept out of any technical discussion with the Soviets in August, 1964 and thereafter "which had important technical implications and ultimately resulted in a high cost project." The Committee were anxious to find out as to why Dasturco was kept out of these negotiations. The Chairman of the B.S.L. and the Secretary of the Ministry explained to the Committee that the Russians were not willing to accept Dasturco as principal consultants. The Chairman, B.S.L. further explained that "we discussed it for several days and unfortunately we were not able to persuade the Soviets to give a large chunk to Dasturs". The Committee feel that the Chairman of B.S.L. who was also the Secretary of the Steel Ministry at that time reversed the whole

1	2	3
		position of Dasturco as a principal steel consultant as was reported to the Lok Sabha on 9th April, 1964. The important point was not to secure enough work for Dasturco, but it was far more importatnt that Dasturco's knowledge and experience ought to have been fully utilised for the establishment of a technically sound and economic steel project to suit the Indian conditions. The whole purpose of getting the design consultancy set up by Dasturco with the Government initiative at the earlier stages was lost sight of and it was not put to good use in setting up the Bokaro Steel Plant for which purpose alone Dasturco was brought to India.
2	2.27	The Committee find that the Detailed Project Report was submitted by the Soviet Collaborators on 22nd December, 1965. It was then examined by a Technical Committee of 22 persons and this Technical Committee took hardly a month to examine this important document on the basis of which the Bokaro Steel Project was taken up and they submitted their report towards the end of January, 1966. The Committee feel that the D.P.R. deserved a far greater scrutiny and that it was not given a proper technical appraisal on the basis of which investment decision of over Rs. 600 crores ought to have been made. Desturco no doubt had two representatives on this technical committee but that would not amount to a proper technical appraisal by them of the D.P.R. The Committee feel that the examination of the D.P.R. by a technical Committee can normally provide a second opinion. Effective scrutiny, by the nature of work itself, can only be made by a closely coordinated, competent, consultancy organisation. D.P.R. has to be reviewed not piecemeal with loose association of pieces but as an integrated project report.
3	2.28	Dasturco was also asked to make a cost reduction study after signing the Memorandum on the acceptance of the D.P.R. The Committee, however, feel that this ought to have been done before signing the

1	2	3
		Memorandum of acceptance. It was explained to the Committee that the agreement had to be signed within two months of the submission of the D.P.R. The Committee feel that the Government should have resisted being stampeded into signing such an important agreement without a proper and detailed scrutiny.
4	2.29	The Committee have found during the course of its examinations of the Public Sector Undertakings during the last two years, namely, I.D.P.L., M.A.C.C., I.O.C. and Bokaro Steel Ltd. that the advice of the Indian experts was ignored in preference to the advice of the foreign collaborators of those undertakings. The result in all these cases has not been happy. The foreign experts have a limited knowledge or have practically no knowledge of the conditions prevailing in India. They are generally guided by their own experiences. Therefore, to completely side-track the Indian experts is not a correct thing to do. The Undertakings and the Government will do better in future if they keep this in view. The Committee would also like that in future if the Government decide to overrule the advice of the Indian experts it is better that the reasons may be fully recorded so that at a future date there may be a proper appraisal of the views of the experts and the decisions of the Government.
5	3.30	The Committee find that Dasturco, the Indian Consultants of BSL had pointed out that there was a good scope of cost reduction amounting to about Rs. 107·5 crores, even if the basic assumptions of the Soviet DPR were accepted. In spite of that no worthwhile effort was made to bring down the capital investment. The Government were aware of the capital cost per ton of steel plant in India. The Committee have been told that the capital cost would be Rs. 2474 (now revised to Rs. 2725 as stated in Rajya Sabha on 16th March, 1970) in Bokaro Steel plant in its second stage *i.e.* when the production will be 4 million tons but in the first stage when the production will be 1.7 million tons the capital cost per

1	2	3
		ton of steel at Bokaro would be Rs. 4000 per ton. In view of this very heavy investment in Bokaro, the Government ought to have given a more serious consideration to the question of the cost reduction study.
6	3.31	The Committee however regret to note that as against the suggestions of M/s. Dasturco for cost reduction amounting to Rs. 107·5 crores in 1st stage of Bokaro Steel Project, suggestions to the extent of Rs. 9·5 crores only could be given effect to. As the suggestions for cost reduction are highly technical the Committee are not in a position to examine them from technical point of view. They, however, find that in the case of steel melting shops the Soviet Consultants themselves recommended the installation of 250 ton converters in the II stage of BSL. As pointed out by M/s. Dasturco in their cost reduction study, the world trend including Japan, USA, West Germany is to adopt converters of 200 to 300 tonnes capacity for large new plants of the type visualised at Bokaro. The reasons for having 200 to 300 tons converters are that investment is lower, refractory consumption decreases, handling of hot metal, scrap, fluxes, slag and ingot moulds is simplified and operating cost are lower. It was estimated by Dasturco that there would have been a saving of Rs. 1.4 crores in operating cost per year by installing converters of 250 tonnes. There would have also been a saving of about Rs. 18.7 crores in the capital cost. The Committee are, therefore, of the opinion that Government should have more thoroughly examined this matter and the idea of obtaining 250 ton converters from other sources ought to have been examined in order to bring down both capital and operating costs.
7	3.32	The following features also stand out rather conspicuously while reviewing the whole course of the finalisation of the agreement with the U.S.S.R. (i) Messrs. Dasturco were asked to make a cost reduction study on 29th March, 1966. But wihout waiting for their Report on that very day Government communicated to the Soviets the acceptance of their D.P.R. Con-

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tracts were also signed on 3rd May, 1966 for the preparation of working drawings and for rendering technical assistance including supply of equipment. Thus the negotiations with Soviets were rushed through and there was little chance of acceptance of any major changes in the designing of Bokaro Steel Project by the Soviets. Government should ensure that the agreements do not have the effect of foreclosing issues of crucial importance in particular those which have a bearing on the efficiency and economics of the plant.

(ii) The Memorandum of acceptance of DPR provided that the Soviet Consultants would give due consideration to concrete technical suggestions for cost reduction which might be made to them by the Indian side within three months, M/s. Dasturco were therefore, asked to give concrete proposals for cost reduction within seven weeks. The Committee are informed that the report submited by M/s. Dasturco 'lacked detailed technical design basis, detailed cost calculation and break-up of cost savings.' As these were not readily forthcoming, Government had to send the delegation to Moscow to discuss the proposals with the Soviets without the study of the details of the suggestions of Dasturco. The delegation was not in a position to argue fully and convince the Soviet Consultants with the proposals. It was admitted by B.S.L. that the discussions (at Moscow) were no doubt handicapped by the Bokaro Steel representatives not being fully conversant with the details of the design data and the cost reduction basis by Dasturco.

The Committee feel that all the discussions with Dasturco ought to have taken place in India and all

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the points should have been sorted out before going to Moscow. The Committee have not been able to appreciate that as the agreement had to be signed in a short time on a particular date, therefore, proper consideration to the whole matter was not feasible. The Government ought to have insisted on having enough time for the consideration of the report and other connected matters before signing the agreement.

(iii) The Committee also feel that it would have been better if the leader of the delegation which was to discuss highly technical matters had been a technical person especially when the other side the head of the team was a technical man. They desire that the delegations for such technical negotiations either with foreign companies or Governments should as far as possible be headed by technical chiefs.

(iv) Dr. Dastur stated in his evidence that 'Mr. Wanchoo dominated in the meetings (at Moscow). Whereas from the Soviet side the head of the design institute, my equivalent, was the leader of their team and he used to argue, from outside, Mr. Wanchoo was the leader of our team and he used to argue and we were only allowed to have a few words in sideways.' On the other hand the Chairman, BSL stated that 'we appointed 5 or 6 panels consisting wholly of technicians in each of which Dastur was represented'. B.S.L. also informed the Committee that 'Dasturco had ten of their representatives in the delegation who argued their proposals but they were not able to convince the Soviet side.' The Committee are left with the impression that there was lack of co-operation and proper understanding among M/s. Dasturco, Bokaro Steel Plant and the Government of India. Had there been a greater understanding and

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		cooperation, probably the results would have been better in the interest of the country.
		(v) The Committee feel that because the Chairman of B.S.L. also happened to be the Secretary of Steel Ministry who led the delegation, the Ministry was denied an opportunity to have a second look at the negotiations and to the agreement of reduction of only Rs. 9.5 crores in the capital cost of the project in place of suggestions to the extent of Rs. 107.5 crores by Dasturco.
8	3.38 3.39	There was likely to be an increase of about Rs. 90 crores over sanctioned capital estimates of Rs. 670 crores for 1st stage of Bokaro Steel Plant. It is, however, surprising that until recently the management of Bokaro Steel Plant was not aware of the extent of increase in the capital estimates. The Committee were informed as late as September, 1969 that the fact whether the original estimates could be adhered to or not will be known only after the review of project estimates undertaken by the management was completed. One of the important tools of management is proper accounting and reporting system which records the variations from the original estimates under various heads and enables the management to know at any point of time the total expenditure likely to be incurred on a project, the extent of variations from the original estimates and the reasons therefor. Bokaro has a Finance Division. It is the primary function of this Division to keep track of financial provisions, progress of expenditure and revised estimates, etc. The Committee are unable to appreciate why Bokaro Steel did not assess in time the ultimate cost of the project and variations from the original estimates.
9	3.40	The Committee also find that in the Demands for Grants for 1967-68 it had been stated that after

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		taking into account the effects of devaluation and proposals of cost reduction agreed upon by the Soviet side the revised cost of 1st stage of the plant as sanctioned by Government is Rs. 620 crores (excluding off-side facilities which are estimated to cost about Rs. 50.4 crores approximately). Having obtained the approval of Parliament to specified figures, the management was committed to complete the 1st stage of Bokaro within that amount unless Parliament had approved of the revised estimates. The Bokaro Steel Ltd. should have taken the first opportunity of informing Government and Parliament about the extent of revision in the estimates stating also clearly as to how it would affect the economics of the plant. They, however, find that even the Demands for Grants for 1970-71 made no definite mention about the extent to which the increase in estimates was likely to be. The Committee highly deprecate the complacent attitude of the Government towards the escalation of estimates to such a magnitude (Rs. 90.0 crores) and they recommend that in future earliest opportunity should be taken to inform Parliament about major increases in estimates of a project.
10	3.41	The Committee recommend that along with the Demands for Grants each year Government should present to Parliament a review on each public undertaking giving a true picture about its working. In the case of public undertakings under construction such a review should also include the original estimate of capital expenditure, the expenditure incurred so far and the percentage of work completed, the estimated increase, if any, from the original estimates and the reasons for variations, etc.
11	3.42 3.43	The Committee find that the Minister for Steel in reply to question 429 dated 2nd March, 1970 in Rajya Sabha and in reply to question 708 dated 31st March, 1970 in Lok Sabha had stated that the total investment on Bokaro on Stage I was now estimated to be of the order of Rs. 760 crores which means the Government considers that the total investment on

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		Bokaro will go up by about Rs. 90 crores above the earlier estimates of Rs. 670 crores as reported to the Parliament *vide* Demands for Grants 1967-68 on the basis of which approval for the establishment of Bokaro Plant was taken. From the examination of the Bokaro Steel and the data that have been furnished to the Committee, they are convinced that even this figure of Rs. 760 crores as reported to the Parliament by the Minister may not be a firm figure. Wide variations between the estimated cost and the actual expenditure has become a common feature in the public sector projects. The Committee would therefore, watch with considerable anxiety as to how in the ultimate analysis the actual cost compares with the estimated cost in the case of Bokaro Steel Plant both for Stage I and II.
12	4.7	The Committee are distressed to note that the date of completion of the Bokaro Steel Plant has been revised twice and as a result of these revisions the completion of the construction has definitely been delayed by 27 months from the date of the original schedule of completion of construction. It has been stated now that Stage I is expected to be completed according to the revised schedule by June, 1973. But the Committee find that even this date will not be adhered to because of the various uncertain factors pointed out by BSL (*vide* paragraph 4.3-page 69) The Committee has been unable to ascertain even the tentative date as to when the construction of the first stage is likely to be completed. The Committee recommend that this matter should be properly examined and a firm date of completion of the Stage I should be reported to the Committee.
13	4.8	As a result of the delay in the completion of the Stage I even by 27 months, the Committee very much regret to note that the losses amounting to Rs. 32 crores on account of production and establishment cost at the rate of Rs. 25 lakhs per month which will in 27 months amount to Rs. 6.75 crores have become

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		unavoidable. It may, however, be noted that if the target date of completion of June, 1973 is not adhered to the loss will be still more. The main reasons for these losses are primarily due to the belated submission of technical datas, drawings, cranes, delay in civil engineering work and supplies from private and public undertakings. Apart from these the Secretary of the Ministry has also admitted during evidence that "there have been some organisational failures on the part of B.S.L." which failure is also responsible for the above mentioned losses. The Committee were informed that steps have now been taken to remedy those organisational failure by adopting a system of network analysis by Dasturco which will show up the deficiencies at various points and which will also show how particular deficiencies can be by-passed if necessary. In spite of the fact that Dasturco advocated the adoption of the modern techniques of planning by BSL as early as 1966, the Committee regret to note that the management at that stage ignored his advice and as a result the avoidable organisational failures crept into the management of BSL.
14	4.9	The Committee have found that the price of many of the supplies to Bokaro from indigenous sources and also their time of delivery have not yet been decided upon particularly with regard to the supplies from Public Sector Units. The Committee would like that this matter should receive most immediate attention and should be settled as early as possible.
15	4.10	The Committee further desire that Government should ensure that other public undertakings who have to supply machinery and equipment to Bokaro Steel Ltd. adhere to the time schedule. It should also be ensured that they do not keep on escalating prices which would inflate greatly the cost of the product and upset the economics of the Bokaro Steel Plant.
16	4.22	The Committee have found that B.S.L. are very unhappy by the imposition of the contracting firm HSCL on them. They feel that there has been un-

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		necessary duplication of supervision work and consequent employment of duplicate supervisory staff. This has also resulted in delay in the execution of the work. B.S.L. pleads helplessness in the situation to get the work executed according to their time schedule. On the other hand the Committee has found that Hindustan Steel Works Construction Ltd. has mostly sub-contracted the work and are not doing the work themselves. The original idea was that H.S.C.L. would do the job themselves and not sub-let the work. The Committee feel that this experiment has not worked well, on the other hand it has worked to the detriment of B.S.L. B.S.L. should have freedom to get the work done in the most expeditious and economic manner as they deem fit so that the management of B. S. L. may be held responsible both for the completion of the Project within the time schedule and for getting the work done on estimate costs. This was not possible if a Public Sector contractor like HSCL is forced upon BSL. Therefore, the Committee feel that BSL may be allowed to get their civil and other works done themselves either departmentally or through a contractor of their choice.
17	4.23	The Committee appreciate the objective with which the HSCL was formed, namely to take the construction of steel plants to solve the problem of the constructional staff and also to develop experience and expertise in civil and engineering work of this nature. But the Committee feel that this cannot be allowed to be done at the cost of a project, in this case at the cost of Bokaro. The primary objective should be to get the project completed in time and according to the cost estimates and if that is put in jeopardy, HSCL has to be withdrawn.
18	4.33 to 4.34	The Committee regret to note that there had been delays both in the supply of drawings and equipment by the foreign collaborators. The inordinate delay in the supply of drawings has caused serious delays and upsets both in the civil construction pro-

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		gramme and also in the manufacture of machinery and equipment in India. It is also surprising that in respect of equipment supply, the contract with USSR stipulated only an overall period of fifty months for the supply of equipment, from the date of signing the contract and did not include a phased delivery schedule. The result was that while on the one hand the supplies were deficient to the extent of 10,000 tonnes for the first blast furnace complex, a large number of items of rolling mills required much later have already been supplied. In order to ensure the supply of equipment in time and in the proper sequence required for construction and erection it was essential to include component-wise phased delivery schedule in accordance with the needs of the project. The Committee could get no satisfactory explanation for this omission in the contract entered into with the Soviet suppliers and would like it to be investigated into and responsibility fixed for such a vital omission which has caused considerable loss.
19	4.35	The Committee feel that such a vital and technical contract document ought to have been either drawn up by competent qualified technical men or vetted by them before signing. The Committee find that Dasturco has made comment on such omissions in the contract. If the Government had made use of their experience in drawing up the contract, probably this omission could have been avoided. The Committee recommend that this should invariably be borne in mind in entering into contracts in future with the suppliers of plant and machinery.
20	4.47	The Committee regret to note that it took BSL and HEC a period of 18 months from the date of placing of letter of intent to clarify the specifications, to give the working drawings and to settle the delivery schedules. The Committee fail to get a satisfactory answer from BSL and HEC for this inordinate

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		delay. During this period the Secretary of the Ministry of Industrial Development and Company Affairs was also the Chairman of B.S.L. It was expected that such a combination of posts would lead to better co-ordination and expeditious disposal and settlement, but instead it took so long for these two public sector undertakings to settle these matters. The Committee cannot help expressing their distress that the concerned Ministries failed to take any effective steps and to provide necessary leadership to streamline the work of these two corporations so that the loss of time and money could be avoided.
21	4.48 4.49	The Committee regret to note that as against the target of 11672 tonnes of equipment to be supplied by the public sector undertakings upto 31st July, 1969 the equipment actually received was only 6101 tonnes *i.e.* 52 per cent of the target fixed. In the case of HEC as against 72415 tonnes to be supplied in all, the actual deliveries up to the end of January, 1970 have been only 10840 tonnes. The Committee also view with concern that there had been delays in supplies from H.E.C. even with reference to the revised schedule prepared in November, 1968. During evidence the Secretary of the Ministry of Steel and Heavy Engineering admitted that "the delays in HEC were due to their own organisational deficiencies. There are some instances where supplies from USSR were delayed but the major portion of delays has been due to their own faults. Unfortunately that is true." The Committee were, however, assured that in pursuance of the recommendations of the Committee on Public Undertakings (1967-68) in their 14th Report on HEC., a study of the working of the Corporation was made by a technical team comprising officers of the Bureau of Public Enterprises and the Directorate General of Technical Development. Corrective measures were being taken to remove the

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		deficiencies pointed out in their report. The Committee trust that effective steps will be taken by the H.E.C. to ensure that the supplies to Bokaro Steel Plant are made in accordance with the sequence and schedules desired by them.
22	4.50	The Committee have noted with concern that MAMC have failed to keep up even their revised and scaled down delivery schedule. As against 4650 tonnes to be supplied by the 1st quarter of 1970, they have supplied only 700 tonnes upto 25th February, 1970. The Committee have examined this year the working and performance of MAMC. They have an impression that MAMC will not be able to make supplies according to their commitments. Therefore, BSL will be better advised to seek alternative sources of supply in order to ensure that their own construction schedules do not get delayed on account of failure of MAMC.
23	4.51 to 4.53	The Committee find from the information received from BSL that the position of the supply of cranes is very precarious. As against 210 cranes which were to be received in the first quarter of 1970 only 24 cranes have been received/despatched. This is bound to affect adversely the construction programme at the site. The Committee would like that it be examined and reported to the Committee whether orders for the supply of cranes were placed in time and if there were delays in placing of orders what were the reasons therefor. The Committee would also like to be informed the reasons for delays in deliveries by the suppliers and who are the suppliers who have failed to honour their commitment of delivery.
24	4.54	The Committee find that the deliveries from the private sector suppliers are also not according to the schedule of delivery. BSL has generally explained

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		that this is due to non-availability of steel and imported components. The BSL and the Ministry should ensure that the private sector companies who are to supply equipment/material to BSL get timely releases and the import licences as the case may so that the programme of construction of Bokaro may not be held up.
25	4.65	The Committee have noted with distress the supply position of refractories. We have now long experience in the manufacture of refractories required by the Steel Plants. The decision to make India self-sufficient in regard to refractories was taken long ago. They regret to note that for our fourth steel plant we had to depend upon imports of refractories for 46,854 tonnes against the total requirement of 1,98,000 tonnes for Bokaro's first stage, *i.e.* for about 24 per cent of the total requirements although originally it was estimated that 96 per cent of the refractories will be procured from indigenous sources.
		The main point that has been urged to justify import of refractories is that the stringent specifications required for Bokaro could not be met from indigenous supplies. The Committee feel that these specifications were known from the very date the decision was taken to build Bokaro. It is evidently a failure of proper planning time and lack of forethought on the part of BSL and of initiating action early enough to get the stringent specifications refractories manufactured in India, that has resulted in their importation. Refractory is not to be used once but has to be replaced periodically. Therefore their manufacture in India according to the specifications is a must in the long run. If action was initiated in years 1965-66 for their manufacture there is no reason why they could not have been manufactured in India according to the specifications.
26	4.66	The Indian Refractory Makers Association have represented that they were not apprised of the specifications and quantity of refractories required suffi-

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		ciently in advance. They were told about the specifications only at the time of inviting tenders. BSL ought to have conducted a survey of the manufacturing capacities and the competence of the refractory manufacturers quite early enough in 1966-67 in order that the necessary remedial actions could be taken to ensure timely supplies of requisite quantity and quality. India has enough experience and experitise in the manufacture of refractories which industry has now been in existence for a large number of years. The total dependence upon Russian expert advice even in the matter of refractories does not speak well of our long standing in this industry and also of our experience in the steel industry. The Committee would have better appreciated if we had depended in our own steel experts in the matter of rejections or acceptance of refractories. The Committee depreciate this tendency to blame the foreign collaborators for our own failures and shortcomings.
27	4.67	The Committee would also like that the departments and the Ministry concerned dealing with refractory industry should take note of the complaints and the observations made by the BSL in the matter of certain shortcomings and failures on the part of the refractory manufacturers. The technical wing of the concerned Ministry should appoint a committee to look into these matters to focus the weaknesses and to take necessary remedial measures so that the needs of the steel industry is fully and adequately met through indigenous sources of supply.
28	4.68	The Committee were informed that due to the failure of the Indian refractory Manufacturers to meet the demands of Bokaro, the Government was considering of putting up a refractory plant in the public sector. The Committe do not understand why this was not considered early enough to obviate imports. On the other hand, the Indian Refractory Makers Association represented to the Committee

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		that the industry has adequate total installed capacity to meet the requirements of the steel industry based on the present pattern of demand for different qualities. All that they want is that operational and constructional requirements should be planned well in advance to enable them to organise production. The Committee feel that before the Government takes a decision to put up a refractory unit in the public sector, a proper enquiry must be made about the existing surplus capacity and the technical competency of the existing units and only after making a thorough study of the economics of the project they should go in for a refractory project in the public sector.
29	5.8 to 5.10	The Committee are surprised to note that although we have spent nearly Rs. 3,500 crores on public enterprises and even after a lapse of 20 years, the Government have not yet evolved a clear concept about the constitution and composition of the Board of Directors for Public enterprises. The Government have said that the "the whole policy regarding the selection of right persons to serve as a part time directors in the public enterprises is under the review at the moment." To a question as to what are the factors that are kept in view for the appointment of Board of Directors, the Secretary of the Ministry stated at the time of evidence "I suppose that factor is to have persons of this standing who experience of a number of industries and therefore their advice is regarded to be very valuable." The Committee consider that the Board of Directors of a project of the dimensions of Bokaro should include a team of functional directors, which team may be jointly held responsible for the proper execution of the project. Then, there should be an element of heirarchy in this functional team included in the Board of Directors so that the Government does not get at the loose-end whenever the chief executive of the project (Managing Director and/or Chairman)

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		retires or resigns. There is still another element in the constitution and functioning of the top management like the Board of Directors which is now being increasingly adopted and that is that the functional directors operate as a constellation i.e. as a closely integrated and a knit team. The Board of Directors should be so constituted that if the top man goes for any reason, a person from within the project, who has the necessary experience and background of the project and who is conversant with the problems immediately steps in to take the place. In a project of the dimension of Bokaro to import a new man whenever a vacancy occurs will always result in set backs because the new incumbent was bound to take his own time to get familarised with the problems.
30	5.11	The Committee find that the Board of Directors of Bokaro, whether the present one or the previous one, were constituted of directors who may be called 'birds of passage.' Excepting the Managing Director none of them has got responsibilities of execution and the career of none of them is dependant upon the success or the failure of the Bokaro. The Committee consider that the concepts of (i) making the fortunes/(career) of Directors fully identified with the failure or success of projects (ii) including in the Board a team of the top functionaries at the project instead of having only the Managing Director and (iii) importing an element of heirarchy in that functional team should be properly examined and given effect to in the constitution of the Board of Directors for public enterprises.
31	5.12	As regards non-official element in the Board of Directors, the Committee find that their number was three in the previous Board out of a total of eight which has now been reduced to one in the existing board of 10 directors. The Committee feel that it is useful to have non-officials on the Board but only one such director is not sufficient. The Memorandum of Association provides that the maximum number of directors of the Board

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		would be twelve. The Committee feels that it will be useful to have at least a fairly good proportion of the members of the Board from among non-officials.
32	5.13	The Committee are not happy at the selection of the non-official directors firstly purely from the angle that they have not been taking interest in the affairs of the Company as is evident from the fact that the two non-official directors (Shri N. M. Wagle and Shri K. Srinivasan) attended only about 50 per cent of the meetings during the last three years. One of them appears to be a professional directors being on the board of 24 companies. It is also understand that he is retired member of the Indian Civil Service. The Government will do better if they give more thought to the selection of the non-official directors and make sure that only such persons are nominated who have the time to take interest in the affairs of the Company and who have really a wide sweep of experience of industrial management of really big concerns of the type and the magnitude of Bokaro. the criteria, which the Secretary of the Ministry has himself stated, ought to be in the nomination of the directors. The Committee find to their regret that this criteria as stated by the Secretary has not been taken care of while making the nominations to the Bokaro Board.
33	5.14	The Memorandum/Article of Association of Bokaro Steel Limited may be suitably amended to provide that any director who has absented himself for more than two consecutive meetings without taking leave of absence ceases to be a member of the Board.
34	5.23	The Committee regret to note that the Secretary of the Ministry of Iron & Steel was appointed as the Chairman of B.S.L. on 4th February, 1964 contrary to the decision of the Government taken as early as November 1961 that "no Secretary of the Ministry/ Department shall be a member of any Board", and in disregard to the recommendations of the Estimates

		Committee which was accepted by the Government. The Committee do not agree with the explanations offered by the Chairman of BSL justifying the appointment of the Secretary as Chairman of B.S.L. The Committee are of the view that by combining the two posts in one person namely that of the Secretaryship of the Ministry and the Chairmanship of the Board of Directors the Government were denied of an independent review of the whole negotiations and agreements between B.S.L. and the Soviet collaborators. By appointing the Secretary as the Chairman, the Ministry got indirectly committed by the agreement arrived at by the Chairman of the B.S.L. and thus the Government of India lost a valuable opportunity to improve the terms of the agreement with the foreign collaborators. In the opinion of the Committee if these two posts were not combined in one person and the advice of the Parliamentary Committee was followed and not disregarded the Government might have had an opportunity both to improve the terms of the agreement and to say no to such of the terms which on second review could have been found not to the advantage of the country. The negotiating parties lost a second tier of reference and final approval. The Committee feel that many of the defects discovered in the agreement and contracts with the foreign collaborators probably would have been rectified had these been given a second look by the Secretary of the Ministry, if he were not also the Chairman of B.S.L.
55	5.24 to 5.25	The Committee are further amazed and distressed that in utter disregard of the accepted priciples for the appointment of Chairman of Public Undertakings, and also in utter disregard of the interest of the B.S.L. itself, Government continued to have Shri N. N. Wanchoo as the Chairman of B.S.L. while he was also the Secretary of Ministry of Industrial Development and Company Affairs. Even Shri Wanchoo told the Committee that he was dissatisfied with this arrangement of dual responsibility—Secretary of the Ministry of Industrial Development and Com-

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		pany Affairs and the Chairman of B.S.L. He was frank enough to state before the Committee "in fact there is disadvantage of the Secretary continuing as Chairman. As regards adverse effects, my feeling is that I tried to do the best under adverse circumstances. Though I had lot of other work. I had tried to minimise the adverse effects with the combination of duties....In principle it would have been better to appoint a Chairman some body who had less burden than I have." Shri Wanchoo thus admitted that one or the other duties assigned to him did suffer. This fact should largely explain the lack of proper supervision and coordination and delay in decision making in many vital matter which has resulted in delaying construction and loss of money.
36	5.26	Shri Wanchoo stated before the Committee that he submitted his resignation from the Chairman of B.S.L. not once but several times and he pleaded to be relieved. The Committee are surprised that the Ministry could not find a suitable incumbent for this post as stated by the present Secretary of the Ministry of Steel and Heavy Engineering for the last 5 years. The least the Committee could say is that this does not speak well of our earnestness and efficiency if Government could not find a suitable incumbent for this post in 5 years time and Shri Wanchoo was relieved only when he retired from service.
37	5.27	The Committee do not agree with the plea advanced by the Secretary of the Ministry of Steel and Heavy Engineering when he says that on Mr. Wanchoo's transfer from the Ministry of Iron Steel to the Ministry of Industrial Development and Company Affairs, the spirit of the Estimates Committee's recommendations was fulfilled and the "basic principle had not been infringed because Shri Wanchoo is Secretary in another Ministry and had no part in advising the Minister for Steel in judging the performance of Bokaro." The Secreatry has

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		missed the other important principle enunciated by the Estimates Committee wherein it is stated "it is not possible for such an official to give efficient attention to the affairs of the undertaking in addition to performing his normal duties". Shri Wanchoo has conceded this point of view from his own experience when he stated that he work under his charge did suffer. The Committee feel that if the Secretary of the Ministry of Steel felt that he could not relieve Shri Wanchoo from the Chairmanship of the B.S.L. on account of his vast experience and knowledge and long standing association with B.S.L. he ought to have persuaded Government to relieve him from the Secretaryship of the Ministry of Industrial Development and Company Affairs in the interest of the proper execution of work at the project.
38	5.35	The Committee find that the management of B.S.L. itself invited the staff inspection unit to undertake a study of staffing of the Company as it was felt that a study by an independent and specialised organisation like S.I.U. would be useful to suggest norms and standards for assessment of work-load and the requirements of staff. Consequently, the Committee are surprised over the statement by the Secretary of the Ministry and of the Managing Director of B.S.L. that S.I.U. were not competent and experienced enough to do the job and therefore they were unable to accord and implement the recommendations of S.I.U. The realisation about the competence of S.I.U. has come to them after the Report was finalised and submitted and when they found that S.I.U. have adversely commented upon the staff strength and pattern. The Committee do not agree with the view that such a review was not necessary 'during the formative stages of a project by an independent authority'. On the other hand the Committee feel that there should be a proper review regarding the employment of staff/workers in all categories by an independent and qualified industrial management expert in order to determine that there is proper utilisation of the working force and there

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		is no overstaffing at any point so that the construction could be completed both economically and efficiently.
39	6.12	The Committee find that in order to take advantage of the economics of the large scale production, the Government decided to have a steel plant at Bokaro with a capacity of 4 million tonnes. However they decided to put up this capacity in two stages and stage one was of the capacity of 1.7 million tonnes. The Committee were very much perturbed to find that the benefits of the scale of production will not be available to the country even at 4 million tonnes production. From the comparison of cost of production as shown in paragraph 6.5 of the Report it will be seen that the cost of production per tonne in all categories of the final products at 4 million tonnes stage is higher than the cost of those items produced by Rourkela whose capacity is only 1.8 million tonnes. Thus, the Committee is unable to find what advantage accrues to the nation by installing a big capacity unit? The ultimate criteria in deciding the size of the unit could only be the cost of production per ton. If these comparative prices given are correct then the Committee feel there is no justification in having a 4 million tonnes capacity plant in Bokaro. The Committee feel that the economies of scale at Bokaro should compensate even a slightly higher capital investment per ton on installed capacity. The Committee, therefore, strongly recommend that a proper and a thorough techno-economic study should be immediately made with a view to remedy the situation so that the nation could have full advantage of the scale of production and get steel at cost comparable to Rourkela if not lower. This techno-economic study should be made by fully qualified technical men and economists available in the country whether in Government and Public Sector or Private Sector or outside. The Government should also not feel shy to take the advice wherever

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		it may be available whether inside the country or outside the country in order to improve the technology and economics of the Bokaro Project.
40	6.13	The Committee has also noted that the Steel rolling mill size at Bokaro has built in capacity for going up to 5.5 million tonnes. This built in capacity should not be put forward another excuse for not having Bokaro in the second stage as viable commercial unit.
41	6.14	The Committee have been told that stage one *i.e.,* 1.7 million tonnes production stage will never be viable unit and B.S.L. will continue to incur loss on this stage of production on account of built in capacity with a capital cost of Rs. 4000 per ton on the basis of Rs. 670 crores estimates. The Committee are perturbed to learn that BSL will continue to lose Rs. 20 crores per annum during the first stage of production till it reaches 4 million tonnes production. Even if a decision is taken to go in for 4 million tonnes production it will take 4 years to reach the second stage. Thus, the Committee have noted that the project is doomed to incur a loss of Rs. 80 crores. Therefore, the compulsion of the situation obliges that Bokaro reaches 4 million tonnes production stage at the earliest in order to contain these losses. The Committee note that the Government have already taken a decision to go in for 4 million tonnes expansion immediately. The Committee would, however, like to emphasise and caution that there is imperative need for a proper techno-economic reappraisal in order that the 4 million tonnes stage becomes really a profitable venture. The Committee would like the Government to take lesson from 1st stage of construction so that mistakes committed in first stage are not repeated. Then alone it is worthwhile taking a decision to go in for expansion for to 4 million tonnes.
42	6.15	The Committee would like to reiterate that there is a need for utmost caution and strict enforcement of economy on expenditure both on construction and

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		operating cost in view of very heavy capital investment per ton of steel and in view of the heavy losses that are likely to take place in the first stage.
43	6.16	The techno-economic study suggested by the Committee should also determine the product-mix so that the production at Bokaro will have ready market both in India and abroad and we do not produce items which are not saleable or whose cost may be such that these could not be marketed either in India or abroad.
44	6.17	The Committee feel that the Parliament ought to have been kept informed about the economics of the Bokaro in the first stage and the Government ought to have taken the Parliament into confidence about the losses that were likely to be suffered during the first stage. The Committee find that the B.S.L. and Ministry were fully aware from the beginning that Bokaro at the first stage would incur losses. This fact ought to have been brought specifically to the notice of Parliament. The Committee would suggest that in future whenever big plants are set up in stages the financial implications about profit/loss in each stage should be brought to the notice of Parliament while obtaining their approval for setting up such plants.
45	7.1	The Bokaro Steel Plant was conceived in 1957 when Government asked Hindustan Steel Ltd. to take preliminary steps for the installation of the new steel works at Bokaro and it will not be before June, 1973 that the construction of 1st stage of the plant is expected to be completed. Thus it will take Government more than 15 years to establish a new steel plant with a capacity of 1.7 million tonnes. Out of this period of 15 years, preliminaries like calling for Preliminary Project Report. Detailed Project Report and settling the question of foreign aid and collaboration took about 8 years and the construction is expected to take about 7 years from the date of signing of contracts with the Soviet collaborators for the supply of plant and machinery.

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		Such a long period in establishing a new plant can hardly be justified. The Committee desire that Government should give serious consideration to this matter to reduce the time lag in establishing new projects in future.
46	7.2 to 7.3	Originally Bokaro Steel was to be financed out of the foreign aid from U.S.A., but this request had to be withdrawn because of the opposition in the U.S. Congress. Then the Government of India received offer from U.S.S.R. for financial and technical aid for setting up the Bokaro Steel. The USSR Government offered credit up to Rs. 166.6 crores on a liberal terms bearing an interst of only 2.5 per cent repayable in 12 years. As a consequence of this offer a D.P.R. was prepared by the Soviet collaborators and submitted to the Government. The Committee find that M/s. Dasturco who were the General Consultant of the Ministry were side-tracked and according to Dastur he was not associated in the technical discussions with the Soviet collaborators in August, 1964 and thereafter which had important techncial implications and ultimately resulted in a high cost project. The D.P.R. submitted by the Soviet collaborators was no doubt examined by a big technical committee consisting of 22 persons. But this examination of the 28 volumes of the D.P.R. was done in hardly a month's time. The Committee feel that the D.P.R. deserved a far greater scrutiny and that it was not given a proper technical appraisal on the basis of which investment decision of over Rs. 600 crores ought to have been made. The Committee feel that the examination of the D.P.R. by a Technical Committee can normally provide a second opinion. Effective scrutiny by the nature of work itself can only be made by a closely coordinated, competent, consultancy organisation. D.P.R. has to be reviewed not piecemeal with loose association of pieces but as an integrated project report.

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47	7.4	The Government finding the cost of the project as submitted by Soviet collaborators as very high, commissioned M/s. Dasturco for a cost reduction study. But before even getting such a cost reduction study report from Dasturco the Government signed agreement with the Soviet collaborators for the supply of equipment, drawings and for rendering technical assistance. M/s. Dasturco were given only seven weeks time to produce a cost reduction study on this voluminous report, which they produced suggesting a cost reduction of Rs. 107.5 crores in the 1st stage. Dasturco however prefaced this report stating that 'due to the very limited time available only major items of reduction are indicated and further scope for cost reduction exists, and could be realised by continuing study and implementation during the engineering and construction of the plant. The Soviet proposals on technology and equipment are retained as far as possible and changes suggested only where the resulting benefits were substantial'. According to B.S.L. this cost reduction study lacked detailed technical design basis, detailed cost calculations and break-up of cost savings. However, without obtaining the required information from M/s. Dasturco and without studying in detail the suggestions made by them, the Government sent a delegation to Moscow to discuss these proposals with the Soviets. The Committee find that no serious worthwhile effort was made to reduce the cost and ultimately a reduction of only Rs. 9.5 crores was obtained. The Committee have found that the negotiations with the Soviets were rushed through. The Committee feel that the Government ought to have insisted on having enough time for consideration of the D.P.R. and other connected matters and not allowed themselves to be stampeded into entering important agreements without proper and detailed scrutiny. The Committee are constrained to observe that while on the one hand in the preparation and the execution of the project there has been inordinate

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		delay resulting in burdening the project with considerable increase in the capital cost, on the other hand on critical occasions when through careful scrutiny considerable economy could have been achieved, decisions were arrived at with unconscionable haste.
48	7.5	The Committee find that the agreement entered into with the foreign collaborators had vital omission like absence of any component-wise phased delivery schedule in accordance with the needs of the project. The result was that while on the one hand the supplies were deficient to the extent of 10,000 tonnes for the first blast furnace a large number of items of rolling mills required much later have already been supplied.
49	7.6	The Committee feel that had the two posts of Chairman of B.S.L. and the Secretary of the Ministry of Iron & Steel not been combined in one person, the Ministry could have an apportunity of making an independent review of the whole negotiations and agreements between B.S.L. and the Soviet collaborators.
50	7.7 to 7.9	The Committee find that in the case of Bokaro Steel Plant, the Government/B.S.L. management depended heavily on the advice of foreign collaborators. It was decided to call for another D.P.R. from the Soviets although Government already had a D.P.R. prepared by M/s. Dasturco because according to the Chairman, B.S.L. "there was undoubtedly Russians insistence that they would do the D.P.R. themselves". It was proposed in 1964 to appoint M/s. Dasturco as principal consultant for Bokaro Steel Ltd. and this was also announced in Lok Sabha on 9th April, 1964. But this position was reversed and the Soviet collaborators were appointed as principal consultants because the Committee were told that 'Soviet authorities were not willing to accept Dasturco as principal consultant for the project and they said that they must remain in full and final authority of

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the project although they would associate Dasturco, and this fact was told to the Secretary of the Ministry and the Ministry concerned' although the Committee could not get any written evidence to confirm this insistence of the Soviet collaborators. Again M/s. Dasturco suggested in their cost reduction study that it was possible to effect savings to the extent of Rs. 107.5 crores in the first stage of Bokaro even if the basic assumptions in the Soviet D.P.R. were accepted. But savings to the extent of only Rs. 9.5 crores could be given effect to because according to the Chairman, BSL the position was that 'the Russians were the primary consultants for this project and we were not in a position to say that whether they liked it or not we would act Dastur's line of thinking.'

India has enough experience of steel industry. Apart from two steel plants in the private sector set up years ago, the Government had experience of setting up three steel plants in the public sector. The forth steel plant at Bokaro was to be set up largely on the basis of experience available in India and the bulk of its supplies were also to come from the indigenous sources. Dr. Dastur was brought to India and M/s. Dasturco commissioned as a steel consultant for B.S.L. The Committee, however, find that for setting up Bokaro, the Government had heavily relied upon foreign know how and expertise which is now being supplied by the Soviet collaborators. Dasturco from being the principal consultant were reduced to doing consultancy work only in respect of indigenous supplies from private sector and the major responsibility for setting up of the Bokaro was taken away from the Indian hands. The Commitee are not opposed to having assistance/ advice from foreign collaborators but Government should never abrogate its right of taking final decision in such matters taking into consideration all the relevant factors including the available advice of Indian experts; and having taken certain decisions after examining all pros and cons they should not

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		feel shy of owning the responsibility for such decisions instead of blaming the foreign collaborators. The Committee feel it is the Government's responsibility that the foreign aid available on liberal terms from friendly countries is put to best use. There is no justification for accepting any project report which the Government is not satisfied is in the best interest of the country only on consideration of making use of liberal terms of foreign aid. The Committee, therefore, are not happy to note from the statements of the Chairman BSL and the Secretary of the Ministry that they were more or less compelled to accept the position because they were obliged to do so by the country giving foreign aid.
51	7.10 to 7.11	The Committee regret to note that according to the revised schedule that 1st stage of Bokaro Steel Plant will be delayed by about 27 months as compared to the original schedule. Even this revised schedule is subject to various uncertain factors. As a result of delay in construction, the losses amounting to Rs. 32 crores on account of production, and establishment cost amounting to Rs. 6.75 crores have become unavoidable. The Committee are not convinced that even the revised target dates of completion of 1st stage will be adhered to because of the various uncertain factors that have been brought to the notice of the Committee and if the present completion dates are not adhered to the resultant losses will be more than what has been estimated.
52	7.12 to 7.13	The Committee very much regret to note that the Ministry has failed to set up an efficient administrative set up for BSL which could be equal to the task to construct and erect a Steel plant of such a huge dimension within the stipulated time and within the estimated costs. As a result the target dates of completion have been revised twice and the costs have been increased by Rs. 90 crores.

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		The Secretary of the Ministry during the evidence before the Committee admitted that "there have been some organisational failures on the part of BSL" which failure was also responsible for the delay in construction and losses. The Committee were told that in order to improve their management technique they were now introducing a system of net-work analysis which would be done by Dasturco. The Committee were informed by Dasturco that: the Bokaro Project is in a mess from the very beginning because there is no proper consulting engineer on the project. It is the function of a consulting engineer apart from drawing up the correct project, an economic project and a viable unit, also to do during the design and construction stages the complete coordination scheduling, supervision, follow up and expedition. All these items were a part of our work which we were supposed to be doing. It was taken out of our work and no body is doing it'. The Committee failed to get a satisfactory answer as to why proper steps were not taken from the very inception to organise the management on such lines.
53	7.14 to 7.15	The Committee find that there has not been proper thought and urgency shown in the constitution of board of management and to find a suitable incumbent to replace the Chairman of the Company who was also the Secretary of a Ministry and as a result of this dual responsibility, as admitted by the Chairman BSL himself, one of the duties of his dual charge did suffer. There was no team of functional directors on the Board of Directors. Neither there was any hierarchy in Board so that if the top executive retired or resigned someone from the Board who had the necessary experience and background of the problems of Bokaro would step into to take his place. Each time a vacancy occurred the Ministry get at the loose-end and they had to find a new man for the post who was bound to take his own time to acquaint

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		himself with the problems which resulted in temporary setback.
		In the appointment of the Board of Management the Committee would like the twin principles of functionalism and necessary managerial heirarchy to be organised in the increasingly accepted context of operating as a Constellation.
54	7.16	The other major failure noticed by the Committee was in matter of supplies of equipment from indigenous sources, largely from the public sector undertakings and also from the private sector factories. The Committee were surprised to find that inordinate delays took place in settling details of drawings, delivery schedules and the prices from the public sector undertakings particularly HEC and MAMC. Even the revised delivery schedules were not being adhered to by them. The Committee very much regret to note that the Government failed to provide the necessary leadership to arrange this co-ordination among the public sector undertakings, so that the supplies to Bokaro could be made in time in order that the schedule of the Bokaro was not upset. The Committee hopes that in future at least the Government will see that all the supplies which Bokaro has to get from the public sector units are made in time and according to schedules of delivery and at agreed price, and necessary measures are taken so that the Bokaro is not delayed on that account.
55	7.17	The Committee are perturbed that the estimates of the cost of construction are not only very high for Bokaro, but also are not being adhered to. As against Dasturco's estimate of about Rs. 600 crores for 4 million tonnes plant, the capital cost for 1st stage itself for a capacity of 1.7 million tonnes will be Rs. 760 crores as against the original estimates of Rs. 670 crores. The Committee also find that in spite of having a plant with a large capacity which should result in economies of scale the cost of pro-

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		duction per tonne at Bokaro Steel Plant even at 4 million tonnes stage will be higher than at Rourkela Steel Plant. This matter deserves serious consideration. The higher cost of production will not only effect the financial viability of Bokaro but high cost steel will adversely affect the entire economy of the country as the production cost of all industries using steel would go up. The Committee, therefore, urge that there is need for a proper techno-economic reappraisal in order that the 4 million stage becomes really a profitable venture. This study should be made by fully qualified technical men and economists available in the country or from outside. The Committee would like that this report together with the Government decision may be laid on the Table of both the Houses so that the Parliament may get an occasion to express itself.
56	7.18	The Committee find that Government have already announced a decision to set up three more Steel Plants at Visakhapatnam, Hospet and Salem in the Public Sector. Comprehensive details about those proposed steel plants have not been made public. The Committee recommend that Government should without delay bring out a comprehensive White Paper containing essential information about the size of the plants, the capital investment involved, the product-mix and the rationale thereof, and in particular the economics and profitability of each of the plants. The Committee need hardly stress that the White Paper should be prepared most carefully so as to give precise and realistic estimates of vital factors which have a bearing on the working of the steel plants so that Parliament and public have clear idea of the resources which are being committed to these plants and the benefit which would accrue to the country therefrom. The Committee expect Government to take specific approval of Parliament to the setting up of these plants which are expected to play a crucial role in the development of economy of the country.

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