C. P. U. No. 178

COMMITTEE ON PUBLIC UNDERTAKINGS (1971-72)

(FIFTH LOK SABHA)

FIRST REPORT

HINDUSTAN STEEL LTD.

(MINISTRY OF STEEL AND MINES)
(ISPAT AUR KHAN MANTRALAYA)

LOK SABHA SECRETARIA
NEW DELHI

September, 1971/Bhadra, 1893 (S)
Price : Re. 2·00

CORRIGENDA

FIRST REPORT OF C.P.U. ON H.S.L.

Page	Para	Line	For	Read
(i)	-	21-22	composition	consumption
(ii)	-	21	review to	to review
1	1.3	6	of	or
1	1.4	3	plants	plant
3	1.8	10	3rd	33rd
5	-	11	was	were
6	2.8	12	extened	extended
10	2.23	3	delete use	
13	3.6	2	P.S.L.	H.S.L.
13	3.6	5	H.S.B.	H.S.L.
13	3.6	9,10	Age	%age
13	3.6	17	Bailai	Bhilai
13	3.6	24	rate	rated
14	3.8	1	produtcion	production
14	3.8	8	cots	cost
15	Statement-against 1969-70, Col.3		5x	568
15		1 to 7	read matter as foot-note to page 14	
15	3.11	3	revampting	revamping
15	3.12	4	banking	blanking
17	3.19	3	re-bult	re-built
17	3.20	2	distrubed	disturbed
18	3.25	3	One	Open
22	3.40	4	Add had after H.S.L.	
22	3.41	13	infromed	informed
23	3.43	4	taht	that
23	3.43	18	availabl	available
24	3.46	19	confiend	confined
26	3.51	10	exparts	experts
27	3.56	6	axle	axle plant
28	3.57	2	producer	produces
28	3.59	5	could	could not
29	3.60	Statement-line 6, Col.2	kept separately	1.00
29	3.60	Statement-line 6, Col.3	1.00	kept separately
29			Para No.31.61	Para No.3.61
29	3.62	7	their	there is
29	3.62	10	colling	cooling
32	4.5	Statement-Col.4, line 2	4.17	4.10
32		5 from bottom	due	was due
34		8	323.62	323.02

Page	Para	Line	For	Read
34	4.10	4	steel	still
34	4.11	4	India. The	India, the
35	4.13	1	standard	standard costing
40	5.12	1	was	were
41	5.14	heading	Darsua	Barsua
44	5.27	last line	Rs.__to Rs.__ per tonne	by 42% during this period
45		5	or	inforior
47	5.35	7	for	over
48	-	3	in evidence	is evident
48	5.36	4-5	Delete from Rs.___ per tonne in 1965-66 to Rs.___per tonne in 1969-70-an increase of	
48	5.36	5	add 'by' before '128.5'	
50	5.42	5	carried	were carried
57	-	Statement line 5 in Col. 1	Delete limestone	
61	5.69	In statement against USA against W.Germany	6241(968) 777	624(1968) 577
61	5.70	8	8.13	813
63	(3)	2	or	for
63	(4)	4	men tof	ment of
63		28	stee	steel
64	6.5	2	enterrises	enterprises
65		7	give	given
65		10	i.e. %age/ (3)x100(2)	%age i.e. $\frac{3 \times 100}{2}$
68	6.12	Statement- against 1969 Rourkela Col.5	8.6%	18.6%
70	6.16	Statement- against Rourkela 1966- 67	68	56
73		10	100.95	100,95
75	6.30	2	to	due to
78	7.1	2	case	care
79	7.5	6	S.S. L.	H.S.L.
87	8.23	last line	12.29	Rs. 12.29
88	8.26	3	fact-find	fact-finding
90	9.2	Statement against 1969 Col.3	1180.3	1080.3
94	10.3	7	Chairman	Chairmen

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95	10.5	13	as	was
97		8	9(963)	1963
100		10	HSCO	IISCO
100		20	average	advantage
101	11.11	8	shifts	shift
101	11.11	14	is	in
102		2	tendered	tended
103	11.14	3	delete seems to involve the location of this problem	
103	11.17	2	against the interest and	
103	foot-note	2	Part II	another
104	11.19	1	on	of
	11.19	statement-against Bhilai Col.4, 1967-68	7912.13	912.13
105	Statement-against Alloy Steels	1967-68 Col.3	(-)3.72	(+)3.72
105	-do-	1969-70 Col.2	573.56	574.56
105	-do-	1969-70 Col.3	(-)3.;2	(-)3.02
107	11.25	1	Non-attainment	non-attainment
109	12.03	4	their	fair
110	-	In item 2 of the statement col.5	200	2000
110	-	Statement heading for 1968-69	dne	due
111	-	item No.1 under the year 1969-70 of the statement col.6	371	3713
112	-	Item No.4 of the statement, Col.6	1775	1575
112	-	Item No.2 under the year 1968-69 col.1	value	valve
113	-	Under the heading 1969-70, Col.1	value	valve

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Page	Para	Line	For	Read
114	-	Co.3 against S.M.S.(Fce.Hrs)	183161	18316
114	-	Line 3 of the Foot-Note	cost	cost
115	-	Line 3 under the heading 'Action Taken'	nathalene	napthalene
115	-	-do-	indicaphtion	indication
115	-	Item 5, under the heading (Recommendation'	Un'keep	Upkeep
117	-	Line 5 under the heading 'Action Taken'	obtain	obtained
120	-	Line 6 from below under colomn 4	carvenate	carbonate
122		Line 3 in item 14 under colomn 2	strrcitly	strictly
123	-	last line, col.1	gas%(NM3)b	gas%(NM_3)
137	2.14	3	Alley	Alloy
138	2.23	2	(M/s.ISC N)	(M/s.ISCON)
139	3.8	12	less	loss
143	3.64	17	if	of
146		10-11	from Rs.___to Rs.____per tonne	by 42% during this period
146	5.36	5-7	from Rs.____ per tonne in 1965-66 to Rs.___per tonne in 1969-70- an increase of	by
150	5.71	16	periodically read be	be periodically
151		21	will	will be
	para 6.10			
160	11.26	7	(Rs.557 crores on 31.370)	(Rs.557 crores on 31.3.70)

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Appendices

COMMITTEE ON PUBLIC UNDERTAKINGS
(1971-72)

CHAIRMAN

Shri M. B. Rana

MEMBERS

2. Shri K. Baladhandayutham
3. Shri Dinen Bhattacharya
4. Shri G. Bhuvarahan
5. Shri Khemchandbhai Chavda
6. Dr. Kailas
7. Shri S. N. Misra
8. Shri Amrit Nahata
9. Shri P. Parthasarathy
10. Smt. Subhadra Joshi*
11. Shri Syed Ahamad
12. Shri Narayana Kalliyana Krishnan
13. Choudhary A. Mohammad
14. Shri Dahyabhai V. Patel
15. Shri Kota Punnaiah

SECRETARIAT

Shri Avtar Singh Rikhy—*Joint Secretary.*
Shri Sameer C. Mookerji—*Deputy Secretary.*
Shri M. N. Kaul—*Under Secretary.*

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*Elected w.e.f. 11-8-1971 in the vacancy caused on the resignation of Dr. V. K. R. Varadaraja Rao, M.P. on 29-7-1971.

STUDY GROUP I ON HINDUSTAN STEEL
(1971-72)

1. Shri P. Parthasarathy—*Convener*
2. Shri Dinen Bhattacharya—*Alternate Convener*
3. Shri S. N. Misra
4. Dr. V. K. R. Varadaraja Rao*
5. Shri Narayana Kalliyana Krishnan
6. Shri G. Bhuvarahan
7. Shri K. Baladhandayutham

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*Resigned from the Committee w.e.f. 29-7-1971.

INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, present the First Report on Hindustan Steel Ltd. The Committee will present another Report on some other aspects of the working of Hindustan Steel Ltd., not covered in this Report.

2. This report is based on examination of the working of Hindustan Steel Ltd. up to the year ending 31st March, 1970. The subject was examined by the Committee on Public Undertakings 1970-71. That Committee also took evidence of the representatives of Hindustan Steel Ltd. on the 2nd, 3rd and 4th September 1970 and of the Ministry of Steel and Heavy Engineering on the 4th September 1970. The Committee, however, could not finalise their report due to the sudden dissolution of the Fourth Lok Sabha on the 27th December 1970. The Committee, on Public Undertakings (1971-72) considered and finalised the report at their sitting held on the 20th July, 1971 based on the evidence taken by the previous Committee and the further information furnished by the Ministry/Hindustan Steel Limited. The Committee considered the comments of the Ministry of Steel & Mines and Hindustan Steel Ltd. on factual verification of the Report at their sitting held on 16th September, 1971 and adopted the Report after certain amendments.

3. The Committee place on record their appreciation of the commendable work done by the Members of the Committee on Public Undertakings (1970-71) in taking evidence and obtaining information for this report which could not be finalised by them because of the sudden dissolution of the Fourth Lok Sabha.

4. The Committee wish to express their thanks to the Ministry of Steel and Heavy Engineering and Hindustan Steel Ltd. for placing before them the material and information they wanted in connection with the examination of Hindustan Steel Ltd. They wish to thank in particular the representatives of the Ministry and Undertaking who gave evidence and placed their considered views before the Committee.

5. The Committee also place on record their appreciation of the assistance rendered to them in connection with the examination of

Audit Paragraphs relating to Hindustan Steel Ltd. by the Comptroller and Auditor General of India.

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

NEW DELHI;
September 16, 1971.
Bhadra 25, 1893 (*S*).

I

INTRODUCTORY

1.1. The economic growth of every developing country is largely dependent on its steel making capacity. Indeed as a multiplier of industrial and agricultural activity steel is crucial to economic development.

1.2. The foundation of India's present iron and steel industry was laid in 1875 with the setting up of a small open top furnace at Kulti for the production of pig iron. The Tata Iron & Steel Company was formed in 1907. Then came the Indian Iron & Steel Company and the Mysore Iron & Steel Works in 1918.

1.3. The appreciation of the role of steel as the basic industry prompted India's planners to lay emphasis on expanding the country's steel making capabilities. Under the Industrial Policy Resolution of 1956 all new units in Iron & Steel Industry were to be set up only by the State. This did not however preclude the expansion of the privately owned units of the possibility of the State securing the co-operation of private enterprise in the establishment of new units when the national interests so required. The Second Five Year Plan, therefore, envisaged the construction of three steel plants of 1 million ton ingot capacity each in the public sector and further expansion of the TISCO, IISCO and the Mysore Iron & Steel Works.

Formation of Hindustan Steel Ltd.

1.4. In January, 1954, Hindustan Steel Ltd. was formed as a joint stock company under the Companies Act to construct and manage the first steel plants in public sector *viz.* Rourkela Steel Plant. On 1st April, 1957, the other two public sector steel projects *viz.* Durgapur Steel Plant and Bhilai Steel Plant which were under the control of the then Ministry of Iron and Steel were also transferred to H.S.L., as Government considered that it would be advantageous if all the three projects were brought under a unified Company management.

1.5. These three steel plants which had initially the capacity of one million ton each have been expanded subsequently. Besides these three steel plants, H.S.L. has set up the Alloy Steel Plant at Durgapur which accounts for the bulk of the country's production of alloy and tool steel. It has also developed a unit offering consultancy—engineering services—the Central Engineering and Design Bureau—and operates several coal washeries, iron ore mines and lime-

stone quarries. Thus, H.S.L. has at present the following projects/ offices under its control—

Rourkela Steel Plant, Rourkela and its captive mines.

Rourkela Fertilizer Plant, Bhilai Steel Plant, Bhilai and its captive mines.

Durgapur Steel Plant and its Coal Washery, Durgapur Alloy Steels Plant, Durgapur.

Coal Washeries Project, Dhanbad Controlling the washeries at—

(a) Dugda;

(b) Bhojudih; and

(c) Patherdih.

Offices:

(i) Head Office at Ranchi.

(ii) Central Engineering and Design Bureau, Ranchi.

(iii) Sales Office, Calcutta and branch offices/stockyards at different places.

(iv) Transport and Shipping Office, Calcutta.

(v) Foreign Office at London.

1.6. H.S.L. is by far the largest Government undertaking in India apart from the Railways. The total investment in this concern partly in equity and partly in loan amounted to Rs. 1063 crores on March 31, 1970 which is about 1/4th of the entire investment by the Central Government (outside Railways) in the public sector. The combined capacity of H.S.L. plants constitute nearly 70 per cent of India's total steel making potential. Today, over 1,20,000 people are employed in the Company's steel plants and other units. The proper working of this vital public undertaking therefore assumes great importance.

1.7. The Committee on Public Undertakings (Third Lok Sabha) examined the working of various projects/offices of HSL in 1965 and 1966 and presented separate reports as follows:—

(1) Rourkela Steel Plant (11th Report)

(2) Durgapur Steel Plant (29th Report)

(3) Bhilai Steel Plant (30th Report)

(4) Alloy Steel Project and Coal Washeries Project (31st Report)

(5) Head Office of HSL including Sales Office, Central Engineering and Design Bureau, Transport and Shipping Office and Foreign Offices (28th Report)

1.8. The following Reports on the action taken by Government on the above mentioned Reports were also presented by the Committee on Public Undertakings in 1966-67 and 1968-69.

(i) 33rd Report (1966-67) on action taken by Government on the recommendations contained in the 11th Report on Rourkela Steel Plant.

(ii) 31st Report (1968-69) on action taken by Government on the recommendations contained in 28th Report on Head Office of HSL.

(iii) 3rd Report (1968-69) on action taken by Government on the recommendations contained in 29th Report on Durgapur Steel Plant.

(iv) 34th Report (1968-69) on action taken by Government on the recommendations contained in 30th Report on Bhilai Steel Plant.

(v) 45th Report (1968-69) on action taken by Government on the recommendations contained in 31st Report on Alloy Steel Project and Coal Washeries Project.

1.9. One of the functions of the Committee is to examine the Audit Reports, if any, of the Comptroller and Auditor General on the Public Undertakings. The Comptroller and Auditor General had included a comprehensive review of the working of Hindustan Steel Ltd., in Audit Report (Commercial), 1966. The Audit Reports (Commercial), 1967, 1968 and 1969 also included certain individual cases of irregularities, losses, etc., relating to various plants of HSL These Audit Paras were not examined by the Committee on Public Undertakings earlier. The present examination of the Hindustan Steel is, therefore, based on the selected paras from Audit Reports (Commercial), 1966 to 1969. The Committee did not consider it necessary to examine in detail the aspects which were covered in their earlier Reports on H.S.L.

The Committee will however present another Report on some aspects of the working of Hindustan Steel Ltd., not covered in this Report.

II

AGREEMENTS WITH CONSULTANTS/COLLABORATORS

(a) Agreement with consultants for Alloy Steels Plant

2.1. M/s. Dastur & Co., were appointed as Consultants for Alloy Steels Plant. An agreement was signed with them on 22nd December, 1959. The main responsibilities of the Consultants under the agreement were as follows:—

(i) The submission of the project report within 7 months from the date of signing of the Consultancy Agreement.

(ii) The preparation of the specifications of the tender enquiries and advising Government on the merits of the offers received.

(iii) The preparation of detailed working drawings to enable the works to be completed in all respects.

(iv) The approval of design and supervision of the manufacture of plant and machinery ordered.

(v) The detailed supervision of construction and erection at site.

2.2. The Consultants were appointed for a period of five years from the date of agreement on a total fee of Rs. 88 lakhs.

2.3. The agreement was to expire on 22nd December, 1964 by which date the progress of work was only 25% to 30% of the total work. The agreement was therefore, extended for a further period of 3 years on an additional fee of Rs. 55 lakhs.

2.4. It was also agreed by the Consultants that they would undertake residual work, if any, left over beyond the date of expiry of the extended period of three years (21st December, 1967) without any extra fee for a period not exceeding 6 months.

2.5. In this connection, the Comptroller and Auditor General of India had informed the Committee that the Chairman, H.S.L. in a D.O. letter dated the 10th December, 1964 to the Secretary, Ministry of Steel and Mines had mentioned that the additional fees of Rs. 55 lakhs was considered by the Board of Directors as very high.

2.6. The Committee enquired during evidence, the reasons for the Government agreeing to pay Rs. 55 lakhs to the Consultants

for the extended period of agreement inspite of the fact that the Board of Directors considered it to be high. The representative of the Ministry stated that some of the important reasons for agreeing to this were: First, in the event of not agreeing to this they would have engaged some other consultants to do the same work and probably they might have had to engage a foreign consultant. Secondly, at that time the question of converting Dastur & Co. into a public sector organisation was very much under consideration. The notings showed that the decision was most imminent and therefore it was felt that it might be advantageous to continue Dasturco. who had been working in the project for the last five years and who was likely to be far better consultant than anybody else. Lastly Dasturco indicated that they would not be willing to continue as consultants if the amount paid was less than Rs. 55 lakhs against their original claim of Rs. 92 lakhs. The broad break up of the fee of Rs. 55 lakhs was as under:—

	(Rs. in Lakhs)
Compensation for the element of dealy . . .	42·20
Extra work due to increase in the scope of the project (raising capacity from 51,000 to 60,000 tonnes). . . .	6·50
Compensation for inspection of structurals and expenses connected with the consultants inspection/unit in Japan .	6·62
	55·32

2.7. The Committee pointed out that according to Audit the consultants themselves were responsible for the delay to a great extent leading to the extension of the time schedule of the project. The Secretary of the Ministry stated "I think the consultants were to some extent responsible for the delay but the responsibility for the delay could also be held on others like Government which took up 18 months to issue sanction and so on. The real mistake in my opinion is that this payment of Rs. 88 lakhs i.e. the original amount was linked to a certain period. What we should have done perhaps was that the agreement should have been connected more with some particular jobs so that these jobs should have normally been completed within the time."

The other payments of Rs. 6.50 lakhs and Rs. 6.30 lakhs were, according to Audit, also open to objection on account of the following reasons:—

(i) The increased cost of the Project was due to general increase in the cost of material and labour and not to additions to capital equipments. Moreover, the provision for future expansion was made, by the Consultants in the Project Report itself and at a certain stage of discussions

both the Company and the Consultants had agreed (February, 1963) that for raising the capacity from 51,000M tons to 60,000 M. tons of finished products, no additional equipment would be necessary.

(ii) In accordance with the agreement the Consultants were under an obligation to inspect the manufacture of all plants and machinery and issue certificates for work done overseas and in India and only the cost of air or other mode of transport for the inspection officials of the Consultants was to be borne by the Company.

2.8. This matter was also considered by the Committee on Public Undertakings while examining the working of Alloy Steels Plant. In their 31st Report presented in April, 1966 the Committee observed as follows:—

"The Committee feel that Government should have stipulated the fee for completion of the work and not related it to time. In that case it would have been in the interest of the consultants also to complete their work as quickly as possible. As events have proved, the consultants have gained by the non-completion of the work within the original schedule. They will get an additional fee of Rs. 55 lakhs for the extened period. As admitted by the Secretary of the Ministry of Iron and Steel during evidence, the consultants cannot be wholly free from blame for the delay in completion of the consultancy work. In view of this statement, Government should be cautious in dealing with such firms. The Committee recommend that Government should ensure that they do not in future enter into consultancy agreements on these terms."

This recommendation was accepted by Government in January, 1967.

2.9. The agreement with the Consultants was, however, further extended beyond 22nd June, 1968, up to 21st June, 1969 in the first instance on an additional fee of Rs. 6 lakhs and then up to 21st September, 1969 on a fee of Rs. 50,000 per month subject to the condition that the Consultants would take the residuary work, if any, without any extra fees, from their Head Office in Calcutta for a period not exceeding three months from 21st September, 1969.

2.10. The Committee enquired the reasons for the further extension of the agreement beyond June, 1968. They were informed that at the time of the expiry of the first extension agreement in June, 1968, the position of the work was reassessed. Though the erection

and construction of the Plant were more or less complete, some of the units of the plant could not be put through final acceptance tests. It was felt in June, 1968 that most of the obligations of the various contractors at Alloy Steel Plants would get discharged by the end of June, 1969 only. It was, therefore, decided to extend Dasturco's consultancy agreement by another 12 months with free services for a period of 3 months thereafter from Dasturco's Head Office, on a payment of Rs. 6 lakhs in all. It was also agreed that in regard to the free services, no fee would be payable but the actual expenditure incurred by Dasturco on travel to Durgapur and back would be reimbursed to them.

2.11. The position of residual work was again reassessed on the expiry of the main contract on the 21st June, 1969 and the following emerged as the scope of the residual work:

1. Completion of the oil firing system.
2. PA & FA test of remaining equipment in the Sheet Mills.
3. Full transfer of background technical information and documents required by ASP|CEDB in connection with items of remaining work and proposed additions and modifications.
4. Certification and clearance of pending Bills and claims and disputes arising therefrom to the extent "the Engineer" is involved.

2.12. M|s. Dastur Co.'s services at site were specially required for another three months for smooth and complete transference of technical information as at (3) above. The agreement was, therefore, further extended for a period of three months.

It was felt that the rest of the items would be cleared by M/s. Dasturco within free period of three months of non-residential services.

2.13. The Committee have also been informed that after the expiry of the agreement with M|s. Dasturco on 21-12-1969, their association with the Project has ceased but as the Consultants have a lot of data|information|documents with them, it becomes necessary to make references to them at times. Such services are being rendered by the Consultants without payment of any charges. It would also be necessary for the Alloy Steels Plant to consult M|s. Dasturco in settlement of certain claims of a few Contractors who have resorted to arbitration.

2.14. The Committee regret to note that in the agreement entered into with the Consultant for Alloy Steels Plant (M/s. Dasturco) in December, 1959, the payment of fee was linked to a certain period

of time instead of providing fee for completion of specified works within stipulated period with suitable penalty clauses for non-completion of work within the time limit. Inspite of the experience of the original agreement the same defective provision was allowed to continue in the agreement for extension of consultancy services in 1965 due to non-completion of the work within the original schedule. As mentioned in paragraph 2.8 the Committee on Public Undertakings (Third Lok Sabha) recommended in April, 1966 that Government should ensure that they did not in future enter into consultancy agreements on these terms. The Committee are distressed to note that although the Government accepted this recommendation in January, 1967, the agreement with the consultants was extended twice linking the additional fees with a period of time instead of completion of the remaining work. The Committee desire that this matter should be looked into by Government with a view to fixing the responsibility for entering into defective agreements in the course of extending the services of the Consultants, ignoring their own experience of the original agreement and the recommendation of the Committee on Public Undertakings.

(b) Agreement with a Consortium of foreign firms—supply of drawings.

2.15. Clause 5(v) of the agreement with a Consortium of foreign firms (M|s. ISCON) who were entrusted with the construction of Durgapur Steel Plant provided as follows:—

> "Subject to sub-clause (vi) of this clause, the contractor shall, if desired by the Engineer or the Government supply to Government on the taking over of any portion of the Works in accordance with clause 39 (Taking over) hereof, three sets of drawings of that portion as completed in sufficient details for the day-to-day operation and maintenance of that Portion of the works. The property in any drawings so supplied shall vest in Government."

2.16. It would be seen from the above that the agreement provided for the supply of detailed drawings on the taking over of any portion of the works for the day-to-day operation and maintenance of that portion of the works. Thus during the interval between the completion of the Works and their actual taking over by the H.S.L. the detailed drawings were not made available by the Consortium, with the result that essential spares for operation could not be arranged from the actual manufacturers but had to be procured from the Consortium who had no manufacturing activity of their own. While scrutinising the prices quoted by the Consortium for Power

Plant and Coke Oven spares, the Consultants pointed out that these prices were 20 to 25% higher than the corresponding "Check Prices" of the foreign manufacturers. In April, 1959 an agreement was reached with the Consortium whereby they agreed to make a flat reduction of 6% in respect of the prices already quoted and to charge in future 10% on the manufacturer's net price for the standard rationalised items.

2.17. The plant Management had up to March, 1965 purchased spares worth about Rs. 3.82 crores (inclusive of commission amounting to Rs. 45.16 lakhs) from the Consortium.

2.18. The Committee enquired the reasons for the supply of detailed drawings being made dependent on the taking over of the completed portion of the works instead of on the completion of its erection. They were informed that it is the normal practice to supply the drawings after a unit has been completely erected and tested, because during the process of erection and testing certain modifications/alterations may have to be made which may change the drawings. Under normal conditions, there should not be any unduly large gap between the time a unit is completed and the time it is taken over. The time lag between the two can arise only if the unit fails to conform to the tests and major changes, either in the quipment or design or layout, are necessary. If these deficiencies are of a serious nature, the operation of the unit would, in any case not be possible. If on the other hand, the deficiencies are of a comparatively minor nature and affect only the performance guarantee of the unit—in the sense that the guaranteed production rates or product-mix cannot be attained-in that event the equipment could be put to use and a qualified certificate listing out the defects/deficiencies could be issued to the contractor. In retrospect, they could say that what the Government did not envisage was that there would be an abnormal delay between the time of completion of a unit and its formal taking over.

2.19. It was, however, admitted by HSL that even subsequently the matter was not taken up with the Consortium so as to make them agree to supply the detailed drawings immediately on the completion of erection of individual units instead of on their formal taking over. There was also delay in supply of drawings even after the taking over of a unit. Thus while the first two stages of the plant were taken over by April, 1960 M/s. ISCON started supplying the detailed drawings sometime from the end of 1960.

2.20. In reply to a question the H.S.L. stated that the contract with M|s. ISCON was entered into by the Government on 31st October, 1956. Due to inadequate experience and perhaps heavy realiance on the Consultants, which was inevitable in their case because they had no experience of steel works construtcion, the Government had to go largely by the advice of the Consultants. It is in this context that the contract for one million tonne plant should be looked at.

2.21. The agreement with ISCON, in certain areas, was not quite clear cut. The stipulation ragarding the supply of drawings was one such case. Normally the supply of drawings should have been tied up with the payment clause so that non-supply of drawings could not escape notice. This shortcoming was rectified in the contracts for expansion of the Steel Plants. In these contracts the supply of drawings was made an integral part of the contract and unless the drawings were supplied in time, the payments were held up. Therefore the supply of drawings for the expansion had been better.

2.22. The Committee also discussed this matter during the course of oral evidenc of the representatives of the Ministry of Steel and Heavy Engineering. The Committee pointed out that there were deficiencies not only in the contract entered into with M/s. ISCON but also in the agreements with the Consultants for Durgapur Steel Plant (International Construction Company) and the Alloy Steels Plant (M/s. Dasturco). These agreements did not contain any financial penalty clause for any failure on the part of the Consultants. In the agreement with M/s. Dasturco, the payment of fee was also related to a certain period of time instead of the completion of work. Asked whether any legal advice was taken before signing these contacts, the Secretary of the Ministry stated as follows:

> "Legal advice was taken. But if you ask us whether we would do the same thing again we perhaps would not. We have a certain modified procedure for doing this. But procedurally, all the people required to be consulted were by and large consulted—the Law Ministry and others. We have more experience of these collaboration agreements today than we had then. We have now all the experience of the mistakes that have been committed which they did not have."

2.23. The Committee regret to note that the agreement with the Consortium (M/s. ISCON) for construction of Durgapur Steel Plant did not contain suitable provisions for use the supply of detailed

drawings simultaneously with the completion of the erection of a unit. The result was that the essential spares for operation of the plant had to be procured from the consortium, who had no manufacturing activity of their own, resulting in avoidable payments in the nature of middle man's profit. The Committee note the statement made by the Secretary of the Ministry of Steel & Heavy Engineering that the lacuna in the agreement was due to inadequate experience at the time of such collaboration agreements. As pointed out in para 2.22 above there were several deficiencies in agreements entered into with other consultants/collaborators also. The Committee, therfore, recommend that Government/Bureau of Public Enterprises should undertake a review of all important agreements entered into with consultants/collaborators by the Government| Public Undertakings and evolve guidelines in the light of the experience gained thereby, for entering into such agreements in future.

III

PRODUCTION PERFORMANCE

(a) General

3.1. The Hindustan Steel Ltd. has under its control the following integrated steel plants for the production of mild steel:—

1. Rourkela Steel Plant
2. Bhilai Steel Plant
3. Durgapur Steel Plant

Rourkela Steel Plant

3.2. Rourkela Steel Plant was the first steel plant to be built in public sector. It has been set up with the collaboration of West Germany. It introduced in the country L.D. process of steel making. Rourkela exclusively produces flat products such as plates and sheets. It has got a pipe plant which manufactures ERW (electrical resistant welded) pipes.

3.3. Starting with a capacity of 1 million tonnes of ingot steel, Rourkela Steel Plant has undergone expansion to 1.8 million tonnes rated capacity. Recent additions to Rourkela are a tandem cold reducing mill, electrolytic tinning lines and galvanizing lines.

Bhilai Steel Plant

3.4. After Rourkela came Bhilai Steel Plant built with Soviet collaboration. Work on this plant started in 1965, and first blast furnace was commissioned in 1959. The main products of Bhilai Steel Plants are rails and heavy structurals, billets, blooms, wire rods and light structurals—beams channels, angles, flats and bars. Although initially it had a capacity of 1 million tonnes, it has been expanded to 2.5 million tonnes. Bhilai is now set for further expansion to 4 million tonnes rated capacity.

Durgapur Steel Plant

3.5. The Durgapur Steel Plant was built with the assistance of a consortium of British steel making firms (ISCON). Durgapur produces special items for the railways wheel and axle sets, sleeper bars,fishplates, etc. It also produces skelp, light structurals and other construtcion materials, billets etc. As in the case of Rourkala

and Bhilai, Durgapur Steel Plant had initially a rated capacity of 1 million tonnes but has undergone further expansion to 1.6 million tonnes.

(b) **Rated capacity vis-a-vis actual production**

3.6. The following table shows the rated capacity, attainable capacity vis-a-vis actual production of P.S.L. as a whole and for its three steel plants in respect of ingot steel during the last three years:

(in thousand tonnes)

1	2	3	4
	1967-68	1968-69	1969-70
Rated capacity .	4916	5400	5680
Attainable capacity .	3691	4226	4680
Actual production .	3447	3720	3781
%age on rated capacity;	70	69	67
%age on attainable capacity	87	88	80.8
Rourkela Steel Plant			
Rated capacity.	1400	1800	1800
Attainable capacity	1000	1200	1400
Actual production .	924	1162	1104
%age on rated capacity	66	64·6	61·3
% age on attainable capacity	92·4	97·2	78·9
Bailai Steel Plant			
Rated capacity .	2500	2500	2500
Attainable capacity	2206	2226	2180
Actual production .	1785	1735	1859
%age on rated capacity .	71·4	69·4	74·4
%age on attainable capacity	80·9	77·9	85·3
Durgapur Steel Plant			
Rate capacity .	1016	1100	1380
Attainable capacity .	755	800	1100
Actual production . .	738	823	818
%age on rated capacity .	72·6	74·8	59·3
%age on attainable capacity . . .	98·0	103	74·4

3.7. It is seen from the above table that the total production of steel ingots in the three steel plants of HSL had come down from 70% of the rated capaicty in 1967-68 to 67% in 1969-70. In the case of Rourkela and Durgapur Steel Plants, the produtcion in 1969-70 had gone down as low as 61.3% and 59.3% of the rated capacity respectively. In Durgapur Steel Plant, the production was even less than that achieved before the expansion of the plant. The pro-

duction in 1969-70 was only 8.18 lakh tonnes as against 10.06 lakh tonnes in 1964-65.*

3.8. The Committee regret to note that the produtcion was not only subtantially lower than the rated capacity but even lower than the attainable capacity which according to the management had been arrived at after taking into consideration the normal gestation period and other constraints like imbalances arising out of lack of matching facilities with the chain of production.

The lower production of steel as compared to capacity means higher cots of production and financial loss to H.S.L. and produces a heavy impact on the whole economy. There has been considerable scarcity of steel in the market resulting in high open market prices. The import of steel to meet the demand also results in loss of valuable forign exchange. Had the three steel plants worked to their rated capacity, an additional 18.99 lakh tonnes of ingot steel would have been available to the country. It is, therefore, imperative that urgent and effective steps are taken to improve production performance of the steel plants.

(c) Reasons for low production

3.9. The main reasons advanced by the H.S.L. for non-achievement of the rated capacity by each of the three steel plants were as follows:—

Rourkela Steel Plant

1967-68

3.10. The shortfall in production was mainly due to:—

Labour troubles arising from the inter-union rivalry which led the plant to shut-down in August/September, 1967 and again in

*The Committee were informed that the rated capacity for ingot steel and finished achieved by Tata Iron Steel Company Ltd., and Indian Iron and Steel Company Ltd., during the last three years was as follows:--

Tata Iron and Steel Company Limited

	Ingot steel	Saleable Steel (000metric toones)
Rated capacity .	2,000	1,500
Year	Actual Production	Actual Production
1968-69	1,816(91%)	1,465(98%)
1969-70 .	1,708(85%)	1,440(96%)
1970-71 .	1,715(86%)	1,375(92%)

Indian Iron and Steel Company Limited

	Ingot Steel (,000metric	Saleable Steel tonnes)
Rated Capacity . .	1,000	800
Year	Actual Production	Actual Production
1968-69	777(78%)	640(80%)
1969-70	700(70%)	5 x(71%)
1970-71	627(63%)	523 (66%)

(Figures in brackets show the percentage utilisation)

October, 1967. The trouble in October, 1967 affected the production right upto November, 1967. Additionally there were labour troubles in the traffic department, pig casting machines, refractories department and the plate mill during May/July, 1967.

1968-69

3.11. The production was affected on account of:—

1. Modification to the 3 converters at the million tonne stage.
2. One of the pickling lines was taken down for revampting during June, 1968.
3. Maintenance problems in the stripper yard, slabbing mill and the hot strip mill on account of non-availability of spares.

1969-70

3.12. The low production was mainly on account of labour troubles which continued practically throughout the year. The troubles in December, 1969 and January, 1970 were such as to necessitate blanking of an entire coke oven battery and banking of a blast furnace. As a result, the operations in the units down the line had also to be scaled down. The trouble lasted for nearly a month and its after effects continued in February, 1970.

3.13. In the cold rolling mill complex, the major bottleneck was at the pickling stage on acccount of non-availability of the old pickling line which had been taken down in June, 1968. In addition to the teething troubles in the new units commissioned during the year, there was also substantial backlog of maintenance in the critical units which had to be made good.

Bhilai Steel Plant

1967-68

3.14. The recession in demand persisted during the year. Production was further restrained due to heavy stocks being carried. Output would have been still less but for substantial increase in the steel exports which the plant achieved (which rose from 30,000 T in 1966-67 to 237,000 T in 67-68).

1968-69

3.15. Apart from the effect of recession which continued during the first half of the year, the performance of the plant was affected due to an increase proportion of output for export which constituted 27 per cent of the total production compared to 20 per cent in 67-68 and 4 per cent in 66-67. The manufacture of these steel products involved specifications/standards in respect of quality and length different from those of the production meant for home market. This affected the rate of production at the Mills. Rolling of 18 meter length rails for export was carried out for the first time.

3.16. Explosion of Turbo Blower No. 6 on 27-10-68 had contributed to the shortfalls in the production at major units of the plant during the rest of the year.

1969-70

3.17. (i) Uneasy industrial relations situation prevailing during the period May-September, 1969 in vital areas of activity, *viz.*, Rail Transport, Steel Melting Shop and Blooming Mill.

(ii) Shortage of required quality and quantity of refractories for repairs of Open Hearth Furnances and soaking pits and casting pit refractories. Due to the above reason Open Hearth Furnance No. 2 was down for a period of 154 days for capital repairs against theis schedule of 60 days. Repairs schedules of furnances could not often be adhered to; some repairs had to be skipped over with the result that furnanuces had to operate at lower efficiency levels. Magnesite peas/powder had been a serious problem that has affected production adversely.

(iii) Sub-standard performance and lesser availability of the imported locomotives. Bulk of the available locos are due for their capital repairs after 10 years of service. The capital repairs programme got affected for lack of heavy maintenance facilities and difficulty in procurement of spares.

Durgapur Steel Plant

1967-68

3.18. The persistent labour troubles lasted with varying intensity practically throughout the year. This not only caused signficant loss of production but hindered the measures to restore the Plant to normal production efficiency in the light of the recommendations of the Pande Committee. During the peak period of labour unrest, even a modest level of production could be sustained often at grave risk to plant and equipment. Recourse had to be taken to a lay-off in the Merchant Mill from the 9th February to 12th March, 1968 as a result of continued slow-downs by a section of the workers

backed by an illegal strike. In the face of sustained labour indiscipline throughout the year, utmost restraint had to be observed to keep the plant in operation in the larger national interest.

3.19. Renovation of coke oven battery No. 3 was completed and that of No. 2 was still in progress at the end of the year. A thorough technological study revealed that battery No. 1 needed to be re-bult. Furnace No. 4 was put into operation in December, 1967.

1968-69

3.20. Except for brief periods of relative calm, the industrial relations situation remained seriously distrubed almost through out the year. There were a number of cases of interruption of work without notice, strikes, bundhs and intimidation of officers and men, the more serious of which led to a lay off of the entire workers of the Rolling Mills during September, 1968 in which the striking workers shut off the water supply to the reheating furnances of the Rolling Mills causing severe damage to the equipment.

3.21. The Management declared a lockout in the Finance Department from November, 1968 to January, 1969 after a strike launched in protest against the installation of an Electronic Computer.

3.22. Despite persistent disturbed industrial relations, the plant improved substantially upon the previous year's performance in respect of pig iron and steel ingots. The same trend was not reflected in saleable steel production mainly as a consequence of a lay-off in the Rolling Mills in September, 1968 and the resulting loss of output. Repairs to the Coke Oven battery No. 3 and the bulk of repairs to coke over battery No. 2 were completed during the year. Coke oven battery No. 1 was shut down for re-building in November, 1968. Blast furnances No. 1 and 2 were re-commissioned after relining during June, 1968 and February, 1969 respectively.

3.23. One of the major impediments to be overcome in the context of the programme of clearing the backlog of maintenance was the shortage of critical spares, mostly of imported origin. A high level team was deputed to U.K. in September, 1969 to speed up the ordering of these spares and expedite deliveries. Based on the contracted deliveries, plans have been laid for carrying out capital repairs to the major equipment Skelp Mill was commissioned in July, 1968.

1969-70

3.24. Labour troubles continued in its various forms during the year. Additionally, there were a series of illegal strikes, the worst one being on the 25th March, 1969 followed by Bengal Bundh on the 10th April, 1969, Durgapur Bundh on the 4th June, 1969 and a lightning strike in the coke ovens on the 11th December, 1969. Added to this, there was heavy absenteeism during certain months to be reckoned with which further hampered the performance of the plant.

3.25. Additional facilities in the Steel Melting Shops under the expansion scheme could not be put to use mainly due to dispute over the manning issue and other troubles. One Hearth Furnace No. 9 under the expansion scheme could be commissioned only in August, 1969. Further, mainly labour troubles and partly non-availability of spares delayed the remedial measures to the break-down in the various units caused to a certain extent due to backlog of maintenance.

3.26. To sum up the main reasons advanced for non-achievement of the rated capacity in the three Steel Plants were:

1. Labour Troubles
2. Recession
3. Shortage of refractories of required quality and in required quantity
4. Sub-standard performance and lower availability of the locomotives
5. Backlog of maintenance due to shortage of critical spares mostly of imported origin.

Some of these factors are analysed in the following paragraphs:

(i) *Refractories*

3.27. Refractory bricks of various kinds are required by the steel plants. The annual Report of H.S.L. for 1969-70 mentioned that in the year under review shortages of refractories became even more pronounced than last year and were a serious impediment to raising production. The shortage covered not only basic refractories for Open Hearth Furnaces but all types of refractories including basic, silica and fire clay refractories affecting the programme of repairs to Coke Ovens, Blast Furnances, Open Hearth Furnances, Soaking pits and Reheating Furnances. Pouring refractories used in the pit side

of the Steel Melting Shops were another category of refractories where quality deteriorated and acute shortages in supplies developed. This affected steel quality adversely and curbed production of special steels.

3.28. To ease the situation imports had to be arranged of substantial quantities of refractories. While orders were placed for Rs. 1.8 crores of refractories in 1969-70, the orders during 1970-71 were likely to be of the order of Rs. 10 crores.

3.29. In the context of the urgent need to expand the capacity in the country for the production of high quality refractories, the Central Engineering and Design Bureau had prepared a feasibility report for a Refractories Project designed to manufacture initially 60,000 tonnes of fire clay refractories, 30,000 tonnes of basic refractories and 10,000 of silica refractories per year. The Government have decided to set up a refractory plant at Bhilai with a capacity of 1,00,000 tonnes, after due consideration of the installed capacity of the refractory units in the private sector and economies of this project.

3.30. In this connection, the Committee find that as early as January, 1961 at the instance of Government, the H.S.L. entered into an agreement with a foreign firm for deputing a team of three experts for the preparation of a Preliminary Project Report for a refractory plant of sufficient capacity to meet the requirements of basic, silica and fire-clay refractory bricks for the steel plants. The foreign experts, in association with an Indian consulting firm, submitted the Preliminary Project Report on 19th December, 1961 at a cost of Rs. 1.06 lakhs which envisaged the establishment of the refractory plant at Bhilai for the manufacture of 80,000 tons of fire-clay bricks and 45,000 tons of basic bricks.

3.31. On 26th December, 1961, the H.S.L. appointed a Technical Committee to look into the Preliminary Project Report. The Committee recommended in March, 1962 the establishment of the proposed refractory plant. One of the members of the Committee had, however, observed in his minute of dissent that there was no justification for an additional plant from the stand-point of quantity, quality or cost.

3.32. In July, 1962 the H.S.L. approached Government for Permission for the preparation of a Detailed Project Report. In March, 1964 Government accorded the necessary permission and in June, 1964 the H.S.L. entered into an agreement with the foreign firm for the preparation of the Detailed Project Report at a cost of Rs. 15.98 lakhs.

3.33. The Detailed Project Report was received in May, 1965 and envisaged the setting up of a plant with capacity of 1,84,000 M. tons of magnesite and fire-clay products per year at an estimated cost of Rs. 133.24 millions.

3.34. In June, 1965, the H.S.L. constituted another Technical Committee to examine the Detailed Project Report. This Committee also recommended in August, 1965 the setting up of refractory plant at Bhilai at a cost of Rs. 158.6 million.

3.35. While examining the report of the second technical Committee it was noticed by the H.S.L. that some aspects like the necessity for the suggested capacity vis-a-vis the indigenous capacity in the country and the details about the availability of the raw materials had not been gone into by it in detail. Meanwhile, the Indian Refractories Makers' Association made a representation to Government that they would meet most of the requirements of the steel plants themselves and that the establishment of another factory in the Public Sector was not necessary. In view of this and also of the facts that demand assessment had to be re-examined and there was no certainty about the raw material base, Government decided on 19th September, 1966 to drop the proposal of setting up the refractory plant after incurring a total expenditure of Rs. 17.04 lakhs on the preparation of Preliminary and Detailed Project Reports for the proposed refractory plant.

3.36. The Committee were informed by H.S.L. that "the Technical Committee appointed by H.S.L. to consider the Detailed Project Report prepared by Soviet side strongly recommended establishment of such a plant. H.S.L. also requested that such a plant should be set up in public sector to cater to the Steel Plants. In a meeting held in December, 1965 in which representatives of Ministry of Iron and Steel, Ministry of Finance, Ministry of Industry and DGTD participated, it was decided that the project will be dropped because of a crash programme undertaken by refractory industry during the period 1962-65 due to which they felt that the refractories industry in the private sector would be able to meet the demand during the Fourth Plan period and beyond till a target of 13 million tonnes steel production. This decision to drop the proposal was accordingly communicated by the Government to H.S.L. However, H.S.L. has been firmly convinced that without the proposed refractories plant, the steel plants will run into serious difficulty due to the inability of private sector refractories industry to meet the growing demands of the steel industry. This view has been fully justified by the pre-

sent serious situation in availability of refractories for the steel plant."

3.37. The Committee were, however, informed by the Ministry of Steel & Heavy Engineering that the decision not to set up a refractory plant in the public sector was taken in December, 1965 in consultation with the concerned Government agencies. The assessment of the situation made at that time indicated that, excep for carbon/graphite refractories, there was sufficient capacity in the country to meet the demand for refractories by the iron and steel industry during the Fourth Plan period. The demand for carbon/graphite refractories was very small which would not justify the setting up of a refractories plant at the cost indicated by the USSR Government.

3.38. The decision not to set up the refractories plant had been taken by Government on the basis of its own assessment, although the Indian Refractory Makers Association had also represented to Government that the creation of additional capacity would not be justified.

3.39. According to the Ministry it appears that the indigenous refractory makers have of late not been able to meet the requirements of the Steel Industry mainly for the following reasons:—

(A) During the period of recession, the refractory industry suffered some set-back. Some capacity was either closed down or did not go into operation. Further, the normal growth otherwise expected, did not take place.

(B) Larger size units of coke ovens blast furnaces, Steel Melting Shops etc., installed during expansion and new facilities call for more strict specifications which refractory manufacturers have not been able to meet.

(C) Specialised requirements such as basic refractories and Silica bricks have increased. The former are required for the introduction of oxygen lancing in Open Hearth Furnaces and the latter not only for new coke ovens at Bokaro and Bhilai but also for rebuilding of coke ovens at Durgapur and a new one at TISCO. After a period of stagnation during recession the industry was not able to gear itself immediately to meet this sharp increase in demand.

(D) Labour unrest/strike in some units.

3.40. The Committee view with concern the shortage of refractories required by the Steel Plants which according to HSL was a serious impediment to raising production. In spite of long established refractory industry in India HSL to import substantial quantities of refractories at considerable cost. The orders for imports during 1970-71 were likely to be of the order of Rs. 10 crores. The Committee, however, feel that with proper planning and foresight it should have been possible to place orders for the import of refractories well in time to avoid shortfall in production due to the shortage of refractories.

The Committee have also been informed that for the production of high quality refractories, the Government have decided to set up a refractory plant in the public sector at Bhilai with a capacity of 1,00,000 tonnes after due consideration of the installed capacity of the refractory units in the private sector and economies of this project. It is unfortunate that an earlier proposal to set up a refractory plant of sufficient capacity to meet the requirements of the steel plants, was dropped by Government in December, 1965 after incurring an expenditure of Rs. 17.04 lakhs on the preparation of Preliminary and Detailed Project Reports.

3.41. According to the Ministry, the assessment of the situation made at that time indicated that except for carbon and/or graphite refractories there was sufficient capacity in the country to meet the demand for refractories by the Iron and Steel Industry during the Fourth Plan period. On the other hand, the Committee were informed by HSL that they were firmly convinced that without the proposed refractories plant, the steel plants will run into serious difficulty due to the inability of private sector refractories industry to meet the growing demands of the steel industry for the refractories of required quality. The view of HSL has been justified by the present serious situation caused by the non-availability of refractories of the requisite quality and quantity for the steel plants. The Committee have not been infromed of the reasons which led the Government to a conclusion contrary to their own earlier decision and the views of the H.S.L. The Committee have been informed that the decision for not setting up the refractories plant had been taken by Government on the basis of its own assessment although the Indian Refractory Makers Association had also represented to the Government that the creation of additional capacity would not be justified. The Committee, however, have the apprehension that the decision of Government was largely influenced by the representation of Indian Refractory Makers Association rather than

by their own realistic assessment of the prospective demand and supply for the refractories after taking into consideration the views of H.S.L. The result has been that there was loss of production of steel due to shortage of refractories and avoidable expenditure on import of refractories. The Committee note that the Government have taken a decision to set up a Refractory Plant in the Public Sector and are of the opinion that there is need for making realistic demand surveys befor deciding to set up a project or otherwise in future so that the projects are set up in accordance with the realistic demands.

(ii) *Locomotives*

3.42. Another reason for shortfall in production in Bhilai Steel Plant was stated to be sub-standard performance and lesser availability of the imported locomotives, bulk of which were due for capital repairs after 10 years of service. The capital repair programme could not be adhered to due to lack of heavy maintenance facilities and difficulty in procurement of spares. These were now being installed as supplmentary to 2.5 million tonne plant.

3.43. The Committee find that this matter was also considered by the Committee on Public Undertakings (Third Lok Sabha) in 1966 in their 30th Report on Bhilai Steel Plant. At that time the Committee were informed taht the 37 Russian Diesel Locomotives purchased for one million tonne stage were found unsatisfactory and spare parts had constantly to be obtained from Russia for their repairs. The maintenance cost of these locomotives was also extremely high i.e. Rs. 80,000 per annum as compared to Rs. 13,000 per annum for other locomotives. The operational efficiency of these locomotives was also low. For the 2.5 M.T. expansion stage the plant refused to purchase these locomotives and 19 locomotives were purchased from Czechoslovakia.

The Committee enquired from the Ministry whether any adverse reports about Russian locomotives had been received by the authorities at the time of the purchase of these locomotives. They were informed that these locomotives were part of the total equipment for the steel plant supplied by U.S.S.R. No report either adverse or otherwise about these Russian locomotives was availabl at that time.

Information was also sought from the Ministry in writing whether the type of locomotives supplied to Bhilai Steel Plant were in use in U.S.S.R. Steel Plants and were the Russians satisfied about

their performance and whether the Russians had supplied these types of locomotives to other countries also. The Ministry, however, replied in December, 1970 that "no information is available."

3.46. Subsequently the Ministry informed in July, 1971 that the Soviet authorities had reported that at the time these locomotives were supplied, they had been in use in the U.S.S.R. for two three years. They could not, therefore, be considered to be of an old model. They were reported to have worked satisfactorily in the U.S.S.R. Soviet authorities had also informed that there was no performance report from the Steel Plants in U.S.S.R. as at that time these locomotives had been used only for 2-3 years. There were, however no complaints about their performance.

The Committee were also informed by the Ministry that these locomotives were stated by Soviet authorities to be still in use in U.S.S.R. although gradually they were being replaced by more modern locomotives. It is understood that in U.S.S.R. the Locomotives had been working satisfactorily without repowering for 5 to 10 years. If a locomotive worked satisfactorily for 8 to 9 years, in U.S.S.R. it was considered to have performed well. After 12 years some replacement etc., would be necessary.

It was further stated that defective performance of thse locomotives was confiend to their diesel engines. Otherwise, the locomotives were found to be sturdy. The advice of Shri Suri, Ex-Director Central Mechanical Engineering Research Institute and of the Research Design and Standards Organisation (R.D.S.O.) of the Indian Railways was sought. Detailed studies were carried out on the basis of which it was decided to repower locomotives with CAT/D-379 diesel engines. The two locomotives which were so repowered in the first half of 1970 had been performing satisfactorily. Further, a decision had been taken to repower the remaining U.S.S.R. locomotives with MAN diesel engines on the advice of Resarch Design and Standards Organisation, Lucknow. Orders for two such engines had been placed on Gardenreach Workshop, Calcutta. Of the 37 U.S.S.R. locomotives, 18 whose performance was not satisfactory, are planned to be repowered in this manner. The other locomotives whose performance was better, will be used without any repowering.

3.47. The Committee are unhappy to note that even after it became apparent that the sub-standard performance of these locomotivs was creating bottleneck in internal transport, no timely measures were taken to improve the position. Although about four

years have elapsed since the Committee examined the working of the plant earlier, the same reason namely inadequacy of locomotives for internal transport is being advanced as one of the reasons for low production. The Committee are distressed to find that it was only in the first half of 1970 that two of these locomotives were repowered with CATD-379 diesel engines to improve their performance on the basis of detailed studies carried out by Shri Suri, ex-Director of Central Mechanical Engineering Research Institute. The Research Design and Standard Organisation of Indian Railways have suggested the replacement of existing locomotive engines by MAN diesel engines. The Committee are unable to understand why the Central Mechanical Engineering Research Institute/the Research Design and Standards Organisation of Indian Railways could not be consulted earlier to obviate the Transport difficulties which have for several years been adversely affecting the working of Bhilai Steel Plant. The Committee would urge that the remedial action in the form of repowering the locomotives may be taken expeditiously if justified by the result of performance of the locomotives which have been repowered in early 1970. They would also like to be informed of the action taken and the improvement effected in the performance of the locomotives as a result thereof.

(d) Durgapur Steel Plant—Wheel and Axle Plant

3.48. One of the units of the Durgapur Steel Plant in which the production has been much below the rated capacity is wheel and axle plant. The following table shows the production performance of the plant during the last six years:—

(In '000 tonnes)

	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70
Rated capacity	57	57	57	57	66	72
Actual production	33	32	21	20	16	11
Age of actual production to rated capacity . .	58	56.1	36.8	35.1	24.2	15.3

It would be seen from the above table that the production has been constantly going down and was only 15.3 per cent of the rated capacity in 1969-70.

3.50. While examining the working of Durgapur Steel Plant in 1965-66, the Committee on Public Undertakings commented upon

the performance of the Wheel & Axle Plant also. In para 34 of their 29th Report, the Committee observed as follows:—

> "The Committee are concerned over the low production in the Wheel and Axle Plant. They understand that certain measures have been taken to improve the working of the Plant, e.g. installation of Electric Furnace in the 3.5 million tonnes expansion for better control over the quality of steel, provisions of extra rough machining capacity and rectification lathe, etc. However, considering that it is more than three years since the plant was commissioned, the time taken in realising the deficiencies and rectifying them has been too long. The performance of the plant has not been satisfactory. This was also admitted by the Secretary of the Ministry. The Committee urge that immediate steps should be taken to improve the working of the Plant and to achieve the rated capacity."

3.51. While furnishing the replies showing action taken on the recommendation of the Committee, the Government informed the Committee in January, 1968 that

(i) The recommendations of the Pande Committee in this regard had been accepted and were under implementation.

(ii) Some additional facilities had already been ordered and were expected to be installed shortly.

(iii) Action was being taken to augment the supply of Wheel Steel in pursaunce of a Report submitted by two foreign exparts in January, 1968.

3.52. It was expected that production would improve after the above steps were implemented. Meanwhile, as an interim measure, the steel making facilities at Alloy Steel Plant were also pressed into service.

It is however, noticed that instead of any improvement there was further deterioration in the production performance of this plant. The total tonnage of wheel sets assembled had come down from 33,000 tonnes in 1964-65 to 11,000 tonnes in 1969-70 and the percentage of rated capacity achieved during the corresponding period came down from 58 per cent to 15.3 per cent.

3.53. The low production in Wheel & Axle plant also affected the production of rail-coaches and wagons. During the course of oral evidence the representative of the Ministry admitted that the low production in the Wheel & Axle Plant 'had badly affected the Railways'. As against their annual requirements of about 45,000 wheel sets the number of wheel sets actually produced during the year 1967-68 to 1969-70 was as follows:—

Year	Numbers produced
1967-68	15,420
1968-69	12,732
1969-70	9,040

3.54. The Committee were also informed by the Bharat Earth Movers Ltd. that the only major item which was being imported by their Rail coach Division was the wheel sets. An experimental order for development and supply of wheelsets for 300 coaches (for one year's requirements) had been placed on Durgapur Steel Plant on 22nd July, 1968. However, they had received so far wheel-sets for two coaches only. Since there is insufficient capacity in the country for manufacture and supply of wheelsets required by the Railway Board and the integral coach factory, the Railway Board has been releasing foreign exchange for import of the same.

3.55. The Committee enquired whether the measures suggested by the Pande Committee and by the foreign experts were actually implemented. They were informed that even though various measures recommended by the Pande Committee and suggested by the foreign experts were implementd it has not been possible to increase the production of wheel and axle plant on account of the labour troubles in the wheel and axle plant itself and the general disturbed situation in the plant. In this context, it may be mentioned that in an integrated steel plant the overall conditions also have an important bearing on the performance of a particular unit. As it has not been possible to increase the steel production, the performance of the wheel and axle plant has also been correspondingly less.

3.56. The Committee are not satisfied with the reasons advanced for abnormal low production in wheel and axle plant. They agree that in an integrated steel plant the overall conditions have an important bearing on the performance of a particular unit. The Committee, however, find that the production in 1969-70 in the wheel and axle has only been about 15 per cent of the rated capacity.

whereas the production of steel ingots was about 60 per cent of the rated capacity. The overall low production of steel in Durgapur Steel Plant could therefore hardly explain the unsatisfactory production performance of the Wheel and Axle Plant. The low production in this plant not only resulted in loss to H.S.L. but also affected the production of railcoaches and wagons. There was also drain of foreign exchange on the import of wheelsets which became necessary due to low production in this plant. One of the reasons for low production as pointed out by Audit was that "there was lack of control over the production of ingots of required sizes." The result was that these ingots did not give the required number of wheel blocks and consequently there was lower yield and lower output of finished wheels. This matter has been analysed in detail in the following paragraphs. The Committee recommend that the Ministry should make a detailed enquiry into the working of this unit to find out the real reasons for abnormal low production and remedial measures should be taken to improve production performance.

Lack of control over the production of ingots of required sizes

3.57. In the Audit Report (Commercial), 1966 it was pointed out that the Wheel and Axle Plant of the Durgapur Steel Plant producer railway wheels from steel ingots manufactured for the purpose in one of the open Hearth Furnaces. Normally one ingot of a size of 90" to 96" is expected to yield 3 wheel blocks of 23 1|8" to 24 7|8" allowing for a wastage of 15" to 26".

3.58. Out of 47,561 ingots used for wheel making during the period from January, 1963 to April, 1965, 10 per cent to 57 per cent of ingots were deficient in length, with the result that only 1,25,260 wheel blocks could be made during that period as against the normal yield of 1,42,683 blocks. Out of the remaining 17,423 odd-size blocks weighing 16,726 M. tons, blocks weighing 2,424 M. tons had to be remelted at a cost of Rs. 2.25 lakhs, while another quantity of 10,747.202 M. tons was sold at a loss of Rs. 14.84 lakhs. The bulk of this expenditure could have been avoided if ingots of the proper size had been manufactured.

3.59. In this connection, the Ministry informed Audit in August, 1965 that "for any new Plant, the first few years are the adjusting time" and that, although "all precautions are normally taken to get the maximum sized ingots", there were certain practical difficulties for which optimum results could be obtained.

3.60. The Committee enquired the reasons for the production of short length steel ingots. They were informed that Wheel Steel is made in Open Hearth Furnance No. 8(H) and then through teeming ladles steel is poured into fluted ingot moulds. There is shrinkage of metal on solidification reducing the length of the ingot. In this process ingots of short length to some extent are inevitable. Further, the wheel ingots are broken on a breaking machine and for getting the 3rd cheese from an ingot certain length of metal (18" to 20") has to be discarded (otherwise balancing cannot be done). This top discard accounts for 17-18 per cent. Norm of yield from a wheel ingot, taking into consideration the manufacturing process has been fixed at 77 per cent. Comparative figures for the last 3 years are:

Description	norm	1967-68	1968-69	1969-70
%Yield of cheese fromingot	77	78.22	68.00	73.00
%total loss	23	21.78	32.00	27.00
a) % top miscard .	17.50	18.70	18.56	18.96
b) % rejection (total)	5.50	3.08	13.44	8.04
i) Shortlength .	Kept separately	1.00	6.28	1.14
ii) Steel . . .	4.50	—	5.55	6.05
iii) Others	—	—	1.61	0.85

31.61. The major reasons for the arising of short ingots are:—

(i) Cast size variation resulting in short poured ingots in the last set of eight moulds.

(ii) Non-uniform rise of metal in the moulds.

(iii) Trumpet leakages.

3.62. The Committee were also informed that the reasons established on the basis of investigation by H.S.L. were also confirmed by the U.K. technicians M/s. Kirk and Monkhouse during their short stay in the plant in connection with the manufacture of wheels and axles.

After the alteration of the moulds and tackles there has been considerable improvement. However, their still short yield as compared to norm. Controlled teeming mould coating with soot preheating of the moulds, preheating of bottom pouring refractories, controlled colling, are some of the measures being taken to get the required yield.

3.63. In reply to a question the H.S.L. admitted that 'the difficulty of short length ingots is not of a perennial nature'.

3.64. The Committee regret to note that even after nine years of the commissioning of the wheel and axle plant, the Management had not been able to produce the steel ingots of required sizes for wheel making resulting in loss of production of wheel sets. There is also avoidable expenditure as the wheel blocks of short length had to be treated as scrap and remelted or sold. It was admitted that the difficulty of short length ingots was not of a perennial nature. That being so it is imperative that urgent and effective measures are taken to avoid the production of ingots of short length to get the required yield of wheels. The Committee view with great concern the continuous loss of production on account of short length ingots and would like to be informed of the remedial steps taken and the results achieved.

IV

COSTING SYSTEM AND COST OF PRODUCTION

Costing system

4.1. The H.S.L. follows the system of process costing. A monthly cost sheet is prepared for each of the production or processing departments including by-products departments and for the mines and quarries in the cases of Rourkela and Bhilai Steel Plants. It was pointed out by Audit in their Audit Report (Commercial), 1966 that there was no uniform and co-ordinated system of costing followed by the three steel plants.

4.2. The Committee enquired whether uniform and coordinated system of costing had since been introduced in the three Steel Plants and the deficiencies in costing method pointed out by Audit rectified. They were informed that a uniform system of costing was evolved, on the model of the system followed by the British Iron & Steel Federation, for implementation in HSL Plants as early as 1960. The points raised by Audit in their report related to minor details or with regard to the periodicity etc. for which the cost estimates were prepared by different units, and not to the basis of compilation of costs. With the implementation of Standard Costing System with effect from April, 1970, a further stride has been made towards achieving uniformity.

Cost of Production

4.3. The following table shows the trend of actual cost of production of ingots steel for each plant (works cost excluding depreciation and interest) during the last five years expressed as a percentage of Project Report estimates:

Actual Cost as percentage of Project Report Estimates

	1965-66	1966-67	1967-68	1968-69	1969-70 Provisional
Bhilai Steel Plant . .	127	129	142	151	166
Durgapur Steel Plant	145	161	193	203	197
Rourkela Steel Plant . .					
(a) Open hearth process	179	191	220	216	264
(b) L. D. process	191	212	250	251	259

4.4. It will be seen from the above table that the actual cost of production has been much higher than the Project Report estimates. There has also been substantial increase in the cost of production during the last five years.

4.5. In this connection, the Committee also called for item-wise break up of cost of production of ingot steel at each of the three Steel Plants during the year 1965-66 to 1969-70. From the figures furnished by the Ministry it is seen that the increase under each head in 1969-70 as compared to 1965-66 had been as follows:—

Plant	Productive materials	Operating cost	Overheads	works cost
BHILAI				
Extent of increase per tonne (Rs.);	59·90	10·16	4·17	74·16
Percentage to toal increase .	81%	14%	5%	100%
DURGAPUR . . .				
Extent of increase per tonne (Rs.);	45·24	34·38	10·78	90·40
Percentage to total increase .	50%	38%	12	100%
ROURKELA				
Extent of increase per tonne (Rs.);	83·06	13·36	(—)1·07	95·35
Percentage to total increase .	87%	14%	(—)1%	100%

4.6. It is extremely disappointing to note from the above table that out of the total increase in works cost of ingot steel during the last five years, the increase due to productive materials alone has been to the extent of 87 per cent, 81 per cent and 50 per cent in Rourkela, Bhilai and Durgapur Steel Plants respectively. The Committee have pointed out in Chapter V of this Report that the cost of production of raw materials in the captive mines of Rourkela and Durgapur Steel Plants has been very high and in some cases it was even higher than the cost of materials purchased from outside sources. The rate of consumption of the raw materials has also been higher than the norms fixed. Thus strict control on the cost and usage of raw materials, refractories, etc. can go a long way in controlling the cost of production.

Another major factor leading to higher cost of production is the increase in operating cost. While in Rourkela and Bhilai Steel Plants, 14 per cent increase in cost of production due to this factor in case of Durgapur this was as much as 38 per cent. The Committee have discussed in detail the question of overstaffing and lower productivity in the Steel Plants in Chapter VI of this Report. The highest incidence of operating cost in Durgapur Steel Plant is due

to lowest productivity in this plant as compared to the other two plants. There is urgent need to raise the labour productivity in the Steel Plants to reduce the incidence of operating cost.

4.7. The Committee also enquired as to how did the cost of production in the steel plants of HSL compare with that in private sector steel plants in India and in other major steel producing countries of the world. The Secretary of the Ministry informed during evidence as follows:—

> "I would submit that it is wrong to presume that the cost of production in Hindustan Steel Plants is high comparatively. What is high is the depreciation and the interest, because the capital cost of Hindustan Steel is much higher than the capital cost of the private steel plants. Secondly, these private plants being old, there are a large number of cases where equipment has been completely depreciated. They do not have to provide for depreciation anything to the same extent as the Hindustan Steel have to do. I would like to give you the figures which we have. We have figures for 1968-69 for our plants. We have also got the figures for the private sector. The works cost of production in Bhilai is Rs. 286.30 per tonne. Open Hearth from Rourkela—Rs. 316.75. Then comes TISCO, Rs. 320. Then comes L.D. Process, Rourkela, Rs. 323. Then comes Indian Iron & Steel, Rs. 336.95 and the highest in this case is Durgapur—Rs. 355.19."

> "We do not have the cost of production of other plants but selling price is a good index. The selling price in India minus the excise duty—there is no excise duty in any other country—is lower than most of the countries. By and large in U.K., U.S.A., E.C.M. countries and Japan the prices are higher. So, it shows that they are selling their steel within their own country really at a higher price. They would not do so unless their cost of production is higher."

4.8. Subsequently in a written reply also the Ministry stated that since data regarding cost of production are regarded as confidential by the Steel Companies no comprehensive study relating to cost of production of steel in India and in various countries like Japan, U.S.A., U.K. and U.S.S.R. could be made. Data are, however, available regarding the works cost of production ingot steel by plants

in India in 1968-69 and this has been given in reply to a Lok Sabha question on March 24, 1970:—

	Ingot cost of production per tonne
TISCO	Rs. 320.00
IISCO	Rs. 336.95
Bhilai	Rs. 286.31
Rourkela O.H.	Rs. 316.75
Rourkela L.D.	Rs. 323.62
Durgapur	Rs. 355.19

Some idea of the cost of production of various steel products in certain foreign countries can be had by comparing the ex-works prices in India per metric tonne and domestic prices in foreign countries since excise duties are almost non-existent on steel products in other countries.

4.9. The Ministry furnished the following figures in respect of prices of steel in India and abroad:—

Ex-works prices in India and domestic prices in Foreign Countries in July, 1970.

(Rs. per metric toone)

	India	U. K.	U. S. A.	Japan
Billets	499	686	881	
Bars and Rods	635	858	1184	
Wire Rods	655	831	1272	
Angles (Medium)	684	838	1147	896
Channels (Heavy)	684	—	1147	1063
Beams/Joists	754	805	1147	1125
C.R. Sheets	1319	1082	1488	1021

4.10. According to the Ministry, it will be seen from the above table that for all the products foreign prices are generally higher. Only in the case of C.R. Sheets, Indian prices are higher than in U.K. and Japan, but are steel lower than in U.S.A.

4.11. The Committee are unable to agree with the view of the Secretary of the Ministry that since the domestic selling prices in some other countries are higher than the ex-works price of Steel in India. The cost of production in these countries could be considered as high. It will be incorrect to draw any conclusion about the comparative cost of production in India and other countries by comparing the ex-works prices in India with the domestic prices in other countries for a particular month. For any meaningful conclusion, the ex-works prices should be compared with the ex-works prices in other countries.

4.12. The Committee would also like to point out that while comparing the cost of production in H.S.L. with that of other producers of Steel in India in the private Sector, it is imperative to take into account the relatively higher degree of sophistication of the modern plants of H.S.L. which are expected to yield higher production at a lower cost as compared to the old plants belonging to the Private Sector.

Standard Cost

4.13. The H.S.L. introduced the standard system with effect from April, 1970 in all three steel plants. The Committee were informed that the system of standard costing evolved by the British Iron & Steel Federation in U.K. had been accepted as a base to develop standard cost procedures and practices in H.S.L.

4.14. The following table indicates the actual works cost (excluding depreciation and interest) for each product as a percentage of standard cost for 1969-70 in respect of Bhilai, Durgapur and Rourkela Steel Plants:—

BHILAI STEEL PLANT

	Percentage of actual cost to Standard Cost
Coke	108
Hot Metal	112
Steel Ingot	107
Blooms	110
Billets	110
Rails & Structurals	111
Merchants Products	110
Wire Rods	112

DURGAPUR STEEL PLANT

Products	Percentage of actual cost to Standard Cost
Coke	102
Hot Metal	110
Steel Ingot	106
Blooms	116
Billets	112
Joist	120

Channel .	111
Bearing Plate .	109
Rounds .	111
Angles .	108
Machined Wheel	181
Machined Axle	179
Wheel Set	184

ROURKELA STEEL PLANT

Percentage of Actual Cost to Standard Cost

Products	
Coke . .	99
Hot Metal	107
Ingot—O.H. .	100
Ingot—L. D. . .	109
Slabs	107
Plates . . .	114
H. R. Coils	108
H. R. Sheets & Plates	110
C. R. Coils . . .	108
C. R. Sheets	107
Tin Plates . . .	107
Galvanised Sheets . . .	109
Pipes (Average)	94

4.15. It will be seen from the above tables that the actual cost of production for each item in 1969-70 was even higher than the standard cost recently fixed by H.S.L.

4.16. The main reason for the actual cost being higher than the standard cost was stated to be shortfall in production.

4.17. The Committee enquired the steps taken to reduce the cost of production. They were informed that the following steps were being taken in this regard.

(i) In a capital intensive industry like steel the most important step that can be taken to reduce the cost of production is to increase the level of operations so that incidence of fixed charges per tonne is reduced to the minimum. With that objective in view

balancing facilities are being provided at all the steel plants and technological improvements are being introduced. Incentive Bonus Scheme is being revised and preventive maintenance schedules are being improved upon.

(ii) The recent long-term contracts entered into with the coal suppliers envisage payment on the basis of quality of coal actually received. It is hoped that this will ensure better quality of coal and contain cost in the long run.

(iii) To improve the quality of ore beneficiation plant has been installed at the captive mines. This will also enable use of higher proportion of ore from the captive mines.

(iv) Constant care is also taken to improve the yield of the end products and usage of raw materials, refractories, etc.

(v) Norms of consumption etc. have been fixed and variations are examined by the management.

(vi) Attempts are being made to reduce inventories and working capital.

(vii) The Management reporting system has been streamlined so that areas of weakness are brought to the notice of the management promptly and actions are taken immediately thereafter.

4.18. The need to reduce the cost of production of steel cannot be over-emphasised. Apart from affecting the financial working of the plant, the high cost of Steel produces adverse repercussions on the manufacturing cost of the products based on steel. The Committee hope that the proposed measures mentioned above would help to bring down the cost of production. It is essential to keep a constant watch on the cost of production. The variations between the standard cost and the actual cost should be analysed periodically and remedial measures taken in cases where the cost of production is found to be higher than the standard cost.

V

SOURCES OF RAW MATERIALS AND THEIR CONSUMPTION

5.1. Raw materials constitute a major element in the cost of production of iron and steel. It will be seen from the following table that raw materials accounted for 56 to 65 per cent of the works cost of steel ingots in the three steel plants of H.S.L.

	Percentage of raw materials to works cost
Bhilai Steel Plant	64
Durgapur Steel Plant . . .	56
Rourkela Steel Plant	65

5.2. The availability of raw materials in required quantity and of required quality, its cost and rate of consumption are therefore of vital importance for the successful working of a steel plant.

(a) Sources of Procurement of raw materials

5.3. The main raw materials required by a steel plant are coal, iron ore, lime stone, dolomite and manganese ore. In the case of HSL the coal required for all the plants is procured from various collieries both in the public and private sector. The HSL has however, got its own washeries for washing coal.

For other major raw materials the Bhilai and Rourkela Steel Plants have their own captive mines. Bhilai Steel Plant is virtually self-sufficient for all raw materials excepting for manganese ore which is purchased from market mines located in Balaghat area of Madhya Pradesh. Similarly, Rourkela Steel Plant also meets major part of requirements of iron ore and limestone as well as part of requirements of manganese ore from their own captive mines. High grade iron ore from MMTC (Barajamda Section) and small quantity of BF ((Blast furnace) grade limestone from market mines (Birmitrapur and Chaibasa) are being purchased. Manganese Ore is also purchased through MMTC from Barajamda-Banspani area.

5.4. The captive Mines of BSP and RSP are as follows:—

BHILAI STEEL PLANT

	NAME OF CAPTIVE MINE	*RAW MATERIALS*
1.	Rajhara Mechanised Mines Jharandalli (Semi-Mechanised) Dalli (Manual) Kokan (Manual) Aridongri (Manual)	Iron Ore
2.	Nandini	Limestone
3.	Hirri	Dolomite
4.	Danitola	Quartzite
5.	Katni	Bauxite Fireclay
6.	Chandidongri	Fluorspar
7.	Kumhari	Runnersand
8.	Balaghat	Manganese

ROURKELA. STEEL PLANT

Barsua	Iron Ore (B.F. Grade)
Kalta	Iron Ore (High-Grade)
Purnapani	Limestone (B. F. - Grade)
Satna	Limestone (SMS-; Grade)
Dengura	Manganese Ore

5.5. In the case of Durgapur Steel Plant Iron ore comes from Bolani Ores Limited which is considered as a captive source and limestone from Barajamda Section through MMTC. Requirements of dolochips in the past were met from market mines but presently the supplies have been tied up from Hirri Dolomite mines of Bhilai Steel Plant.

5.6. The major raw materials imported by HSL are tin ingots, zinc, sulphur, nickel, cobalt and various ferro alloys. The problems in respect of certain important raw materials are analysed in the following paragraphs.

Coal

5.7. The Committee enquired whether HSL experienced any major difficulty in procuring raw materials. They were informed that no difficulties were experienced in procuring these materials other than coal where difficulties were being faced on account of quality as well as price.

5.8. The question of quality of coal received by HSL was considered earlier also by the Committee on Public Undertakings in their 29th Report (3rd Lok Sabha) on Durgapur Steel Plant. The Committee observed that:

> "the high ash content in the coal results in lower blast furnace output and consequently higher cost of production. The

Committee desire that some suitable solution should be found in order to ensure supply of required quality of coal to the Steel Plants."

5.9. This matter was also considered by the Committee appointed by Government under the Chairmanship of Dr. Harekrushna Mahtab to consider the cost of production of steel. In their Report, the Committee observed as follows:—

"Another factor contributing to the coal cost in the steel works (as well as in the washeries) is that coals received by them have been one or two grades lower than the grades for which payments are made to the suppliers on the basis of the grading made by the Coal Controller, resulting in substantial overpayments. This situation needs immediate rectification. We have recommended that the process of regrading which now reportedly takes as much as a year should be considerably speeded up. Further, having regard to the manner in which attempt at introducing joint sampling at destination have been frustrated so long in the absence of a legal backing for this measure, it is recommended that Government should arm itself with statutory powers to make joint sampling at the destination obligatory on the coal suppliers."

5.10. In pursuance of the recommendations of this Committee the Government had set up a Committee under the Chairmanship of Shri K. S. R. Chari, Coal Mining Adviser to evolve a method of sampling acceptable to both the coal and the steel industries and, in the event of failure to find an acceptable formula, to recommend formula which in its judgement would be fair to both the industries. The Report of the Committee was submitted to the Government on the 31st May, 1969.

5.11. The Committee were informed during the course of oral evidence by the representatives of H.S.L. that in pursuance of the recommendations of this Committee the procedure had been changed. Now there was analysis of the quality of the coal both at the despatch and the receiving ends. The payment for the coal was now made according to the quality of coal they got and not according to the quality supposed to be at the time of mining. They had entered into agreements with the suppliers for fixed quantity of coal and this would enable them to have long term planning for consistent production.

5.12. The Committee was also informed subsequently in a written reply that after long terms contracts, linking price with quality and

sampling and analysis both at loading points and destination, have been entered into with major coal suppliers, the difficulties on account of quality and price have been largely overcome.

5.13. The Committee trust that the linking of price with quality coupled with sampling and analysis of coal both at the receiving and despatching points would help in exercising stricter check on consumption of coal and improving the production performance of the Steel Plants. The question of coke consumption has been discussed in detail in paras 5.59 to 5.71 of this Report and the Committee's detailed recommendations are contained therein.

(b) Performance analysis of captive mines showing production performance and cost of production.

Iron ore:

(i) *Darsua Iron Ore Mines, Rourkela Steel Plant*

5.14. The requirements of iron ore for Rourkela Steel Plant are mainly met from its own completely machanised captive mine at Barsua. A Beneficiation Plant has also been set up in 1968 to improve the quality of ore. The production of iron ore at Barsua Mines during 1965-66 to 1969-70 was as follows:—

(In lakhs of tonnes)

Year	Rated capacity	Total production	Percentage	Lump		Fine		Waste	
				Actual output	Percentage column 3	Actual output	Percentage to column 3	Actual output	Percentage to column 3
1	2	3	4	5	6	7	8	9	10
1966-67	28.03 per annum	16.53	55.40	5.74	34.73	4.838	29.22	5.96	36.05
1967-68	do.	11.21	38.57	4.19	37.38	4.13	36.84	2.89	25.78
1968-69	do.	12.31	43.92	4.70	38.18	4.93	40.29	2.65	21.53
1969-70	do.	10.61	37.09	4.57	43.1	3.95	37.2	2.9	19.40

5.15. It will be seen from the above figures that the total production was much less than the rated capacity. The production had also come down from 55 per cent of the rated capacity in 1966-67 to 38 per cent in 1969-70.

5.16. The reasons for the low production were stated to be as follows:—

(i) Development work and longer haulage lead;

(ii) Non-availability of dumpers, accumulation of fines in the ore sidings;

(iii) Restriction imposed on the despatch from the Mines due to industrial unrest at Rourkela.

5.17. As regards non-availability of dumpers it was stated that timely action was taken to place orders for Dumpers in the year 1965-66 but these were received in the year 1969. This was mainly due to the reason that initially the foreign exchange was not available and later M|s. Bharat Earth Movers, the manufacturers of Dumpers took time for delivery of the dumpers.

5.18. The Committee, however, find from the information furnished by the Bharat Earth Movers Ltd. that the H.S.L. had placed order for only one dumper in June, 1965 and this was delivered to H.S.L. in 1965 itself. The orders for four other dumpers were placed only in August, 1967 and were scheduled to be supplied originally in July, 1968. These were actually delivered by Bharat Earth Movers Ltd. in January and April, 1969.

Cost of Production

5.19. The low production at Barsua Iron Ore Mines also affected the cost of production. The Project Report estimated the cost of production of lump ore and fines at Rs. 5.98 per ton F.O.R. Barsua (excluding charges on account of Central Administration, interest on capital and income tax) on the basis of annual production of 30 lakh tonnes. In July, 1964 the Management also fixed the standard cost of production for lump ore and fines. The following table shows the actual cost of production of lump ore as a percentage of the standard cost during the years 1966-67 to 1969-70:—

Year	Cost of production of lump ore as a percentage of the standard cost
1966-67	150
1967-68	221
1968-69	206
1969-70	213

5.20. It will be seen from the above table that the cost of production during the last three years was even more than double of the standard cost fixed by Management itself.

5.21. The reasons for the higher cost of production were stated to be as follows:—

(i) Lower level of production.

(ii) Lower percentage of lump ore.

(iii) The increased cost of salary and wages, stores, overheads etc. as compared to the amount assumed while fixing the standard. The wage bill at Barsua Unit during 1969-70 was Rs. 4.4 millions as against Rs. 2.4 millions assumed in fixing the standard cost.

5.22. It was also stated that the cost of production can be brought down only by improved production (but not upto the standard cost in view of the escalation in costs due to wage board award, general increase in prices etc. after the standards were fixed).

5.23. As to the steps taken to improve the working of the mines, the Committee were informed that the U.N. Mining Expert whose services were secured for a period of ten days in January 1966 studied the problem at Barsua and recommended certain steps for further geological exploration etc. Action was taken on the lines suggested by the U.N. Mining Expert. In the meantime, discussions were in progress with the German authorities for the ways and means of improving the raw materials raised at the Mines M|s. Gowerkeschaft Exploration, West Germany were appointed Consultants in December, 1967 to examine the issue and make recommendations. They submitted their report in August 1968 which was accepted by the Management. Their main recommendations were as follows:—

1. Stepping up of the productive working time to 14 hours per day on a two shift basis for the mines as well as for the Beneficiation Plant.

2. Acquisition of additional mining equipment, that is, 3 additional Blast hole drills, 4 nos. Shovels, a total fleet of 20 dumpers.

3.(a) Further exploration of iron ore mines.

(b) Service of German experts—A geologist and a Mining Engineer for chalking out the programme of exploration and mining.

(c) Preparation of long-term mining plan and the geological exploration with proper drilling programme.

4. The existing arrangement of the stacker for blending iron ore fines is to be fully utilised and additional fine ore siding to be provided.

5. Blending of iron ore in the R.R. Bins.

5.24. It has been stated that the German Consultants were assisting the Management in implementing the report. The implementation work will be completed by 1971 after which it is expected that the production can be considerably stepped up. The Benefication Plant is already in operation since February, 1970 and this has helped in the improvement in the quality of fines.

5.25. The Rourkela Steel Plant purchases high Grade Iron Ore to sweeten the Barsua Iron Ore burden for the Blast Furnaces in view of the lower F.E. content in the iron ore and sinter. The following table shows the cost of ore raised at Barsua mines as a percentage of the price of purchased ore (both on FOR Plant basis).

Year	Percentage of cost of Ore raised to purchased Ore.
1966-67	88.9
1967-68	116.6
1968-69 . . .	102.7
1969-70	102.8

5.26. It is significant to note that the actual cost of production at Barsua during 1967-68 to 1969-70 was even higher than the price of ore purchased from outside sources even when the quality of ore produced was inferior to that of the purchased ore.

5.27. The working of the Barsua Mines was examined by the Committee on Public Undertakins (11th Report Third Lok Sabha) in 1965. The Committee desired that the reasons for the unsatisfactory working of the Barsua Mines should be investigated and efforts made to increase its production and reduce the cost of raising. It is unfortunate that instead of any improvement, there has been further deterioration in the wroking of the mines, in spite of the fact that action was stated to have been taken on the lines suggested by the U. N. Mining Expert. The production has gone down from 55 per cent in 1966-67 to 38 per cent in 1969-70 and the cost of raising has increased from, Rs. 15.68 **to Rs.** 26.40 **per tonne. The increase in cost of**

production has made the mines uneconomic and the cost of iron ore F.O.R. Rourkela Steel Plant from this captive mine was even higher than the cost of ore purchased from outside sources during the last three years. The quality of ore raised from Barsua mines was also stated to be or to that of purchased ore.

The Committee hope that the implementation of the recommendations made by the German Consultants in August, 1968 would improve the working of the mines by 1971. It is imperative that urgent and effective steps are taken to improve the working of the mines to bring down the cost of raising ore at least equal to the price of ore of similar quality available from outside sources. In the event of failure to achieve the desired objective, the Committee feel that running of these captive mines and thereby increasing the cost of production of steel cannot be justified.

(ii) *Rajhara Iron Ore Mines, Bhilai Steel Plant*

5.28. The Bhilai Steel Plant has also got its own captive machanised iron ore mine at Rajhara. The mechanisation of the Rajhara Irone Ore Mines was completed in October, 1960 at an estimated cost of Rs. 549.20 lakhs (as on 31st March, 1965) to yield 21 lakh tonnes of iron ore per annum for meeting the requirements of the Bhilai Steel Plant which were estimated at 19.4 lakh tonnes. The actual production from these mines during the last five years as compared with the Budget estimates for each year was as follows:—

(Qty. in lakh tonnes)

	Rajhara Mines Production				%of fulfilment		
	Rated capacity Qty.	Budgeted original Qty.	Budgeted revised Qty.	Actual production.	Over rated capacity	Over-original Budget	Over-revised budget
1965-66	24.00	21.28	21.28	20.01	83.8%	94.0%	94.0%
1966-67	24.00	27.50	—	22.51	93.8%	81.8%	—
1967-68	26.66	30.10	—	21.46	80.7%	71.3%	—
1968-69	35.00	34.20	—	23.01	65.7%	67.2%	—
1969-70	35.00	33.81	33.81	21.56	61.6%	63.76%	63.76%

5.29. The following table also shows the production of lump ore and fines separately during each of the last five years:—

Year	Production Lump	Fine	Percentage of fines to total production
1965-66	12.08	7.93	39.6
1966-67	12.21	10.30	45.8
1967-68	10.49	10.97	51.1
1968-69	11.50	11.50	50.0
1969-70	11.09	10.47	48.6

5.30. It would be seen from the above analysis that the actual production of ore was much lower than the budget estimates. What is worse is that the percentage of fines in the Iron ore was as high as 50 per cent in 1967-68 and 1968-69 as against the expected limit of 37.5 per cent as envisaged in the Project Report. The Committee enquired whether the increase in fines was due to wrong design given by the foreign collaborators. They were informed that the foreign collaborators worked out the project Report on the basis of data furnished from Indian side. This was based on the Report of Indian Bureau of Mines. It would therefore, perhaps not be possible to fix responsibility on foreign collaborators. The designers have accepted that the occurrences of fines would most likely be 45 per cent.

5.31. The large percentage of fines in the ore raised created other problems. The fines which could not be absorbed by the Sintering Plant had to be stored separately to be used later on. The quantity of fines added to the stock at Mines during the last five years after taking into account stock adjustment on physical verification and the cost of dumping the same are given below:—

Year	Quantity added to Stock (Tonnes)	Quantity transported by contractors (Tonnes)	Cost of dumping (exluding Departmental expense) Payment to contractors (Rupees)
1965-66	180,413	—	no amount booked
1966-67	290,913	45,269	89,809
1967-68	177,635	29,180	49,730
1968-69	212,800	100,837	104,066
1969-70	320,952	299,773	317,389

5.32. As regards the prospects of utilisation of fines it was stated that the second Sintering Plant had been proposed in the expansion of the Bhilai Steel Plant. Till that time there were not much prospects of the dumped fines being utilised. The experiments were also being conducted for pelletisation.

Cost of Production

5.33. The following table shows the actual cost (including depreciation) of raising iron ore as a percentage of the budgeted cost at Rajhara Iron Ore Mines during the last five years:—

Year	Percentage of actual cost to budgetted cost
1965-66 (R)	100.6
1966-67 (O)	112.5
1967-68 (O)	173.5
1968-69 (O)	178.3
1969-70 (R)	107.0

5.34. The following reasons have been advanced for higher cost of production:—

1966-67:	Lower volume of production.
1967-68 :	Budget is for overall cost of lumps and fines wheras actuals are after giving credit for fines at Rs. 5 per tonne (raising stage and lower volume of production).
1968-69 :	Lower volume of production partly offset by saving in expenditure.

5.35. It is also seen that the cost of raising ore was not only higher than the estimates but it had gone up by 128.5 per cent within the period of four years from 1965-66 to 1969-70 as given below:—

Year	Percentage of increase in cost of raising ironore for 1965-66
1966-67	0.7
1967-68	3.0
1968-69	91.3
1969-70	128.5

It is also significant to note that the cost of production during the last three years (1967-68 to 1969-70) was even more than the cost of raising iron ore by manual operations as in evidence from the following Table:—

Year	Mechanised mines cost as percentage of manual mines cost
1965-66	82.0
1966-67	81.4
1967-68	125.9
1968-69	134.6
1969-70	160.4

5.36. The Committee view with concern the unsatisfactory working of the Rajhara Iron Ore Mines. The cost of raising iron ore has been much higher than the estimates during the last five years and it had gone up from Rs. 9.47 per tonne in 1965-66 to Rs. 21.64 per tonne in 1969-70—an increase of 128.5 per cent within a period of four years. The most disquieting feature is that the cost of production from the mechanised mines, mechanised at a total cost of 5.49 crores, was even more than the cost of raising iron ore by manual operations.

The two main reasons advanced for high cost of production are lower volume of production and higher percentage of fines. As against 37.5 per cent fines envisaged in the Project Report and even as against the designers revised estimate of 45 per cent fines, the actual fines in 1967-68 and 1968-69 were of the order of 50 per cent of the total production. The Committee could get no satisfactory explanation for low production and such a heavy percentage of fines. They desire that a detailed technical study should be made regarding the production performance and high cost of production in these mines with specific reference to the imperative necessity of reducing the percentage of fines and to investigate into the reasons for higher cost of raising ores by mechanised methods compared to the manual ones. In case it is found that it will be more economical if these mines are operated manually, the HSL should consider the possibility of utilising the machinery somewhere else.

(iii) *Lime Stone—Purnapani Lime Stone Quarry*

5.37. To meet the requirement of lime stone, the Rourkela Steel Plant has set up its own quarry at Purnapani about 32 Km. from Rourkela. A scheme for the development and mechanisation of this quarry at an estimated expenditure of Rs. 31.3 million (subsequently revised to Rs. 29.19 million) for meeting limestone requirements of the Blast Furnace, (5 lakh M. tonnes per annum) the sintering plant (70,000 M. tons per annum) and the Fertilizer Plant (2 lakh M. tons per annum) was drawn up in September, 1958. The scheme included the installation of a crushing Plant having a capacity of 261 M. tons per hour.

5.38. The following table shows the total production of lime stone from the quarry for the last five years and the actual cost of raising lime stone expressed as a percentage of estimated cost:

Year	Production (M.tons)	Cost of raising as percentage of estimated cost
1965-66	3,24,181	160.0
1966-67	1,13,859	243.5
1967-68	1,65,115	391.0
1968-69	4,29,197	221.4
1969-70	4,06,153	237.4

5.39. It would be seen from the above that the total production during the last five years was much lower than the rated capacity of 7.7 lakh tonnes per annum. The actual cost of rising was also much higher than the estimated cost.

5.40. In the quarterly financial Report for the period ending March, 1968, the FA & CAO of the Plant had mentioned as follows:

(a) Due to lower production at Purnapani, the Plant had to purchase a larger quantity of lime stone from outside sources from 1966-67 onwards in order to meet the requirements of Blast Furnaces, Sintering Plant and Fertilizer Plant. According to the OMQ department of the Plant, the nature of deposits at Purnapani did not permit large scale mechanised mining because of the necessity to adhere to a particular quality specification.

(b) Against the production capacity of 7,00,000 M. tons, the Plant can produce even under favourable conditions only about 5,48,000 tons of lump and fines per annum whereas the requirements of the Steel Plant for Blast Furnace grade of limestone, Sintering Plant and Fertilizer Plant was estimated at 12,24,000 Mt. tons. The Steel Plant was, therefore, facing a critical situation in regard to limestone, lump and fines. Due to non-availability of material from nearby sources, some quantity of fines had to be procured from Bhilai Steel Plant even by paying a higher freight.

5.41. The reasons for which the Crushing Plant could not produce its rated capacity were stated to be the difficulties in mining which were as follows:—

(i) Nature of the deposits intermixed with good and bad layers.

(ii) Clay pockets slow down the drilling rate.

(iii) Large scale wear and tear of Rubber Tyres, shovel track chains on account of rough roads.

(iv) Non-availability of spare parts.

(v) Crushing capacity restricted due to clay feed with limestone, resulting in jamming of chutes, screens etc.

5.42. The Committee were also informed that the capacity of the Crushing and Screening Plant installed at Purnapani was put to several trial tests before accepting the same from the Contractor. As per the contract, the capacity of the crushing system should have been 270 tonnes per hour but after tests and trials carried out the capacity was accepted as 235 tonnes per hour by the Technical Team which studied in detail the working of the Crushing and Screening Plant. Thus as per the Project Report the capacity of the machanised mines was envisaged as 7.7 lakh tonnes per annum but in view of limitations in the Crusher as observed during trial operations, the capacity of the mine has been reduced to 6.5 lakh tonnes per annum.

5.43. The Committee were, however, informed that to supplement the availability of lime stone from Purnapani, to meet the ultimate requirements, following steps have been taken.

(i) An adjoining area to Purnapani *viz* Gatitanagar is to be developed for which land acquisition action has been taken but this is time consuming.

(ii) The mining lease for the development of Chilhati deposits in M.P. has been applied for.

5.44. The Committee regret to note that as in the case of Barsua Iron Ore Mines, the working of the captive limestone quarry of Rourkela Steel Plant at Purnapani was also unsatisfactory. The production was much lower than the rated capacity and the cost of raising was more than double the estimated cost. As pointed out by the F.A. & C.A.O. due to shortfall in production, the Rourkela Steel Plant was facing a critical situation in regard to availability of lime stone and additional expenditure had to be incurred to procure limestone from other sources resulting in higher cost of production of Steel.

One of the reasons for low production was stated to be that the nature of deposits did not permit large scale mechanised mining because of the necessity to adhere to a particular quality specifications. This gives the impression that the management did not make requisite investigation about the nature of deposits before taking up the scheme for the development and mechanisation of the limestone quarry. The Committee are of the view that with advance planning some of the factors hampering production, e.g. large scale wear and tear of rubber tyres, shovel track chains on account of rough roads and non-availability of spare parts etc. could have been foreseen and timely remedial action could be taken. They desire that immediate steps should be taken to improve the working of the quarry.

(iv) *Nandini Lime Stone Mine, Bhilai Steel Plant*

5.45. To meet the requirements of lime-stone, Bhilai Steel Plant has set up its own quarry at Nandini about 25 K.M. from the plant. The mechanisation of mines was completed in October, 1960 at a cost of Rs. 203.8 lakhs. In order to supplement mechanised mines, manual mining is also resorted to.

5.46. The following statement shows the Budgetted Production and the actual production of limestone from the Nandini Mines during the last five years:—

Year	Budgetted production			Actual production			Shortfall
	Mech.	Manual	Total	Mech.	Manual	Total	
1	2	3	4	5	6	7	8
1965-66 . .	9.60	4.39	13.99	8.67	2.60	11.27	2.72

1	2	3	4	5	6	7	8
1966-67	12.67	3.26	15.93	8.48	3.67	12.15	3.78
1967-68 .	12·56	1·61	14·17	7·83	4·16	11·99	2·18
1968-69	11·26	2·15	13·41	8·88	4·00	12·88	0·53
1969-70 . .	12·70	7·36	20·06	10·37	2·02	12·39	7·67

5.47. As regards the reasons for lower production as compared to the Budgetted production, the Committee were informed that the requirement of limestone were based on production estimates of the Plant. Accordingly, mines production budgets were planned, taking into account the estimated production from the mechanised mines. The balance requirement was provided in the budget from manual mines. The production budget of the Plant underwent drastic changes resulting in corresponding reduction in requirement of limestone.

5.48. Despatches to parties other than Bhilai Steel Plant were to be made in BOX wagons which could not be loaded with shovels from the mechanised production and had to be planned on manual mines.

5.49. The other reasons for shortfall in production were:

(1) Delay in Commissioning of new crushing plant and initial difficulties in its operation. (2) Higher percentage of fines. (3) The difficulties due to old U.S.S.R. locos, already working for about a decade without capital repairs in the absence of requisite facilities either in plant or mines.

Cost of Production

5.50. The following statement shows the actual cost (excluding depreciation) of raising limestone from Nandini Mines by mechanised operation as a percentage of the budgetted cost:—

Year	Percentage of actual cost to budget estimates
1965-66(R)	142·0
1966-67(O)	208·9
1967-68(O)	147·4
1968-69(O) .	164·9
1969-70(R)	106·8

5.51. It would be seen from the above table that in the case of mechanised mines cost of raising limestone was higher than the budget estimates. Further, as in the case of Rajahara Iron Ore Mines, the cost of raising limestone by mechanised operations was higher than that raised by manual operations as shown below:—

Year	Percentage of cost in mechanised mines to manual mines
1965-66	107.0
1966-67	157.6
1967-68	154.8
1968-69	174.2
1969-70	123.8

5.52. The Committee are unhappy to note that the working of the Nandini Limestone quarry also has not been satisfactory. The production from mechanised mines was lower than the budget estimates and the cost of production was higher than the estimates therefor. What is worse is that the cost of production from the mechanised mines was even higher than the cost of limestone raised by manual operation. The Committee could get no satisfactory explanation in this regard. They desire that the reasons for high cost of production should be analysed and remedial measures taken to bring it down.

5.53. One of the reasons advanced for low production during all the years has been that the mines operated with imported locos only. Those locomotives were due for capital repairs, facilities for which were not available either in the Plant or mines. As pointed out in paras 3.42—3.47 of this Report, the Steel Plant had also suffered loss of production due to unsatisfactory working of these imported locomotives. The Committee regret to note that in spite of continuing handicaps for last 4 years both for the mines and the Steel Plant, prompt measures were not taken to provide requisite facilities for repairs and maintenance of these locomotives. The Committee would like to be informed of the measures taken or proposed to be taken for repairs and maintenance of these locomotives.

Manganese Ore

5.54. The current requirement of the Bhilai Steel Plant in respect of manganese ore is of the order of 1.2 lakhs tonnes per annum. The plant has got its own captive mines for manganese ore. But

production from these mines was much lower than the Budgetted quantity and most of the requirement is met by purchases from outside sources. The following statement shows the Budgetted quantity, actual raising from the captive mines and the quantity purchased from outside sources during the last five years.

	Budgetted quantity	Actual raising from captive mines	%age to Budgetted quantity	Quantity purchased
				in tonnes
1965-66 (R)	8,600	683	7.9	93,640
1966-67 (O)	5,000	315	6.3	89,099
1967-68 (O)	18,000	483	2.7	135,594
1968-69 (O)	21.000	1685	8.0	110,002
1969-70 (R)	18,200	3653	20.1	101,814

It is evident from the above table that the quantity raised from the captive mines was only a small part of the total requirements.

5.55. As to the reasons for the actual production being much lower than the target, the Committee were informed that the shortfall in production was due to the high cost of mining of the present rather uneconomic areas leased out to Bhilai Steel Plant. The region where Bhilai Steel Plant had conducted mining operations had been a busy centre and activities boomed from 1950 to 1956. All available areas of Manganese Ore were given on lease to private parties. To fulfil the requirement of Bhilai Steel Plant, Manganese areas were asked for and the State Government and Directorate of Geology and Mining had recommended certain areas. These areas were not prospected earlier. Part prospecting was conducted by the Bureau of Mines and later the prospecting was done by their Department. These projects revealed that economically mineable deposits did not occur here. This was later corraborated by Manganese Ore India Ltd. also during their inspection of the Mines when the matter was referred to them.

Cost of production

5.56. The following table shows the cost of Manganese ore raised in own mines as a percentage of price of ore purchased from outside sources:—

Year	Quantity purchased raised to	% of cost of ore market-price
1965-66 .	93.640	765
1966-67 .	89,099	1050
1967-68 .	135.594	846
1968-69 .	110.002	340
1969-70	101.814	179

5.57. It would be seen from the above statement that the cost of ore raised from the captive mines was abnormally high. As to the reasons for high cost of production the Committee were informed that although the H.S.L. did not have sufficient areas where Manganese Ore could be produced it had to maintain the statutory personnel for Manganese production since it had applied for a number of areas to be given to Bhilai Steel Plant for the purpose of exploitation. Since these areas were not granted within the time limit as stipulated under the Mineral Concession Rules it had to book the wages of these personnel against the meagre production that it could make as part of the prospecting operation during these periods, which had abnormally raised the cost of Manganese ore produced by this method.

5.58. The Committee regret to note that as in the case of other mines, the working of the manganese ore mines presented a dismal picture of very low production and abnormally high cost of production. The Committee are surprised to find that the H.S.L. accepted for exploitation those areas which are not economically mineable. The average output from the mines during 1965-66 to 1969-70 has been about 1.5 per cent (approx.) of the total quantity required by the Plant and the cost of raising has also ranged between 10 times to about 2 times (approximately) the cost of ore purchased from open market. These mines are hardly serving any purpose except adding to the avoidable expenditure year by year due to abnormally high cost of raising ore. The Committee therefore recommend that

the desirability of continuing the mining of manganese ore from these captive mines should be examined in the background of its existing performance without any further loss of time.

Rate of consumption

5.59. The Detailed Project Report for each steel plant provided the rate of consumption for each principal raw material for production of iron and steel. The Committee were, however, informed that the quality of principal raw materials envisaged in the project report had considerably changed and therefore, there was not much relevance in comparing the actual consumption with that of the project report figures.

5.60. In March, 1968, the H.S.L. constituted a Committee for developing the norms of consumption of the principal raw materials and yields in the various units of the three steel plants with a view to evolve the system of standard costing. The underlying objective in the evolution of these norms was to provide the technical parametres against which the performance of various units of the steel plants could be appraised. This Committee formulated the norms of consumption of raw materials and the attainable yields at various stages under the existing conditions. The method adopted was to analyse the statistical data already available in respect of the average past performance, the best performance achieved in the past and the designed capacity at maximum efficiency and on this basis to arrive at the 'best attainable' targets achievable under the existing operating conditions.

The following statement shows the norms fixed by the Norms Committee in 1968 for raw materials and the actual peroformance against these norms in 1969-70:—

Consumption Rates of Raw Materials

	Bhilai Steel Plant		Durgapur Steel Plant		Rourkela Steel Plant	
	As per Norms Committee	Average 1969-70	As per Norms Committee	Average 1969-70	As per Norms Committee	Average 1969-70
1	2	3	4	*	6	7
COKE OVENS (per tonne of Coke dry) Coal dry.	1316	1314	1316	1278	1282	1290
BLASTFURNACE (Per tonne of hot metal)						
Fe. through ironfore sinter & Scrap	965	985	950	911	950	929
Lime Stone	270	262	350	339	350	326
Lime Stone Dolomite	—	—	—	—	100	101
Manganese ore	50	53	40	35	120	94
Coke	800	813	860	922	900	939
STEEL MELTING SHOPS (Per tonne of ingot steel)						
1. Pig Iron	725	750	825	856	400 OH 995 LD	419 1030
2. Scrap.	300	282	205	217	745 OH 140 LD	720 156

1	2	3	4	5	6	7
3. Iron ore	160	189	150	190	6 OH 4 LD	15·0 14·0
4. Lime	15	14	17	18	35 OH 110 LD	37·0 112·0
5. Limestone	75	62	30	43	— OH 4 LD	0·6 11·0
6. Dolomite Raw	30	26	10	16	1·0 OH — LD	1·2 —
7. Dolomite Burnt	20	26	30	31	20·0 OH — LD	22·8 —
8. Ferromanganese	15	16	12	13	15 OH 5 LD	17·8 6·1
9. Ferro Silicon	0·9	1·4	1·0	1·2	2.00 OH 1·3 LD	1·8 2.3

5.62. It would be seen from the above table that the actual consumption of raw materials particularly of coke for production of hot metal and of pig iron, scrap (except in Bhilai and O.H. in Rourkela Steel Plant) and iron ore for the production of ingot steel was higher than the norms fixed by the Norms Committee in all the three Steel Plants.

Coke rate

5.63. The rate of consumption of coke per tonne of hot metal as suggested by the Norms Committee and the actual consumption in 1969-70 was as follows:—

	Bhilai	Durgapur	Rourkela
As per Norms Committee . . .	800	860	900
Average 1969-70	813	922	939

5.64. The question of coke rate was also considered by the Committee appointed by Government under the Chairmanship of Shri Harekrushna Mehatab to examine the cost of production of steel. The Committee in their report pointed out as follows:—

> Intimately linked with the improved increase in blast furnace productivity is the question of securing a decrease in our coke rate. Cost-wise also this is very important. Because of poor quality of Indian coking coal, coke rate in Indian furnaces is very high as compared with international standards. The coke rate in our plants varies from 840 to 1000 kilos/tonne of hot metal, the average being about 900 kilos/tonne. This compares unfavourably with coke rates, sometimes as low as 500 to 600 kilos per tonne of hot metal, attained in modern furnaces of similar capacity abroad. The fixed carbon content in Indian Coke is about 75 per cent as against 85 to 90 per cent in other countries. It has been estimated that a decrease in fixed carbon in coke by 1% will increase the coke consumption by about 15 to 20 kilos|tonne. A 10% derease in fixed carbon content will require an additional 150 kilograms of coke per tonne of hot metal. Thus on an equivalent fixed carbon basis the average Indian coke rate may be assumed at about 750 kilos/tonne of hot metal. Our coke rate is further increased due to the presence of excess alumina in ore because the high alumina in the ensuing slag require a higher operating temperature needing addi-

tional coke in the burden. In these circumstances, the present coke rate cannot be brought down to values attained in foreign countries. But with better performance with existing facilities as well as the adoption of improved technological practices, the coke rate can be substantially reduced. A target of about 750 kilos/tonne of hot metal could be considered as attainable with Indian coke of 23/24% ash content."

5.65. The Committee enquired the reasons for the Norms Committee having fixed the Coke consumption rates higher than the target suggested by Mehatab Committee. They were informed that the Blast Furnaces in the steel plants have different capacities and produce both basic as well as foundry grade iron. The coke rate in the case of foundry grade is about 10 to 15% more than that in the case of basic iron. Coke rate will, therefore, differ according to the proportion of foundry grade iron in the total hot metal production. Further, coke rate is also dependent on the quality and consistency of the raw materials. In addition, disturbances in labour situation lead to frequent checking|blanking of furnaces leading to higher coke consumption. The Norms Committee had also indicated in the Report that since the plants were not working to their full rated capacity and in view of the progressive fluctuations in the quality of raw materials, it would neither be feasible nor realistic to prescribe norms which would hold good for all times to come and that the norms recommended should be reviewed periodically.

5.66. The Committee were also informed that with the commissioning of the Benefiaction Plant and progressively higher usage of sinter, the coke rate was expected to improve further at Rourkela. The production at Durgapur Steel Plant had been affected by disturbed industrial relations. If the situation improved and the plant worked at a steady level, the coke rate was ilkely to come down.

5.67. Hindustan Steel Limited had drawn up a comprehensive plan for the introduction of technological improvements in the blast furnances. These include oxygen enrichment of the blast, increase in blast temperature burden preparation, etc. These measures were expected to have a beneficial effect on the coke rate, besides increasing blast furnace productivity.

5.68. Hindustan Steel Limited, however, felt that in view of the quality of coal and frequent fluctuations in the quality of coal and frequent fluctuations in the quality of other raw materials. it might be difficult to achieve coke consumption rate of 750 Kg/tonne of hot metal suggested by the Mahtab Committee; perhaps it would more

realistic to expect an average coke rate of about 800 Kg/tonne (for basic iron).

5.69. The Committee also enquired as to how rate of consumption of raw materials in the steel plants of H.S.L. compared with the steel plants in other countries. They were informed that the question of consumption of raw materials in foreign countries with those of H.S.L. plants had no relevance because of the difference in the raw material qualities. For example, the ash content in our coke was 24% to 25% as against 8% to 10% in other countries and insoluble content in limestone fluctuates widely and at times went as high as 20%. However data on coke rate in selected foreign countries was as follows:

Country	Kgs per tonnes (Yr)
USA	6241(968)
UK	656 (1968)
USSR	601(1967)
W. Germany	777(1968)
Japan	499(1968)

5.70. The Committee find that the Mehtab Committee had suggested the coke rate of 750 Kg. per tonne after taking into account the quality of raw materials available in the country. Considering the very low coke rate in other countries which was between 500 and 650 kilo per tonne, the coke rate of 750 kg. suggested by Mehtab Committee cannot be considered unattainable. On the contrary, the Committee regret to find that the actual consumption of coke has been much higher. (Bhilai 8.13, Durgapur 922, Rourkela 939). It has surprised the Committee more to discover that the norm has also been fixed much higher than the target fixed by Mehtab Committee. The Committee therefore ,recommend that efforts should be made to achieve the target of coke rate of 750 kg. per tonne through efficient operation and by adoption of improved techniques.

5.71. The Committee also find that the rate of consumption of some of the other raw materials had also been higher than the norms laid down by the Norms Committee. Thus, the 'Fe' consumption through iron ore, sinter and scrap per tonne of hot metal in the Bhilai Steel Plant was higher than in the norms laid down. The rate of consumption of pig, iron ore and Ferromanganese in the steel melting shops of all the three steel plants has also been higher. It is also noted that the Norms Committee had fixed these norms on the basis of past performance and these were considered 'achievable' under the existing operating conditions. The Committee, therefore, recommend that the reasons for variations between the actual consumption and the norms fixed should be periodically analysed in detail with a view to eliminating excess consumption and/or wastage.

VI

PERSONNEL AND MANPOWER ANALYSITS

(a) *Staff in Works Departments*

6.1. The Audit Report (Commercial), 1966 pointed out that the strength of staff actually employed as on 31st March, 1965 in the three steel plants of HSL was far in excess of that provided for in the Project Reports as is evident from the table given below:—

Plant	Men required as per project report	Men in position on 31st March, 1965.	Men in postion on 31st March, 1965 after excluding the staff empoyed in those Units for which no provision was made in the Project Report.	Surplus (Column 4-2).
1	2	3	4	5
Bhilai	7,300	21,390	19,712	12,412
Durgapur . .	9,300*'	18,012	15,315	5,515
Rourkela .	6,800	18,230	13,423	6,623

(*as given by U.K. Steel Mission)

6.2. In this connection, the Management had informed Audit in January, 1966 as follows:

(i) The Project Report estimates were not realistic for the reasons indicated below:—

(a) Persons making the estimates had little experience of Indian conditions.

(b) The man-power requirements for the various services were based on the presumption that the facilities would be available outside the Steel Plants. This presumption did not hold good in actual working.

(c) The Project Report figures were based on a high degree of mechanisation as is the case in the foreign plants.

(d) Assumptions relating to absenteeism and leave entitlement made in the Project Report did not materialise fully.

(2) Climatic conditions, under-nourishment, lack of literacy and lack of long industiral experience of the work force in the Steel Plants in India have affected per capita productivity

(3) Certain traditions in the Indian Industry for utilising large groups of unskilled workers or assisting skilled workers in their operations resulted in the employment of larger number of people.

(4) The rate of progress for attaining the full working capacity from the date of the commissioning of the various plant units had to be faster and this led to the employmen tof a large number of unskilled workers.

The Committee were informed by Hindustan Steel Ltd. that in view of the shortcomings in the forecast of manpower requirements made in the Project Report, a Manpower Committee was appointed by HSL in March, 1960 to make realistic estimates; for the one Million Tonne stage in the three Steel Plants. The Committee's recommendations for manpower requirement for the one million tonne stage (for the Works Department only) of the three Plants were as follows:—

Bhilai Steel Plant	16529
Durgapur Steel Plant	14896
Rourkela Stee Plant	14207

6.3. The question of over-staffiing in the plants of HSL, at the million tonnes stage, was considered by the Committee on Public Undertakings in their earlier Reports on HSL in 1964-65 and 1965-66. However, as the three Steel Plants have since been expanded the Committee called for the project estimates for manpower after their expansions. The following statement shows the manpower estimates for the Bhilai and Rourkela Steel Plants as given in the Project Reports after their expansion. The Project Report for Durgapur Steel Plant did not indicate the manpower requirements for the

expansion stage since a special Committee was then working on the standard force for each Steel Plant.

	BHILAI	ROURKELA
	2·5 MT. Expansion	1·8MT. Expansion
Categories		
1. Officers/Engineers Technicians	1288	489
2. Workers in Works Deptt.	10232	8549
3. Office Employees	377	792
4. Attendants (Class IV Staff & Security Staff etc.) .	203	—
5. Allowance for losses (absenteesim) . .	—	770
TOTAL	12040	10600

6.4. Against these estimates the total number of regular personnel engaged as on 31st March, 1970 in the Works Department of the two Steel Plants was as follows:

	Project Report Estimates after expansion	Number of regular personnel engaged as on 31-3-70	Percentage of perosns actually employed to project Estimates
Bhilai Steel Plant .	12040	25451	211%
Rourkela Steel Plant .	10600	20837	197%

It would be seen from the above statement that the number of persons actually employed in the Works Departments was about double of that provided in the Project Report estimates.

6.5. According to a survey conducted by the Bureau of Public Enterrises, the surplus staff employed in all the public undertakings as on 30th September, 1967 was estimated to be 15,000. Out of this, the surplus staff in H.S.L. alone was estimated to be 9214.

6.6. The Committee were informed by H.S.L. that by 1963-64, the manpower requirements (for Works Departments only) for the

expansion stage were also determined by the Industrial Engineering Departments of the Plants and their estimates were as follows:—

Bhilai Steel Plant . .	26090
Durgapur Steel Plant	22005
Rourkela Steel Plant	23572

A comparative position of the percentage of persons actually employed at expansion stages in relation to these estimates is given below:—

Manpower in Works Departments

Plant	IED estimates of requirements for expansion stage	Actual in position as on 31.3.70	i.e. %age/ (3) x100(2)
1	2	3	4
Bhilai Steel Plant .	26090	25451	97·7%
Durgapur Steel Plant	22005	20045	91.2%
Rourkela Steel Plant .	23572	20837	88·7%

6.7. The Committee were informed by Hindustan Steel Ltd. that the earlier estimates made in Project Report were based on assumptions which were neither correct nor relevant to Indian context. The estimates made by Industrial Engineering Departments in the Plants in 1963-64 were also based only on broad studies and discussions. This aspect was looked into in still greater detail in connection with the revision of Incentive Schemes undertaken in collaboration with the Consultancy and Applied Research Division of the Administrative Staff College, Hyderabad. In this connection, recently detailed manning studies were undertaken for each post. Standard force for each plant has emerged as a result of these studies.

Incentive Revision studies have been completed for all the Produtcion Departments and the uptodate overall results of the studies are given below:—

Surplus/Deficit as Indicated by Card Studies

Plant/Date	Ttoal men in position in Works covered by studies	Reference manning	+surplus; —Deficit	Percentage of reference manning
1. Bhilai (as on 1-4-1971)	21156*	19585*	+1571	+8%
2. Durgapur (as on 1-5-71) .	17495	17518	—23	(—)0·135%**
3. Rourkela (as on 1-6-71)				
(a) Works . . .	18858	17552	+1306	+7·5%
(b) OM&Q .	1285	1200	+85	+7·1%
(c) Fertilizer Plant . .	1148	1321	(—)173	(—)15·1%**
TOTAL	59942	57176	+2766	+4·84%

*Excluding OM&Q Deptt.
**% of men in position.

6.8. As regards remedial measures taken to avoid overstaffing, the Committee were informed that the Board of Directors had decided in November, 1968 to impose a freeze as far as possible on the manpower making it necessary that any demand for additional manning will have to be examined first by the industrial Engineering Department on a scientific work measurement basis. The Hindustan Steel Ltd. was also committed to spare experienced personnel of various levels of executives and non-executives for Bokaro Steel Ltd. According to latest estimates the reqeuirements of Bokaro Steel Ltd. would be 229 executives and 1856 non-executives. This opportunity will be utilised for re-deploying surplus personnel from HSL plants. Besides these, necessary efforts were being made to absorb available surplus in expansion units of HSL units. As for example the sixth Blast Furnace complex of Bhilai will absorb some surplus men with necessary skill.

6.9. The Committee regret to note that the actual staff strength in the Works Departments of Rourkela and Bhilai Steel Plants as on 31.3.1970 was about double of that provided in the Project Reports for their expansion. They are amazed, over the statement by the

HSL that "the earlier estimates made in the Project Report were based on assumption which were neither correct nor relevant to Indian Context." With the experience of one million tonne plants, it was expected that the estimates for manpower requirements included in the Project Reports for their expansions would be more realistic, to serve as a yardstick for actual manning of the Steel Plants

6.10. The Committee also note with surprise as to why the Industrial Engineering Department of HSL had reported in 1963-64 that there was no surplus staff in H.S.L. Instead, the undertaking had a shortfall against their (I.E.D.) estimate of staff requirements after expansion. On the contrary, the studies made by the Bureau of Public Enterprises and the latest studies conducted by the Administrative staff College, Hyderabad have revealed that HSL has got surplus staff. In the face of these definite reports of independent and expert agencies, the Committee feel that it would not be safe to rely on the report of the Industrial Engineering Department of the HSL. The Committee find that the report of the HSL (IED) is based on broad studies and discussions unlike the study of the Independent agency (i.e. Administrative Staff College, Hyderabad, whose detailed work measurement studies are expected to be more scientific than the previous estimates. Consequently, the Committee have come to the conclusion that the estimates of HSL(IED) are on the high side.

The Committee hope that the staff strength in the steel plants will be adjusted in accordance with the latest studies and Government/Hindustan Steel Ltd. would take the opportunity offered by the expansion scheme of the steel Plants and Bokaro Project to gainfully employ the surplus staff as early as practicable and possible.

(b) General Administration and Township staff

6.11. The following statement shows the position regarding the percentage of staff in the General Administration and Township Department to the staff in operation (works Deptts) in the three steel plants.

Particulars	1966	1967	1968	1969	1970
1	2	3	4	5	6
		Bhilai			
(I) Staff employed in General Administration and Township . .	6120	6130	6862	6799	6887

1	2	3	4	5	6
(ii) Staff employed in Operation (Works) . .	23405	24649	25362	25459	25453
(iii) Percentage of Staff in Gen. Admn. & Township to staff in Operation.	26·1%	24·8%	27·1%	26·7%	27·0%
Durgapur					
(i) Staff employed in General Administration and Township . . .	6900	7215	7347	7054	7132
(ii) Staff employed in operation (Works) . .	15362	16390	18320	19885	20045
(iii) Percentage of staff in Gen. Admn & Township to Staff in operation. .	45·0%	44·1%	40·1%	35.5%	35·4%
Rourkela					
(i) Staff employed in General Administration & Township . . .	6579	6329	7066	7259	7114
(ii) Staff employed in operation (Works); . .	15707	17808	19294	20860	20837
(iii) Percentage of staff in Gen. Admn. & Township in staff in operation.	41·8%	35·5%	36·5%	34·8%	34·1%

6.12. The following statement shows the further breakup of the staff employed in General Administration and Township Departments:

Year	Plant	Staff employedin operation Deptts (Works) (a)	Staff employed in General Administration		Staff employed in Township Deptts.	
			Nos.	% of (a)	Nos.	%of (a)
1966	Bhilai .	23405	2973	12·6%	3162	13·5%
	Durgapur	15362	3278	21·4%	3622	23·6%
	Rourkela	15707	3571	22·7%	3008	19·10%
1967	Bhilai . .	24649	2816	11·4%	3314	13.4%
	Durgapur .	16390	3420	20·9%	3795	23·2%
	Rourkela .	17808	3132	17.6%	3197	17·9%
1968	Bhilai .	25362	2794	11·1%	4068	16·0%
	Durgapur .	18320	3440	18·8%	3907	21.3%
	Rourkela .	20860	3889	18·6%	3370	16·2%
1969	Bhilai .	25459	2764	10·9 %	4035	15·8%
	Durgapur	19885	3073	15·5%	3981	20·0%
	Rourkela	20860	3889	8·6%	3370	16·2%
1970	Bhilai . . .	25453	2833	11·1%	4054	15.9%
	Durgapur . .	20045	3084	15.2%	4048	20·2%
	Rourkela . .	20837	3814	18·3%	3300	15·8%

It will be seen from the above table that the percentage of staff in General Administration and Township to the staff in works departments in the three steel plants has ranged from 27 per cent to 35.4 per cent in 1969-70. The staff employed in Township Departments alone ranged from 16 per cent to 20 per cent of the staff in Works Departments.

6.13. As to the reasons for high percentage of staff employed in the General Administration and Township departments, it was stated that in the initial stages as more and more new units were being commissioned the staff employed in the Works Departments was gradually increasing, whereas most of the staff in the General Administration and Township had to be in position for day-to-day administration. As could be seen from the percentages in the Corresponding years the staff employed in the General Administration and Township has not increased in the same proportion as the staff employed in the Works Departments. There had been actually a decrease in the percentage of staff in the General Administration and Township Departments of Durgapur and Rourkela Steel Plants in the later years.

6.14. The Board had decided to freeze as far as possible the manpower as in November, 1968 for the three steel plants and since then there had been no appreciable increase in the staff. HSL had organisation and Methods (O & M) Sections in the Industrial Engineering Departments of the three Steel Plants which undertake studies in the General Administration and Township Departments whenever there are any demands for additional manning and suggest how the existing manning could be better utilised. Besides this, HSL had not conducted any study in regard to General Administration and Township staff. These Departments were also not covered under the Administrative Staff College Study. The Committee were however subsequently informed that O & M Sections in the plants have undertaken detailed studies on a continuing basis in all the plants for (a) simplification of office procedures and (b) for determination of manpower requirements.

6.15. The Committee regret to note that the staff in the General Administration and Township Departments of the three Steel Plants ranged from 27 per cent to 35 per cent of the Staff employed in operation (Works Departments). They feel that this percentage is on the high side and there is scope for economy in personnel costs in these departments by improving systems and procedures of work. The Committee find that H.S.L. had not conducted any study in regard to the staff employed in these departments with a view to ascertain the reasons for differences in manning pattern in

the three steel Plants and to effect economy in staff. However, according to HSL, the O & M Sections in the plants have now undertaken detailed studies on a continuing basis in all the plants for (a) simplification of office procedures and (b) for determination of manpower requirements. The Committee desire that these studies should be completed expeditiously and the norm evolved for the staff in the Township and general Administration be adhered to strictly. The services of the surplus personnel revealed as a result of such study could be made available to the other steel plants proposed to be set up in the country with a view to give them experienced staff from the inception.

Labour Productivity

6.16. In order to compare the performance of three steel plants in the field of manpower the Committee also examined the productivity indices in terms of output of ingot steel per man-year. The following table shows the average labour productivity (for works personnel only) for the last five years in the three Steel Plants of H.S.L.

(in tonnes)

Average labour productivity for the year :

Plant	1965-66	1966-67	1967-68	1968-69	1969-70
Bhilai	70	83	77	75	79
Durgapur	68	50	47	48	45
Rourkela	70	68	50	59	54

6.17. It will be seen from the above that the labour productivity was the lowest in Durgapur Steel Plant. There has been a steep fall in productivity in this plant and it had come down from in 1965-66 to as low as 45 in 1969-70. The productivity had also come down in Rourkela Steel Plant from 70 to 54 during the corresponding period. In the case of Bhilai Steel Plant there has, however, been an improvement and the productivity went up from 70 in 1965-66 to 79 in 1969-70 the highest of the three steel plants.

6.18. As to the reasons for low productivity the Committee were informed that the productivity in terms of ingot tonne per man-year depended on the rate of production level reached in the different plants and the manpower employed for achieving the same.

While the manpower required for the Expansion Units had to be provided after necessary training etc., the production was gradually picking up. The productivity was also affected due to restriction on production on account of recession in the years 1967 to 1969 and also depended on major capital repairs undertaken. In addition, the man hours lost on account of go-slow, strikes, etc. affected the production and as such the productivity.

6.19. In this connection the Committee were informed that the average labour productivity in the two private sector Steel plants in India has been as follows:

	1967-68	1968-69	1969-70
Tata Iron & Steel Co.	66·5	62	58·5
Indian Iron & Steel Co. .	40·5	42	37

6.20. It has been stated that 'the labour productivity in HSL plants has been comparable with that of the private sector steel plants in India and in case of Bhilai it has been much better. While the labour productivity in Durgapur has been lower compared to other HSL Plants it is better than that in Indian Iron & Steel Co. though both these plants are situated in the same industrial region.'

6.21. The Committee would, however, like to point out that in comparing the labour productivity of the modern steel plants of HSL with that of Tata and Indian Iron & Steel Companies, commissioned years ago, it is necessary to take into account the higher degree of sophistication of the plants of HSL which should result in higher production.

6.22. The Committee also enquired as to how the labour productivity in the plants of HSL compare with that in Japan and other advanced countries. They have been informed that "this index of productivity is only a rough indication of the overall productivity of the Steel Plants as it does not take into account the complexities and the sophistications of the Finishing Mills. In the case of Indian Steel Plants it has to be borne in mind that maintenance and other services like the repair shops etc. which are not normally included in the Steel Plants in other countries have to be provided in our conditions.

6.23. The total number of men employed depends upon the product-mix of the plants, the degree of sophistication of the equipments and the degree of mechanisation and advances in manufac-

turing technology. In addition certain organisational factors and traditional practices like provision of helpers and lack of flexibility in deploying men from one unit to another are other prohibitive factors in achieving higher labour productivity in India. Further interplant comparison of labour productivity is difficult by reason of the product-mix being different in different plants. However, comparisons within a Plant-over a period are possible. The average labour productivity in terms of ingot tonne per man year for some of the advanced countries for the year 1969 were as follows*:—

Japan	247
U.S.A.	235
West Germnay	122

However, in Japan Coke Ovens are not considered a part of the Steel Plant. Further environmental factors also play an important part in higher labour productivities in foreign countries.

6.24. The question of labour productivity was also considered by the Mehtab Committee. In their Report that Committee had observed as follows:—

> "It seems to us that there are major possibilities of effecting improvement both in Manpower productivity and personnel costs with each expansion of the Steel Plants. We consider it possible to raise the productivity in respect of works personnel from the present level of 55 to 70 ingot tonne per man year to a productivity index of about 125 ingot tonne per man-year and above in each of the plants."

6.25. The Committee enquired the action taken by Government on the recommendation of the Mehtab Committee. They were informed that HSL has, for the present set the following targets in respect of labour productivity at the end of the current expansion of the Steel Plants.

Bhilai Steel Plant	100	Ingot tonnes per man year
Durgapur Steel Plant	90	-do-
Rourkela Steel Plant	95	-do-

*The productivity indices are for the total iron and steel industries in the countries concerned including the production in foundries, re-rollers etc. whereas those given in para 6.16 and 6.19 are for individual plants in India.

6.26. As to the reasons for fixing lower targets for labour productivity as compared to the recommendations of Mehtab Committee, the Committee were informed that Hindustan Steel had estimated that if the three steel plants operate at rated capacity and the present manning can be reduced/adjusted in accordance with their industrial engineering studies, it should be possible to reach a productivity level of 125,100 and 100 ingot tonnes per man year in Bhilai, Rourkela and Durgapur Steel Plants respectively. However, HSL feels that, in the present circumstances, it would be more realistic to proceed on the basis of a productivity of 100.95 and 90 for these plants. While 125 ingot tonnes per man year might be possible and should be a desirable target, the best rates achieved so far and having regard to the current difficulties in stepping up production and on the labour front, they can work only progressively towards this objective. Labour productivity can improve by stepping up production on the one hand and Containing/reducing manpower on the other. Within the limitations imposed by the Industrial relations situation, the management of Hindustan Steel Limited is making concerted efforts to raise production to rated capacity levels as rapidly as possible. These include removal of back-log of maintenance, greater emphasis on preventive maintenance, stepping up of major capital programme required to correct critical imbalances in production facilities, introduction of technological improvements, import of essential spares, refractories, locos and other essential raw materials, etc. To contain manpower the Board of Directors had decided that pending the completion of industrial engineering studies undertaken in connection with the revision of production incentive schemes, manpower requirements of the steel plants should be frozen as on 1-11-1968, exceptions being made for compelling reasons like commissioning of new equipment for starting new activity. These studies have revealed the existence of certain surpluses which will have to be deployed elsewhere. The proposed revised incentive scheme which is being negotiated with the unions also provides positive inducement for working with standard manning and this should help contain manpower.

6.27. The Committee regret to note the low productivity in the three steel plants of HSL ranging between 45—79 ingot tonnes per man year. The most disturbing feature is that while it was expected that with the expansion of the Steel Plants, there would be improvement in labour productivity, the position has worsened and the labour productivity in Rourkela and Durgapur Steel Plants was even lower than in 1965-66. The productivity in 1969-70 being only

54 and 45 in Rourkela and Durgapur Steel Plants respectively against the corresponding figures of 70 and 68 in 1965-66. As mentioned in para 6.23 of this Report the labour productivity in some of the advanced countries ranged from 156 to 247 ingot tonnes per man year. Even the Mehtab Committee appointed by Government to look into the cost of production of steel and which included representatives of Hindustan Steel and Tata Iron and Steel Company considered it possible to raise the productivity to about 125 ingot tonnes per man year and above in each of the plants. Viewed in this background, the present low level of productivity in the Steel Plants of HSL cannot but be a matter of urgent concern. The Committee are informed that if the three steel plants operate at rated capacity and the present manning can be reduced/adjusted in accordance with their industrial engineering studies, it should be possible to reach a productivity level of 125,100 and 100 ingot tonnes per man year in Bhilai, Rourkela and Durgapur Steel Plants respectively. The Committee hope that HSL would strive to attain at least this minimum level of productivity.

6.28. The Committee also recommend that the Research and Development Divisions of the Steel Plants and the Central Engineering and Design Bureu of HSL should make a detailed study of the reasons for high productivity in other advanced countries (like Japan, U.S.A. and West Germany), with a view to ascertain the technological innovations and manning pattern etc. that account for the high productivity in their respective countries and suggest their adoption in H.S.L. Steel Plants to attain comparable productivity level per worker.

Industrial Relations

6.29. The Industrial Relations in Hindustan Steel Ltd. have not been happy. The following statement shows the manhours lost and the value of loss of production due to strikes etc. in each of the Steel Plants during the last four years:

Bhilai Steel Plant

Year;	Manhours	Financial Loss (Fixed charges)	Value of Production Lost Rs.
		Rs.	Rs.
1967-68	8,958	1,068,000	7,273,000
1968-69	1,095	51,000	626,000
1969-70 .	31,668	5,825,000	44,853,000
1970-71 . .		NIL	

Durgapur Steel Plant

Year	Manhours	Financial loss (Fixed charges) Rs.	Value of Production Lost Rs.
1967-68 .	1,080,540	69,094,000	109,701,000
1968-69 .	515,809	87,654,000	190,698,000
1969-70 .	535,729	60,531,457	116,304,499
1970-71 . .	1,763,660	62,197,124	111,597,000

Rourkela Steel Plant

Year	Manhours	Financial loss (Fixed charges) Rs.	Value of Production Lost Rs.
1967-68 .	22,000	22,034,000	63,336,000
1968-69 . .		NIL	
1969-70 .	167,112	19,141,000	70,950,000
1970-71 . .	292,420	27,447,880	120,420,000

6.30. It would be seen from the above statements that there had been considerable loss of production to strikes etc.

6.31. According to H.S.L. the main causes of labour unrest in H.S.L. appear to be the following:

(1) *Inter-union rivalry*

There are 8 unions in the Bhilai Steel Plant, 6 unions in Rourkela Steel Plant, and 7 in the Durgapur Steel Plant. It is obvious that in a situation where all these trade unions having conflicting ideologies and leadership are operating, industrial peace will be hard to maintain.

(2) *Intra union Rivalry*

Even where unions are recognised, and have a fairly large following as in the case of Bhilai and Durgapur, owing to ideological conflicts or because of personality conflicts, groups and factions have developed with the result that management has not always been

able to get responsive cooperation, even from these recognised trade unions.

3. Further some times the extraneous political factors affect industrial peace and productivity. The loss of production and the damage to costly equipment and property in Rourkela during the two Orissa Bundhs, one for the Talcher-Bimalgarh rail link and the other for a second steel plant in Orissa are glaring examples of it.

4. Also the Evaluation and Implementation Committee set up under the Code of Discipline should meet more regularly and function more effectively than hitherto. In West Bengal the Evaluation and Implementation Committee has not met since 1964.

6.32. As regards remedial measures which in the opinion of HSL would help in having better industrial relations, the HSL suggested the following steps:—

(a) Joint leadership of all unions to negotiate at the plant level, alternatively, the formation of a plant union and a governing council made up of persons elected by the entire body of workmen. The formation of a plant Union would enable different politically oriented trade unions to offer their candidates for election. Whether joint leadership of all unions is set up or a plant is constituted, the joint functioning of all section of workers should be ensured.

(b) Constitution of a two-tier bipartite machinery to settle labour management disputes. This machinery should consist of shop level watch dog committees, at the bottom, comprising representatives of management and employees to suggest measures for increasing production, maintaining discipline, and to intervene in disputes. At the top, there should be a high-powered central body comprising representatives of both management and employees drawn from the lowerrung committees.

(c) Prompt and firm disciplinary action against employees committing gross acts of indiscipline, and measures to isolate the ring leaders amongst the employees. It is believed that 80 per cent of employees, are disciplined and loyal, but are being misled and coerced and prevented, by

a few disruptive and extremist elements, from exercising their option to do normal work.

(d) Soliciting the active support and cooperation of all political parties.

(e) Providing police protection both in the plant premises and townships for such employees who would like to resist the disruptive tactics of the obstructions.

6.33. The Committee view with concern the unsatisfactory industrial relations in the steel plants of HSL especially in Durgapur and Rourkela Steel Plants. From the figures furnished to the Committee they find that the mandays lost due to strikes etc. in Durgapur Steel Plant during the first seven months of the year 1970-71 were as high as 1,763,660 resulting in loss of production of the value of Rs. 11.16 crores. In Rourkela Steel Plant, although the mandays lost 292,42 during the corresponding period were lower as compared to Durgapur Steel Plant the value of loss of production was stated to be much higher i.e. Rs. 12.04 crores. It needs no emphasis that for the efficient and economic working of any undertaking it is necessary that there should be understanding and co-operation between labour and management. In the steel plants, especially, due to the inter-relationship of manufacturing processes involved and the sensitiveness of the equipment to sudden and unplanned stoppages and interruptions, the strikes, etc. cause considerable harm. There is need for a constant endeavour, both on the part of the management and the labour unions to resolve difference, through mutual discussion, and voluntary arbitration rather than by resort to strikes, lock outs, etc.

6.34. The Committee note the various causes mentioned by the HSL for the labour unrest in HSL and the remedial measures suggested for it. The Committee have taken up for examination this year the horizontal study of Personnel Policies and Labour Management in the public undertakings. They would, therefore, make their detailed recommendations in this regard in that Report.

VII

PLANT MAINTENANCE

7.1. The three steel Plants of HSL have got separate maintenance departments independent of the production departments for the case and maintenance of the plant and machinery. It is, however, noticed that there have been a large number of major breakdowns (over 8 hours) in all the three Steel Plants. The details of such breakdowns during the last three years are given in Appendix..I..The total hours of shut down of plant and machinery due to such breakdowns was as follows:—

	Hours lost		
	1967-68	1968-69	1969-70
Bhilai Steel Plant . .	396·3	181·7	328·70
Durgapur Steel Plant . .	3545·3	5464·3	5054·8
Rourkela Steel Plant	315·2	418·2	880·5

7.2. The large number of breakdowns especially in Durgapur Steel Plant shows that due attention had not been paid towards regular preventive maintenance of plant and machinery. It was admitted by H.S.L. that one of the reasons for low production in Rourkela Steel Plant in 1969-70 was substantial backlog of maintenance in the critical units which had to be made good. In the case of Bhilai Steel Plant, it had been stated that a very satisfactory level of maintenance of plant and equipment was essential to enable the plant to achieve the rated capacity. It had also been found that the capital repairs programme of locomotives in this Plant got affected for lack of heavy maintenance facilities and difficulties in procurement of spares. So far as Durgapur Steel Plant is concerned, this matter was considered by the Pande Committee also which was appointed by Government to identify and assess the deficiencies in Durgapur Steel Plant and to ascertain the causes therefor. In its Report in April, 1967, the Committee observed as follows:—

> "It is a matter of regret that maintenance which is vital aspect of plant management has so far been sadly neglected at

Durgapur. The result of bad maintenance in the coke oven has had a very adverse effect throughout the Plant."

7.3. The Committee were informed that in a disturbed situation like the one in Durgapur Steel Plant, the programmes of scheduled maintenance were totally disrupted, wear and tear on the equipments in the absence of proper maintenance increased severely leading to frequent breakdowns and repeated changing of parts. The procurement of spare parts on the basis of normal wear and tear thus became totally inadequate to meet the replacement needs on account of accelerated wear and damage. All these had not only affected the production but have also affected the condition of the plant and equipment. The condition of the Plant and equipment would need to be improved. The organisation for maintenance has been adequately strengthened and schedules for preventive maintenance as well as annual overhauls had been prepared and were being implemented. Advance planning for procurement of spares had already been organised.

7.4. The Committee regret to note that sustained attention had not been paid towards repairs and maintenance of the Plants and Machinery especially in Durgapur Steel Plant resulting in a large number of breakdowns. Proper maintenance of plant and machinery is a must to ensure trouble-free operation of the plants at maximum efficiency free from breakdowns and non-planned shutdowns. The Committee therefore, desire that the maintenance departments in the plants should be geared to clear the backlog of repairs and maintenance and to ensure that the preventive maintenance of all the units is carried out in accordance with the schedules laid down. Advance planning for spares should also be done to facilitate timely replacements of worn out parts.

7.5. The Committee also regret to note that the Capital repair programme of locomotives in Bhilai Steel Plant suffered due to lack of heavy maintenance facilities. They feel that this handicap could have been overcome by the Plant with more careful planning and coordination in so far as repairs of locomotives is concerned. The (BSL) should have had arrangements with Railways for overhauling and repairs etc. of locomotives—a task not difficult to perform.

VIII

BY-PRODUCTS

8.1. An integrated steel plant envisages utilisation of coke oven gas as fuel in various furnaces of the plant. Since the coke oven gas contains certain harmful and corrosive ingredients, certain amount of treatment for the purpose of removing these constituents is inescapable. Additionally, the coke oven gas contains valuable chemicals which, it is desirable, should be recovered prior to burning the coke oven gas in various furnaces in the plant. These chemicals are essential for sustaining the organic chemical industries. As such the recovery of these chemicals is desirable in the overall national interest. In view of the demand for these chemicals by the organic chemical industries, units for recovering these products form an essential part of the integrated steel plant complexes everywhere. In the integrated steel plants under HSL also by-product plants have been set up as a part of the integrated complex.

8.2. The main products recovered at the by-product Plants can be divided broadly into three categories: (i) Tar products, (ii) Benzol produtcs and (iii) Ammonium Sulphate. Various products coming under Tar and Benzol products have been shown below:

Tar Products	Benzol products
(1) Creosote oil	(1) Benzene
(2) Pitch	(2) Toluene
(3) Naphthalene	(3) Xylone
(4) Patch creosote mixutre	(4) Solvent naphthalene
(5) Road tar	
(6) Processed tar	
(7) Crude anthracene	
(8) Crude tar oil	

8.3. The working of the by-product plants of HSL has not been satisfactory. The by-product plants both at Rourkela and Durgapur Steel Plants suffered loss in 1969-70 the loss being Rs. 26 lakhs and Rs. 109 lakhs respectively. The by-product plant at Bhilai, however, made a profit of Rs. 36 lakhs in 1969-70.

8.4. The Committee were informed that the reasons for the by-product plants running at a loss were essentially two, namely, lower volume of production and uneconomic prices for some of the products. The price of the by-products had been revised sometime ago and with the increase in the steel production the performance of the by-product plants will also show corresponding improvement.

8.5. The working of the by-product plants was examined by the Committee on Public Undertakings (Third Lok Sabha) while examining the three steel plants in 1964-65 and 1965-66. In their 11th Report on Rourkela Steel Plant in May, 1965 the Committee had pointed out that the various by-product plants were working much below the rated capacity and had recommended that expeditious action be taken to see that the fertilizer and other by-product plants work to their rated capacity.

8.6. In their 29th Report on Durgapur Steel Plant also the Committee had recommended that the causes of low utilisation of these plants should be investigated and steps taken to see that these plants at least pay their way rather than remain a liability on the Steel Plant.

8.7. As regards the action taken to improve the production performance of these by-product plants, the Committee were informed that Hindustan Steel Limited had appointed a Committee in 1967 to review the performance of the by-product Plants under Hindustan Steel Limited and to suggest measures for improving their performance. The recommendations of the Committee whose report was submitted in February 1968, were under implementation. Subsequently, a High-Level Technical Committee was appointed by Government, with Dr. G. P. Kane as Chairman, to review the working of the By-products Plant at Rourkela and the supply of coke oven gas to the Rourkela Fertilizer Plant in February, 1968. The report of the Committee was submitted in July, 1968. The decisions taken by Government on the various recommendations of the Committee were under implementation. The Statements showing the recommendations of the two Committees mentioned above and the action taken thereon are given in Appendies II and III. The Committee were informed that some improvement was already noticeable. For example, the recovery of Ammonium Sulphate in Bhilai has improved from 0.9 per cent of dry coal charged in 1964-65 to 1.0 per cent in 1968-69. Similarly, the recovery of Benzol at Durgapur had improved from 2.57 litres per tonne of dry coal charged in 1964-65 to 5.34 litres in 1968-69.

8.8. From a statement furnished to the Committee showing the yield of various by-products in three steel plants (Appendix IV) the Committee, however, find that the recovery of various by-products had been lower than norms laid down by the Norms Committee. The recovery of both crude Benzol and the Ammonium Sulphate during the years 1968-69 and 1969-70 has been the lowest in Rourkela Steel Plant as compared to the other two steel plants.

The Committee hope that the implementation of various recommendations of the two Expert Committees appointed by HSL to examine the working of these by-product plants will be expedited to improve the working of these plants. They would like to emphasize the need to maximise production from these plants since substantial investment has been made by HSL and their performance affects the cost of production of steel and also the working results of H.S.L.

Working of Screw Compressors—Rourkela By-Products Plants

8.9. In the case of by-product plants at Rourkela Steel Plant, the Committee found that one of the reasons for unsatisfactory working of these plants was the poor performance of screw compressors. Thus in the case of sulphuric acid plant, besides low hydrogen sulphide content in the coke oven gas, the poor performance of the screw compressors was stated to be an additional factor. In the case of Benzol Plant also it was stated that Benzol is to be recovered from the Coke Oven Gas after it is compressed to about 14 atm. pressure. The layout is such that the compressed gas passes to the Fertilizer Plant through the Benzol Recovery Unit. The performance of the screw compressors which were provided to compress the gas has been unsatisfactory from the very beginning; as such it has not been possible to pump the full quantity of gas to the Benzol Recovery Unit. The Committee were informed that the matter was taken up with the suppliers of screw compressors who carried out a lot of repairs/modification and also supplied certain spares. But they could not be held responsible for the consequential loss due to unsatisfactory performance of the screw compressors.

8.10. In this connection, the Committee would invite attention to the following observations in the Report of Kane Committee appointed by Government in February, 1968 to review the working of these by-product plants:—

> "The Committee feel that the Consultants should have provided a purification system to remove Benzol, Naphthalene

and hydrogen sulphide from coke oven gas prior to its entry into the screw compressors."

* * * *

"The next important innovation was the recommendation made by the suppliers, M/s. Koppers, that screw compressors be used for the handling of coke oven gas. They had stated that upto that time such compressors were not used anywhere else for the handling of dirty gases such as partially purified coke oven gas. At the same time it was claimed that the tar fog present in partially purified coke oven gas would provide a seal and prevent by-passing of gas from the high pressure to the low pressure side of the screw compressors. Surprisingly, on the basis of such claims the suppliers did not provide for full purification of the coke oven gas before it was compressed. It could have been anticipated that in an equipment like a screw compressor which has to operate at high speed, with the low clearance between the rotor and the casing and the likely presence of solid as well as semi-solid impurities and in the presence of corrosive material like cyanogen compounds, the operation of the compressors is likely to be full of trouble in a short period of time. Unfortunately this was what actually happened. The maintenance of the screw compressors seems to have been a major source of difficulty to the staff of the coke oven plant. After the introduction of a system of cleaning the gases between the second and the third stages the working of the screw compressor has been improved to some extent. It was reported also that with the experience gained at Rourkela M/s. Koppers have incorporated such washers into the design of screw compressors supplied to a similar complex established recently in Spain. The Committee would like to record therefore that the introduction of untried equipment for compression of a corrosive gas without provision for adequate purification, introduced an element of risk into the design of the plant that ought to have been avoided."

8.11. As regards action taken to improve the performance of the plant, the Committee were informed that the following steps have been taken to improve recovery:

(i) One more screw compressor has been ordered as a replacement to one of the old damaged screw compressors. This is expected to be available by April, 1972.

(ii) Action to instal additional gas cleaning facilities which will help improve the operation of the screw compressors has been taken. These facilities will be available by April, 1971.

8.12. The Committee regret to note the unsatisfactory working of the by-product plants at Rourkela Steel Plant due to poor performance of the screw compressors. It is unfortunate that the design deficiencies in the by-product plant resulted in avoidable loss to H.S.L. As pointed out by the Kane Committee the "introduction of untried equipment for compression of a corrosive gas without provision for adequate purification introduced an element of risk into the design of the plant that ought to have been avoided." The Committee further note that the Kane Committee recommended that "the Consultants should have provided a purification system to remove Benzol, Nepthalene and Hydrogen sulphide from the coke oven gas prior to its entry into the screw compressors." It appears that the entire working of the by-product plant was handicapped since the date of installation of the plant resulting in continuous loss in production. The Committee are amazed to find that in spite of having their technical experts, neither the Consultants nor the HSL noticed such a major defect in the plant till the Kane Committee detected the defects in 1968. The Committee are disappointed to note that the substantial loss and avoidable expendiure had to be incurred on account of the defective working of the compressors. Apart from the low production of by-products resulting from the defective compressors, remedial measure had to be taken by the HSL to instal a new compressor as "replacement" to the "damaged" one. For all these losses and avoidable expenditure, the Committee feel, the consultants and HSL cannot escape responsibility.

8.13. The Committee also find that even after the Report of the Kane Committee in July, 1968, it was only on 20th February, 1969 i.e. after six months that the Government conveyed to H.S.L. their decision on the various recommendations contained in the Report. The recommendations of the Committee were stated to be under implementation. The Committee feel that Government should not delay such matters of importance where production is hampered. The Committee hope that implementation of the recommendations of the Kane Committee would help to improve the working of the by-product plants.

Delay in commissioning of sulphuric acid plant at Rourkela Steel Plant

8.14. The Sulphuric acid plant at Rourkela Steel Plant was erected in May, 1960 at a total cost of Rs. 16.67 lakhs for the manu-

facture of sulphuric acid of 78 per cent strength out of the hydrogen sulphide gas available from the coke oven gas. The plant could, however, not be commissioned till August, 1970. The main reason was stated to be that the hydrogen sulphide content in the coke oven gas was lower than that envisaged at the time of designing the plant.

8.15. In this connection, the Committee find that the suppliers of this plant (Messrs. K. F. W.) had suggested in November, 1961 the setting up of a sulphur burning unit to make good the deficiency of Hydrogen sulphide content in the Coke Oven Gas. The H.S.L. decided in November|December, 1962—one year after the suggestion was made by the suppliers—to have a sulphur burning equipment and technical specifications were prepared by the Central Engineering and Design Bureau accordingly. However, it was not until 16th November, 1966 that the order for the unit was placed at a total cost of Rs. 3.81 lakhs.

8.16. As to the reasons for taking four years for placing orders even after taking the decision to have a sulphur burning unit, the Committee were informed that the decision regarding installation of Sulphur Burning Unit was taken in November|December, 1962, but it could not be implemented as the foreign exchange releases by the Government were not sufficient even to cover the maintenance requirement. Further, the question whether the plant should be based for using Pyrites or Sulphur was also under consideration.

8.17. The H.S.L. had sent proposals to Government on 26th December, 1962 for the installation of Sulphuric Acid Plant of capacity of sixty tonnes of Acid per day (at 100 per cent. concentration basis) based on sulphur under the Expansion Scheme. Government advised HSL *vide* their letter dated 11th February, 1963 that the Sulphuric Acid Plant to be included in the Expansion Scheme should be designed|modified to use indigenous pyrites instead of elemental sulphur and that arrangements shall also be made for change over from Sulphur to pyrites in the existing Sulphuric Acid Plant at Rourkela and Durgapur. They also advised that a change over will be arranged by HSL in consultation with Pyrites and Chemical Development Corporation.

8.18. The Government however approved and released foreign exchange for placement of the orders on Messrs. Koppers for the by-product plant including the sulphuric acid plant based on the elemental sulphur under the expansion scheme, subject to the condition that the new Sulphuric Acid Plant should be so designed that it may be converted to the use of indigenous pyrites at a later date

to take care of any delay that may arise in taking final decision in the matter. The contract was accordingly placed on the 4th July, 1963. However, for the Sulphur Burning Unit for the original plant the orders were not placed till 16th November, 1966. The Committee were informed that the Managing Director, Pyrites and Chemicals Development Corporation advised the Ministry in September, 1965 that indigenous pyrites would not be available earlier than middle of 1968. This was communicated to the H.S L. in October, 1965. Thereafter, the suppliers (Messrs. K. F. W.) were approached on the 19th November, 1965 for financing the project from DM credit earmarked for 1.8 MT Expansion Scheme. Messrs. K. F. W. agreed to the proposal on the 25th November, 1965. Orders were thereafter placed on 16th November, 1966. The sulphuric acid plant had been commissioned in August, 1970 and was under trial operations.

8.19. The Committee regret to note that the sulphuric acid plant erected in May, 1960 at a total cost of Rs. 16.67 lakhs could not be commissioned till August, 1970. There had been avoidable delay in placing orders for sulphur burning unit costing Rs. 3.81 lakhs to make good the deficiency of hydrogen sulphate content in the Coke Oven Gas. Surprisingly it took H.S.L. a period of five years for placing orders for this unit after the suggestion was made in this regard by the suppliers. It is surprising that about 2½ years were taken only in ascertaining from the Pyrites and Chemicals Development Corporation the position regarding the availability of pyrites in terms of the Government direction issued in 1963 that the existing Plants be designed|modified to use indigenous pyrites instead of imported sulphur.

8.20. The Committee also find that the contract for the by-product plant including sulphuric acid plant under the Expansion Scheme was placed on the 4th July, 1963 with elemental sulphur burning equipment with a future provision for pyrites burning. It is paradoxical that while the orders for the Sulphuric Acid Plant under the expansion scheme were placed in July, 1963 itself pending examination of availability of pyrites, the Management waited till November, 1965 for a reply from the Pyrites and Chemicals Development Corporation regarding the supply of pyrites before placing orders for the Sulphur burning unit in respect of the sulphuric acid plant already installed under the original scheme.

The Committee are also not able to appreciate how a period of four years was allowed to elapse between the placing of order for the Sulphur burning unit in November, 1966 and the commissioning

of the Plant in August, 1970. This is indicative of a leisurely and almost casual manner of dealing with plant operation which the Committee cannot but too strongly depreciate.

8.21. The Committee also fail to appreciate the decision to install another Sulphuric acid plant with higher capacity while the plant installed earlier could not even be commissioned till August, 1970, not to speak of its working satisfactorily.

Naptha reforming Unit of Fertilizer Plant, Rourkela

8.22. The Fertilizer Plant of Rourkela Steel Plant has also been working much below its rated capacity. The percentage of rated capacity achieved by the Fertilizer Plant during the last three years was as follows:—

1967-68	34%
1968-69	42%
1969-70	26%

8.23. The working results of the Plant during the above three years were as follows:—

	Net Loss
1967-68	Rs. 10·96 million
1968-69	Rs. 11·14 million
1969-70	Rs. 16·80 million

The total cumulative loss suffered by the Plant till 1969-70 was 12.29 crores.

8.24. The Committee have been informed that the loss has been mainly due to the fact that the fertiliser plant has been running at a very low capacity as compared to its rated capacity. This under-utilisation of capacity is mainly due to inadequate availability of coke oven gas from the steel plant.

8.25. The Zaheer Committee which examined the working of this Plant had suggested that to meet the shortfall of coke oven gas a Naptha Steam Reforming plant with a capacity of 8,500 Nm 3 hr. of hydrogen be installed in the fertilizer plant. This Unit was commissioned on 30th December, 1968. The Plant, however, met with a number of initial operational difficulties and on 18th May, 1969, *i.e.* only after 4½ months of its commissioning, there was an explosion in the reforming furnace of this plant. The Plant had been shut down since then and was commissioned only on 7th August, 1970.

8.26. As regards the reasons for the explosion, the Committee were informed that immediately after the explosion in the Naptha Reforming Unit of the Fertilizer Plant on 18th May, 1969, a Fact-find Team was set up by the General Manager, Rourkela Steel Plant, consisting of the German General Superintendent and the Assistant General Superintendent of the Steel Plant, the Chief Superintendent of the Fertilizer Plant and a representative of M/s. Ottos, the Contractors for the design, supply and erection of the Naptha Reforming Unit, to collect the facts concerning the accident so as to establish the sequence of events leading to the explosion. Later, on 21st May, 1969, an Expert Committee was set up by Hindustan Steel Limited under the Chairmanship of Shri V. K. Kasturi Rangan, Chief Project Officer, Department of Petroleum and Chemicals to go into:—

(i) Causes and circumstances leading to the explosion;

(ii) Survey the damages sustained jointly with the contractor, M/s. Otto & Co.

(iii) To fix responsibility for acts of omission and commission involved;

(iv) To recommend the technical precautions whereby such an occurrence could be avoided in the future.

8.27. The Expert Committee submitted their report on 17th July, 1969. The main points arising out of the report were as follows:—

(i) The broad assessment indicated that approximately Rs. 40 lakhs will have to be spent to restore the furnace to its original condition, which included dismantling, procurement of all supplies erection, supervision, transportation, insurance etc. About 50 per cent. of the above amount would be in foreign exchange.

(ii) There was lapse on the part of Contractors, M|s. Otto & Co., to give clear operating instructions; especially when no written instructions were given to operators before each shift in case of change of programmes;

(iii) The procedure adopted in purging into the furnace was completely wrong and was probably undertaken jointly by the staff of Fertilizer Plant and M/s. Otto. The hazards of purging the gas through the hot furnace were not realised;

(iv) Purging should always be done outside the furnace and not into the furnace. The procedure suggested by the Ottos in purging should not be practised; and

(v) Additional facilities enabling more liberal provisions for purging should be provided.

8.28. The Committee were informed that necessary steps had been taken by the Hindustan Steel Limited in June, 1969 in agreement with the Contractors for the rebuilding of the furnace within 13 months. It had been agreed that M/s. Otto, should arrange procurement and supply of all f.o.b. items required for the repairs and HSL should advance to M/s. Otto, rupee portion needed for the same. This arrangement was, however, without prejudice to the interest of either party claiming damages on account of the repairs of the furnace. Accordingly, orders for f.o.b. materials had been placed.

Besides the amount of Rs. 40 lakhs approximately which was required to restore the furnace to its original condition, there was considerable loss of production. The original targetted production programme of C.A.N. (25 per cent N) Fertilizer for the year 1969-70 was 4,00,000 tonnes, depending upon the minimum supply of 40—45,000 Nm hr. of coke oven gas from the Steel Plant. As against this, actual production, was of the order of 1,20,000 tonnes. While inadequate supply on account of labour troubles and difficulties with screw compressors of the By-Product Plant was responsible for the shortfall in production, the non-availability of naptha on account of the explosion also contributed to the shortfall.

8.29. The Committee regret to note the loss of about Rs. 40 lakhs suffered by the Rourkela Steel Plant due to explosion in the Naptha Reforming Unit of the Fertilizer Plant. They would like to be informed of the action taken by the HSL for the various acts of ommission and commission on the part of the Contractors, etc. pointed out by the Kasturi Rangan Committee.

IX

INVENTORIES

9.1. The following table shows the position of inventories for H.S.L. as a whole during the last three years.

Total Inventories (this includes Raw Materials, Finished & Semi-Finished materials & Stores and spares)

(In Millions of Rupees)

Year	Total Inventories of raw materials, finished & Semi-finished materials stores & spares as on 31st March	Value of production including depreciation & interest	Total inventories as percentage of value of production
1967-68 . .	1631·6	2642·8	61·73
1968-69 . .	1692·6	3192·9	53·01
1969-70 . .	1733·1	3862·4	44·87

9.2. The break up of total inventories was as follows:

(Inventory of Raw Materials)

Year	Stock of Raw materials as on 31st March	Consumption of Raw materials	Stock of Raw materials as percentage of consumption
1967-68 .	109·1	823·4	13·25
1968-69 .	161·2	992·7	16·24
1969-70 . . .	117·3	1180·3	10·86

Inventories of finished and semi-finished materials

(In Millions of Rupees)

Year	Stock of finished and semi-finished materials as on 31st March	Value of sales	Stock of finished and semi-finished materials as percentage of sales
1967-68 . .	578.5	2517.7	22·98
1968-69 . .	567·7	3203.8	17·71
1969-70 . .	617.6	3813.3	16·18

Inventories of stores and spares

(In millions of rupees)

Year	Stock of stores & Spares as on 31st March	Consumption of stores & spares	Stock of stores & spares as percentage of consumption
1967-68 . .	944·0	368·5	256·17
1968-69 .	963·7	413·3	233·17
1969-70 .	998·3	495.6	201.43

The Plant-wise details of inventories are given in Appendix V.

9.3. It will be seen from the above tables that there has been a down-ward trend in the level of inventories during the last three years. It is, however, noticed that the value of stores and spares was still high and the stocks at the end of 1969-70 was equivalent to 26 months stock on the basis of annual consumption.

9.4. The inventory position in respect of individual plants also shows that in Alloy Steel Plant the inventories were still very high. The total value of inventories as percentage of value of production was 121 per cent in this plant as compared to 35 to 51.6 per cent in the other three steel plants.

9.5. As regards the reasons for high inventories in Alloy Steels Plant it was stated that the high inventory ratio in this Plant was due to the fact that the production at the plant had not attained its rated capacity and the total inventories included left-over of construction materials, some initial spares and raw materials including ferro-alloys whose consumption pattern was yet to be established with the picking up of production.

The following measures had been adopted for the control of inventories:—

1. Cataloguing of General Stores & Spares.
2. Conducting ABC analysis and exercising strict control over A items.
3. Taking all items of general stores on Automatic Procurement system.

4. Taking disposal action for surplus items.

5. Long terms contract for regular and high value items so that most of the supplies are in the pipe line.

6. Standardisation.

7. Import substitution activities.

As a result of the above measures, the ratio of the total inventories had been gradually coming down from year to year.

9.7. As regards the steps taken for reducing the stock of stores and spares in the steel plants, the Committee were informed that so far as items under general stores and refractories were concerned the cataloguing of general stores items had been completed in Bhilai, Durgapur and Rourkela Steel Plants and had been completed to the extent of 67 per cent in Alloy Steels Plant. The remaining work was likely to be completed by about the middle of next year. While cataloguing, variety reduction aspect is also kept in view. Further, A, B, C, analysis had been carried out at all the plants. Category 'A' items are reviewed with reference to the stock, consumption during the last three months, quantity outstanding against requisitions, orders etc., once a month. Most of the 'A' category items orders covering annual requirements are placed with phased deliveries spread over the whole year. All times of general stores had been brought under automatic procurement system at Durgapur, Rourkela and Bhilai Steel Plants. The work in Alloy Steels Plant was in progress and was likely to be completed at all the plants by about the end of next year. A system of locating surplus items and the disposal of the surplus periodically had also been developed.

9.8. As regards spares, cataloguing in a newly devised proforma was being done and was likely to be completed by about the middle of next year. With the cataloguing of spares, their classification into slow moving, fast moving and risk insurances items was also being carried out. Monetary ceilings had been prescribed on purchase of spares for each Department of the plant. An exercise was also being made in standardisation and variety reduction.

9.9. To encourage import substitution Government had also appointed in June, 1969 a Committee under the Chairmanship of the Chief Engineer, Central Engineering and Design Bureau of Hindustan Steel Limited to make an expert review of the progress so far achieved in the matter of import substitution and the existing ar-

rangements for securing a coordinated development of manufacturing and other facilities and to suggest measures which should be taken for progress in the reduction in the imported requirements of spares, components etc. for the steel industry, both in the public and private sectors. The report of the Committee had been received and their recommendations were under consideration.

Hindustan Steel Limited Workshops were being fully used to meet the demands of the plants. Each Plant had been provided with a unit of spare Part Cell/Equipment Planning Department. The import substitution work for spares and sub-assemblies was, however, very much dependent on the availability of manufacturing drawings and special steels required for the purpose. Efforts were being made for the acquisition of the required drawings from the equipment suppliers and to make drawings where these were not available from the suppliers to the extent possible.

9.10. Thus, according to H.S.L. increasing control is being exercised in order not only to keep a check on the rise in inventories but also to reduce inventory holdings. Budget for procurement of stores and spares and refractories is also drawn up well in advance of the financial year taking into consideration the stocks in hand, past consumption and estimated future requirements. Purchases are kept within the budget and control is exercised through monthly statements. Remedial measures are also taken in case of variations.

9.11. The Committee note that the inventories in the Steel Plants of H.S.L. have shown a declining trend during the last three years and the total inventories as percentage of value of production was 43 per cent in 1969-70. However, in the case of stores and spares, the value of stock was still equivalent to 26 months on the basis of annual consumption. The Committee hope that the various measures undertaken by H.S.L. in this regard will help in bringing down the stock of stores and spares.

9.12. The Committee also find that Alloy Steels Plant was still having heavy inventories. These were 121 per cent of the total value of production in 1969-70 as compared to 43 per cent for the H.S.L. as a whole. Heavy inventories not only result in blocking of Capital but also mean avoidable expenditure by way of inventory carrying cost. The Committee recommend that a special drive be made to reduce inventories in this plant without any further loss of time. The Committee also suggest that the possibility of using computerised services for inventory control may be examined.

X

ORGANISATION

Board of Directors

10.1. The Board of Directors of H.S.L. has undergone several changes with regard to its type and composition during its existence of 16 years. Originally when HSL was established, it had a Board without any functional Directors. In their 33rd Report, the Estimates Committee (1958-59) recommended that for better administration and co-ordination full time Directors should be entrusted with the charge of certain specified departments of the Company. The Board of Directors was therefore changed from the policy type to the functional type between 1959—61. However, in 1962-63, the Policy Board was again revived. The functional members of the Board were dropped and so were the General Managers of the Plants. The Board consisted of one whole-time Chairman and the rest were part-time Directors.

10.2. The Committee on Public Undertakings also examined this matter and in their 28th Report in April, 1966 on Head Office of Hindustan Steel Ltd. the Committee observed that the functional Board pattern would be best suited to HSL. The Committee also considered that there were advantages in inclusion of General Managers on the Board.

10.3. In a statement laid on the Table of Parliament by the Minister of Steel, Mines and Metals on Performance of the Hindustan Steel Ltd., in April, 1968 it was stated *inter alia* that in response to the compulsions of the present situation several basic changes had been made in the top management structure of H.S.L. It was envisaged that in addition to the Chairman, there would be as full time functionaries two Deputy Chairman and three functional Directors, one for Finance, one for personnel matters including Industrial Relations and one to attend to the Commercial side. Further, by restoring the General Managers to the Board of Management it was sought to be ensured that the practical experience of the General Managers was available to the Board of Management in shaping policy.

10.4. In pursuance of these decisions, three functional Directors were appointed on the Board. One each for Finance, and personnel matters and one to attend to the commercial side. The General

Managers of the Rourkela, Bhilai, Durgapur and Alloy Steel Plants have also been appointed on the Board.

10.5. As regards appointment of Deputy Chairmen, the Committee were informed that two posts of Deputy Chairman had been envisaged at a time when the amalgamation of Bokaro with HSL was contemplated. It was subsequently decided that the merger of Bokaro Steel Ltd. with H.S.L. should be considered after it had gone into production. Accordingly, only one post of Deputy Chairman was sanctioned and the post was filled on 6th December, 1967. This post however fell vacant towards the end of March, 1969 consequent on the transfer of the incumbent to another post under Government. Having regard to the urgent need for stepping up production in the Steel Plants a post of Directors Production has been sanctioned in lieu of the post of Deputy Chairman. The post of Director Production as filled on 23rd September, 1970.

The Board of Directors at present consists of 13 members including the Chairman. Four of them *viz.*, (Director Personnel), Director (Commercial), Director (Production) and Director (Finance) are functional Directors. Another three are the General Managers of the three Steel Plants. The remaining five Directors represent the Ministries of Finance and Steel, the Chairman of Heavy Engineering Corporation, Bokaro Steel Ltd. and a non-official Director.

10.7. The Committee hope that the present system of the functional Board would be given a fair trial and frequent changes either in the character of the Board or its personnel, as has happened in the past, would be avoided. Now that the HSL has four functional Directors, the Committee expect the top management to have effective central control on important matters of policy and to provide suitable guidelines to the plant with a view to improve their working. It should however, be ensured that the plant management's initiative and self-confidence is maintained by allowing them to function independently within their respective spheres of delegated authority.

XI

FINANCIAL MATTERS

(a) Financial Position

11.1. The table below summarises the financial position of the H.S.L. under broad headings for the years 1967-68 to 1969-70:—

(Rs. in lakhs)

Liabilities	1967-68	1968-69	1969-70
(a) Paid up Capital (Including share deposit) . .	55,200	55,700	55,700
(b) Reserves and surplus (Capital contribution from outside parties) . .		0·80	1·01
(c) Borrowings:			
(i) From the Government of India . . .	53,150·03	54,183·36	50,581·29
(ii) From foreign party .		897·54	1,043·61
(iii) From Bank (including cash credit). . .	1,417·49	1,854·57	2,035·07
(d) Trade dues and other current liabilities (including provision); . . .	12,269·63	10,370·57	10,586·88
Total . .	122,037·15	123,006·84	119,947·86
Assets			
(e) Gross Block .	99,747·20	107,802·76	112,300.84
(f) Less Depreciation .	29,267·13	35,088·62	41,492·85
(g) Net fixed assets; . .	70,480·07	72,714·14	70,807·99
(h) Capital work-in-progress.	7,732·50	3,839·30	2,926·83
(i) Expenditure during construction/Expansion awaiting allocation . .	388·63	388·06	155·09

(j) Current assets, loans & advances (including investments received from outside parties as security Deposit)	30,599·12	29,386·79	28,402·81
(k) Investment . . .	67·48	0·76	0·75
(l) Other assets :			
(i) Deferred Revenue Expenditure (including Mines Development Expenditure, Limestone Development Cell Expenditure and United CE & DB Development. Expenditure) . .	498·04	414·81	344·13
(ii) Profit and loss Account	12,243·81	16,235·48	17,282.76
(iii) Miscellaneous expenses not written off .	27.50	27·50	27·50
TOTAL . .	122,037·15	123,006·84	119,947·86
Capital employed .	88,992·87	92,016·04	89,020·06
Net worth	42,430·65	39,023·01	38,046·62

Note:—1. Capital employed represents net fixed assets plus working capital.

2. Net worth represents paid up Capital plus reserves less intangible assets.

(b) Project Estimates

11.2. The table below indicates the estimates as originally drawn and those revised from time to time together with the actual expenditure incurred upto 31st March, 1970 for the three steel plants (1 million tonne plant):

(Rs. in crores)

	Original Estimates (1955)	Revised Estimates (1957)	Revised Estimates (1961)	Revised Estimates 1(963)	Actual cost upto 31st March, 1970 (Provisional)
Bhilai Steel Plant . .	110.00	178.65	199.32	202.34	199.86
Durgapur Steel Plant .	115·00	167·00	199·05	201·26	195·18
Rourkela Steel Plant .	128·00	213·85	221·33	233·20	230·69

11.3. It will be seen from the above table that there have been several revisions of the estimates in respect of all the three steel plants and the actual capital cost up to 31st March, 1970, on the one million tonne plants was 177 per cent of the original estimates in 1955. The main reasons for the revisions in the estimates from time to time in the case of each plant are given in Appendix VI.

11.4. In the case of the expansions of these plants also there were several revisions of the estimates as shown below:—

(Rs. in crores)

	Estimates drawn up by Consultants	First Estimates drawn up by Company	Revised Estimates drawn up by Company	Estimates sanctioned by Board	Estimates sanctioned by Govt.	Revised Estimates by the Board (1967)	Estimate; approved by the Govt.	Actual cost up to 31-3-1970
Bhilai Steel Plant (2.5 million tonne expansion)	104·60 (July, 1961)	157·30 (1962)	165·88 (1964)	164·35 (May, 1965)	138·14 (Oct, 1965)	152·26	151·21 (1970)	151·21
Durgapur Steel Plant (1·6 million tonne expansion)	66·20 (Aug. 1962)	64·61 (March, 1963)	69·70 (June, 1963)	60·59 (Feb. 1965)	58·65 (June, 1965)	67·78	67·78 (Nov. 1969)	64·43
Rourkela Steel Plant (1·8 million tonne expansion)	77·65 (Feb. 61)	113·17 (Sep. 1962)	135·70 (1963)	124·48 (Feb. 65)	105·53 (Oct. 1965)	167·40	—	154.59
Grand Total	248·45	335·08	371·28	349·42	302·32	387·44	—	370·23

N.B. The above figures do not include expenditure on township and ancilliaries.

11.5. The main reasons for the revisions in the estimates for the expansion of each of the three steel plants are given in Appendix VII.

11.6. Because of heavy capital expenditure on these plants, the gross block per tonne of steel ingots in the steel plant of HSL was considerably high. The following table shows the gross block per tonne of steel ingots in the three steel plants of HSL and its comparison with that in the private sector steel plants in India:—

Gross Block per tonne of Steel Ingots (Rupees)

	Million tonne plant stage	Expansion	Combined
	Rs.	Rs.	Rs.
Bhilai Steel Plant .	2023	1053	1441
Durgapur Steel Plant	2013	1233	1721
Rourkela Steel Plant .	2332	2180	2264
Tata Iron & Steel Co. . .	—	—	1342
Indian Iron & Steel Co.	—	—	1131

11.7. The Committee enquired during evidence the general reasons for the frequent revision of these estimates. The Chairman, HSL stated that one of the reasons was that from time to time there were additions to the facilities.

Another reason was the increase in the cost of civil construction due to changes in the rates and quantum of work. Further, if the time taken in completing the project is more than originally envisaged, it results in increased capital costs by way of interest charges, etc.

11.8. As regards the reasons for the difference in the cost of expansion of Rourkela and Durgapur Steel Plants, it was stated that the two plants were not similar. Rourkela Steel Plant has mainly L.D. system of making steel whereas Durgapur Steel Plant has only the open hearth system. Further, the expenditure incurred on the rolling mills was also different depending upon the products to be manufactured. In Rourkela, there was large expenditure—nearly half of the equipment cost—on the cold rolling mills for further processing of the material which increased cost without adding to the tonnage capacity.

11.9. As regards the reasons for higher capital cost in the case of H.S.L. as compared to steel plants in private sector the Committee find that in a statement laid on the Table of the House in April, 1968 by the then Minister of Steel, Mines & Metals on the perform-

ance of HSL, the following factors were stated to be responsible for higher capital cost of HSL:—

(i) These plants were ordered during the period 1956-57. As against this, only about 50 per cent of TISCO's plant and equipment, namely, those which formed part of their Modernisation and Expansion programme launched in 1951-52 and their Two Million Tonne Programme in 1955-56 can be considered as modern facilities, as indicated in the speech of their Chairman at their Fifty-third Annual general meeting. In the case of HSCO the proportion of post war equipment is less. Therefore, the higher capital costs of the HSL plants per unit capacity *vis-a-vis* TISCO and IISCO on the one hand and of TISCO *vis-a-vis* IISCO on the other reflect the differing average age composition of the facilities in the three Companies.

(ii) The cost of the HSL plants were pushed up by the fact that their foreign exchange costs were financed with source—and project—tied loans which precluded their being bought on the commercial basis of global tenders, an average TISCO and IISCO enjoyed by virtue of the fact that their expansions/modernisation were financed by World Bank loans and plant and equipment were secured on the basis of global tenders.

(iii) Another cost raising factor was that their construction was in the main undertaken on turn-key basis and to the design and engineering of foreign consulting engineers.

(iv) The HSL plants have substantial built-in capacity at the million tonne stage. While such capacity would be progressively absorbed when the current expansions get under way, they constitute idle investment at the million tonne stage and depress the capital/output ratio.

(v) The HSL plants were set up on green field sites which involved substantial development charges in the creation of the needed facilities. In particular, the capital expenditure on townships is as high as Rs. 70 crores. Unlike the case with TISCO and IISCO who were able to develop the township facilities over an extended period of time and with the aid of self-generated resources, this expenditure had to be incurred not gradually but all at once and at the very beginning with resources advanced by Government. The related interest charges have added to the

burden of recurring annual deficits on running the townships.

(vi) The capital costs of the HSL plants reflect progressive increases in the rates of customs duty that took place since the beginning of the Second Plan period. It has been computed that the customs duty paid by HSL on capital equipment amounts to about Rs. 75.4 crores till end of March, 1967. This part of the capital expenditure stands already recouped to public revenue.

11.10. The question of capital costs was also considered by the Mehtab Committee. That Committee found that there is scope for the reduction of capital cost, particularly in respect of the following items; (i) plant and equipment, including its erection; (ii) structurals; (iii) refractories; (iv) civil engineering; and (v) township.

11.11. The Mehtab Committee made the following recommendations to reduce the cost of these items:—

"(i) Turn-key contracts which have generally been found to be more expensive should, as far as possible, be avoided unless the need for speedy work makes such an arrangement unavoidable.

(ii) The experience of expansion programmes shows that it should now be possible to make a substantial shifts to indigenous plant and equipment. Such a shift would be particularly helpful to secure substantial savings in foreign exchange. The country is now well-equipped to design the general lay-out of a Steel Plant. But we have a big gap in our ability to design equipment. The Design Organisation is the country should be strengthened and encouraged to develop equipment designing.

(iii) Structurals fabrication is another item in which considerable reduction can be achieved. New designs should be developed to reduce the total tonnage of steel for the structurals. Our engineerings industry is now capable of developing and implementing such improved designs.

(iv) As regards refractories, already, we are using mostly indigenous manufactures but we should make efforts to rely entirely on our own refractories. Their quality however, needs to be substantially improved.

(v) The civil engineering works which were undertaken as part of turn-key jobs, naturally tendered to be expensive. The foreign contractors actually get the work done from the Indian firms. As we shift from turn-key to non-turn-key arrangements we should have direct contracts with the Indian engineering firms for all the construction work in the steel plants. The number of such firms is, however, limited and conditions should be created to encourage the entry of new organisations in order to ensure competition, which would bring down the cost of engineering work.

(vi) The present situation with regard to steel townships needs to be reviewed. As time passes, the burden of public utility services on the steel plants will go on increasing. The State Governments should be persuaded to share the cost of essential services particularly in view of the fact that they derive considerable revenue from the location of the industry in their areas.

As regards future townships, there is a need for improving the lay-out to plan compact towns. The number of quarters per acre can be very much increased and thereby the cost of land as well as utility service reduced."

11.12. The Committee enquired the action taken by Government on these recommendations. They were informed that the recommendations made by the Mehtab Committee in regard to cost reduction were generally acceptable. In fact, some of the suggestions made by the Committee have already been implemented. In the case of the Bokaro Steel Plant, the agreement between the Governments of India and the USSR for this Plant does not envisage a turn-key contract. For the first stage of the Plant, the total machinery and equipment required is 282,440 tonnes. Of this, only 1,02,902 tonnes would be imported. Similarly of 2,35,841 tonnes of steel structures required, only 17,708 tonnes would be imported from USSR. The bulk of total Bokaro's refractory requirements would be obtained indigenously. For Civil Engineering work, the contract has been given to Hindustan Steel Works Construction Limited. To promote maximum possible Indian participation in carrying out the design work, M/s. M. N. Dastur and Co. (P) Limited have been appointed as the Indian consulting engineers for a period of seven years from the 1st January, 1966. Their functions include preparation and submission of tender documents in respect of such portions of the plant, machinery and equipment as are outside the scope of Soviet suppliers and preparation of design and construction drawings

for the units to be designed in India from the design assignments to be supplied by the Soviet Consultants.

11.13. The Central Engineering and Design Bureau of Hindustan Steel Limited has signed a licence agreement with M/s. United Engineering and Foundry Company, Pittsburgh, USA in the beginning of 1969 for the acquisition of technical know-how for the design and manufacture of rolling mill equipment. To bridge the existing gap in its capacity to undertake planning of a steel plant as well as detailed designing of major units of a steel plant complex, an agreement has been recently signed with TIAZPROMEXPORT, USSR.*

11.14. As regards refractories, the difficulties relate mostly to the supply of basic refractories for open hearth furnaces. A satisfactory solution of this problem seems to involve the location of this problem seems to involve the location of new sources of high quality raw materials, especially magnesite and improvement in quality of refractories consistent with technological development in the field of steel-making. This matter is presently under the consideration of Government.

11.15. The question of economy in the cost of civil construction has already been considered by Government and a number of instructions have been issued by the Bureau of Public Enterprises to the Public Sector Undertakings covering economy in the cost of RCC structures, norms for engineering staff and supervision charges on civil construction, provision for contingencies in the estimates for civil works, etc.

11.16. Various matters relating to townships and factory, buildings of public undertakings were considered by the Committee on Public Undertakings in their 8th Report (Third Lok Sabha). Action taken by Government on their recommendations contained in this Report has been indicated in the 19th Report of the Committee (Fourth Lok Sabha).

A number of instructions have been issued by Government through the Bureau of Public Enterprises covering such matters as rational assessment of land requirements, rational assessment of requirements of residential accommodation, provision of semi-permanent structures, phasing of township requirements, norms and standards for industrial housing in public sector undertakings, etc.

11.17. The heavy capital expenditure on the plants of HSL is a major factor responsible for raising the cost of steel as against the depreciation charges account for about 25 per cent of the total cost

* The Committe will examine the working of Central Engineering and Design Bureau of H.S.L. in part II of this report.

of production of steel. **The Committee regret to note that there have been frequent revisions and considerable increases in the capital cost estimates as compared to the original estimates for each of the three plants of HSL not only for the original million tonne plants but also for their expansions. In order to have a proper economic appraisal of a project it is essential to prepare realistic estimates taking into account all foreseeable items of expenditure to obviate the need for freqquent revision of estimates. If substantial increases in capital outlay are placed before Government for approval after the project has been launched Government are left with no alternative but to approve the increase.**

11.18. The Committee find that one of the reasons for increase in capital cost has been the delay in construction and commissioning of the plants. There have been inordinate delays (2-3 years) in the commissioning of some of the units of the three steel plants both in the case of original one million tonne plants and their expansions. These delays result in higher capital costs on account of increased interest charges and administrative expenses during construction besides escalation in prices. The Committee recommend that steps should therefore be taken to control the time taken for the construction and commissioning of the plants by making effective use of modern net-work analysis techniques like Programme Evaluation and Review Technique and Critical Path Method.

The Committee further suggest that strict control should also be maintained over expenditure to ensure that there was no wastage or avoidable expenditure on the setting up of the plants.

(C) Working Results

11.19. The working results of H.S.L. as a whole and also on the individual units for the last three years are given below:

(Rs. in lakhs)

	Profit (+) Loss(—)	Prior period adjustments made in the year	Profit (+) Loss (—) after prior period adjustment
Consolidated Position			
1967-68	(—)3,877·01	(—) 134·86	(—)4,011·87
1968-69	(—)3,942·03	(—) 49·64	(—)3,991·67
1969-70	(—)1,090·55	(+) 43.27	(—)1,047.28
Units			
Bhilai			
1967-68	(—) 815.89	(—) 96.24	(—)7,912.13
1968-69	(—)1,119.41	(—) 15.88	(—)1,135 29
1969-70	(+) 282.72	(+) 81.88	(+) 364.60

1	2	3	4
Durgapur			
1967-68	(—)1,737.95	(—) 70.49	(—)1,808.4
1968-69	(—)1,749.08	(+) 12.03	(—)1,737.05
1969-70	(—)1,536.17	(—) 14.32	(—)1,550.49
Rourkela			
1967-68	(—) 780.80	(—) 11.75	(—) 720.55
1968-80	(—) 305.50	(—) 91.69	(—) 397.19
1969-70	(+) 829.41	(—) 46.41	(+) 783.00
Coal Washeries			
1967-68	(+) 13.33	(+) 38.67	(+) 52.00
1968-69	(+) 20.98	(+) 39.28	(+) 60.26
1969-70	(+) 15.07	(+) 22.30	(+) 37.37
Fertilisers Plant (Rourkela Steel Plant)			
1967-68	(—) 119.39	(+) 9.82	(—) 109.57
1968-69	(—) 127.33	(+) 15.94	(—) 111.39
1969-70	(—) 179.21	(+) 11.19	(—) 168.02
Alloy Steels			
1967-68	(—) 481.94	(—) 3.72	(—) 478.22
1968-69	(—) 673.56	(—) 9.08	(—) 682.64
1969-70	(—) 573.56	(—) 3.;2	(—) 577.58

11.20. It will be seen from the above table that there has been considerable loss suffered by H.S.L. during the last three years. In fact, except during the years 1964-65, and 1965-66, the H.S.L. has been running into losses since commencement of production in 1958-59. The net aggregate loss to HSL as on 31st March, 1970 amounted to Rs. 172.83 crores which worked out to 31.03 per cent of the equity capital of Rs. 557 crores. In addition there were cumulative balances under miscellaneous expenses (Rs. 27.50 lakhs), Deferred Revenue Expenditure, limestone Development Cell Expenses and Mines Development expenses, etc. (Rs. 344.13 lakhs) which are to be written off by charge to profits of subsequent years.

11.21. The Committee were informed that the main reasons for heavy losses in HSL were:

Unremunerative sales prices. The price structure for steel, as approved by the Government in 1962, provided for depreciation at 5 per cent and return at 8 per cent on a gross block of Rs. 1176 per tonne of finished steel (which was largely based on the then block of TISCO). HSL's gross block after expansion will be in the region of Rs. 2,400 per tonne of saleable steel. Had this been accepted as the basis for price fixation, HSL would have made a cumulative additional revenue of Rs. 330 crores upto 1969-70.

This would not have only wiped out the cumulative loss of Rs. 172 crores upto that period but would have enabled HSL to earn a net

profit of about Rs. 158 crores. Not only the price was unremunerative to start with, but the subsequent increases in price also invariably lagged behind the cost escalations.

11.22. The cost of production has gone up considerably during the period 1965-66 to 1969-70. The weighted average works cost of ingot (excluding depreciation and interest) has gone up from Rs. 247 to Rs. 330 per tonne. The increase is about 33.6 per cent as per table given below:—

Year	Weighted average cost (excluding interest & depreciation)/ Tonne	Increase over 1965-66	
	Rs.	Rs.	%
1965-6	247	—	—
1966-67	261	14	5.7
1967-68	299	52	21.1
1968-69	313	66	26.7
1969-70	330	83	33.6

11.23. As against this increase in cost, the net selling price increases (as an average of the prices of different products) during the period have been as follows:—

Year	Average Ex-works Net selling price/tonne of Saleable Steel	Increase over 1965-66	
	Rs.	Rs.	%
1965-66	525	—	—
1966-67	525	—	—
1967-68	569	44	8.6
1968-69	604	79	13.1
1969-70	638	113	21.5

It will be seen from the above noted figures that the prices have not been increased in proportion to the increase in cost of production.

11.24. Another reason for the losses was stated to be the increase in the capital related charges *i.e.* depreciation and interest without appreciable increase in production. The increase in production could not take place due to various reasons, the predominant being the disturbed industrial relations, general economic recession and unremunerative export prices (till 1968-69). The incidence of depreciation and interest from 1965-66 to 1969-70 is given in the following table:—

(Rs. in million)

	Depreciation	Interest
1965-66	418	183
1966-67	470	205
1967-68	532	242
1968-69	595	285
1969-70	644	294

11.25. In reply to a question it was admitted that Non-attainment of rated capacity significantly affected the working results of the company. With production reaching rated capacity, the incidence per tonne of steel even in the case of personnel and raw materials from captive mines was also likely to improve.

11.26. The Committee regret to note that the HSL has suffered a cumulative loss of Rs. 172.83 crores by the end of March, 1970. Even after 16 years of its establishment in 1954 it has been incurring heavy losses even now the loss being Rs. 10.47 crores in 1969-70. Instead of providing any return on large capital investment (Rs. 557 crores on 31st March, 1970) for all these 16 years, the losses incurred by HSL have wiped out 31 per cent of the equity capital. Of the three main steel plants, the loss suffered by Durgapur Steel Plant has been the highest i.e. Rs. 83.54 crores as against Rs. 32.19 crores incurred by the Rourkela (excluding Fertilizer Plant) and Rs. 26.03 crores by the Bhilai Steel Plant.

11.27. One of the reasons advanced for the losses is the unremunerative sales prices which have been fixed on a gross block of Rs. 1,176 per tonne of finished steel (largely based on the then block of TISCO) as against HSL's actual gross block of Rs. 2,400 per tonne after expansions of the Plants. The Committee would however, like to point out that while considering the impact of

higher capital cost on the working results of the Company, it is necessary to take into account the relatively higher degree of sophistication of the modern plants which are expected to yield higher production at lower cost as compared to the old plants.

The Committee also find that there have been increases in the selling price of steel. As pointed out in para 11.23, the average ex-works net setlling price per tonne of saleable steel has increased from Rs. 525 in 1965-66 to Rs. 638 in 1969-70 i.e. an increase of 21.5 per cent. But the cost of production has increased at a faster rate. The weighted average cost (excluding interest and depreciation) per tonne has gone up to the extent of 33.6 per cent during the corresponding period. The increase in the selling price of steel has wide economic repercussions. The Committee therefore, emphasise the need to reduce the cost of production instead of having a vicious race between the cost of production and the selling price. The Committee have discussed in detail in the previous chapters of this Report the various cost raising factors e.g. low production as compared to rated capacity, high cost of raising raw materials in the captive mines and higher consumption rate of raw materials, over staffing, lower productivity of labour, etc. They feel that there is considerable scope for reduction in the cost of production of steel with the consequent advantage of improving the working results of H.S.L.

XII

CONCLUSION

12.1. The Hindustan Steel Ltd., being the largest producer of steel, has made significant contribution to the industrial and economic growth of the country. Apart from providing employment opportunities to a large number of persons, the undertaking has also, contributed to the growth and dissemination of technical know-how in addition to the production of steel. The export of steel by the HSL to various countries in the world has been on the increase amounting to over Rs. 45 crores in 1969-70 which represents more than half the share of export of Indian steel. It has helped thereby in earning valuable foreign exchange and raising the image of Indian steel Industry.

12.2. The examination of Hindustan Steel Ltd. has, however, revealed serious deficiencies in the working of this undertaking which are summarised as follows:—

(i) Low production in all the plants.
(ii) High cost of production
(iii) Higher rate of consumption of raw material
(iv) Overstaffing and low productivity
(v) Heavy capital expenditure (gross block) resulting in higher depreciation and interest charges
(vi) Heavy recurring losses

The above deficiencies have been dealt with in detail in the concerned chapters of the Report.

12.3. To sum up, the Committee have come to the conclusion that to earn success the Hindustan Steel Limited should (i) maximise production (ii) improve industrial relations, (iii) effect economy through cost control measures and (iv) strive for their return on investment made and obviate losses.

12.4. The Committee are of the opinion that for the realisation of the objectives highlighted above, much will depend on the joint initiative of HSL and the Government. The undertaking/Government should study in depth the deep-rooted factors that stand in the way of production, cost control and profitability and should make a determined effort to eliminate them. The Committee have every reason to believe that this undertaking will grow into a successful enterprise and make even greater contribution to national economy provided remedial steps are taken forthwith by the undertaking/ Government with imagination and firmness.

New Delhi,
September 16, 1971.
Bhadra 25, 1893 (s).

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

APPENDIX I

Major Breakdowns (over 8 hours)

BHILAI STEEL PLANT

Estimated Production Loss due to Break-downs

Sl. No.	Nature of breakdowns	Units involved	Duration in hrs.	Estimated loss of production	
				(Tonnes)	Value Rs.
1	2	3	4	5	6
				(Rs. in thousands)	
	1967-68				
1	Choking of tuyere due to over flowing of slag	Blast Furnace No.3	16·7	800	136
2	Tap hole arch burst	Blast Furnace No. 5	28·0	200	341
3	Failure of Main Cooler of Monkey No. 2	Blast Furnace No. 1	9·6	500	85
4	Tap hole arch broke	Blast Furnace No. 4	15·00	1000	171
5	Metal leaked through the bottom of Furnace No.4	Open Hearth Furnace No. 4	18·0	400	108
6	Leakage in the coke-oven Gas pipe line.	Open Hearth Furnace No. 2	10·0	250	67
7	Metal leaked through door No. 3	Open Hearth Furnace No. 5	144·0	3500	945
8	Air checker fell down	Open Hearth Furnace No. 5	144·0	3500	945
9	950 Stand delivery side manipulator flap broke	Rail & Structural Mill (Rails)	11·0	1100	697
	Estimated Production Loss dne to break-downs				
	1968-69				
1	Big Bell rope snapped	Blast Furnace No. 4	18·0	1050	197
2	Slag entered in almost all the tuyeres	Blast Furnace No. 1	11·7	500	94
3	Left side guide channel of the main skip broke	Blast Furnace No. 4	10·0	600	113
4	Breakdown of Mud gun mechanism	Blast Furnace No. 2	14·0	500	94

Sl. No.	Nature of breakdowns	Units involved	Duration in hrs.	Estimated loss of production	
				(Tonnes)	Value Rs.
1	2	3	4	5	6
					(Rs. in thousands)
5	Wicket wall collapsed .	Open Hearth No. 8	9·0	230	66
6	Sill through and Jam removal. .	Open Hearth No. 8	22·0	570	163
7	Right side slag pocket wall failure	Open Hearth No. 8	24·0	610	174
8	Reversal out of order . .	Open Hearth No. 9	12·0	300	86
9	Left air smoke valve rope snapped	Open Hearth No. 1	11·0	280	80
10	Bricks from right knuckle fallen .	Open Hearth No 8	26·0	650	186
11	Luander leakage .	Open Hearth No. 8	24·0	610	174
	1969-70				
1	Failure of tuyere cooler No. 1 .	Blast Furnace No. 5	303	18900	371
2	Screw-down mechanism of 1150 stand broke	Blooming Mill	11	3000	1437
3	Left side manipulator gear bolt sheared	Blooming Mill	14	4000	1916

ROURKELA STEEL PLANT

Estimated Production Loss Due To Break-Downs

1	2	3	4	5	6
	1967-68				
1	Explosion of Monkey. . .	Blast Furnace II	43—50	1800	367
2	Explosion of Monkey & intermediate cooller	Blast Furnace IV	66—05	4125	841
3	Pit Running & Track Jam . .	LD 'Y'	36—30	1825	587
4	Mech. Breakdown .	LD 'Q'	89—10	4895	1775
5	Mech. trouble in coil conveyor	C.R.M. Pickling (MTP)	26 hrs. 10mts.	864	456
6	Mech. trouble in coil conveyor .	C.R.M. Pickling (MTP)	24 hrs. 15 mts.	800	422
7	Mech. trouble in Welding Machine	C.R.M. Pickling (MTP)	29 hrs. 15 mts.	906	478
	1968-69				
1	Shutdown for high mixer balance but prolonged due to compensator trouble	Blast Furnace I	48—00	2000	425
2	For changing hot blast Value . .	Blast Furnace IV	21 —00	1300	277
3	Ring bricks fell down .	L.D.Con. 'Y'	41—14	2063	666
4	Slag fell on the track while taking sample from the converter & jammed	L.D Con 'Q'	71—40	3960	1279
5	Breakdown in Manipulator	B&S Mill 25 mts.	15hrs 25 mts.	2064	816
6	No power due to falsh-over in Electrical pannel G.H. Bay	B&S Mill	19 hrs 30 mts	2633	1041
7	Mech. trouble in Top work Roll Beam	Plate Mill	48 hrs. 25 mts.	1334	1054

1	2	3	4	5	6
8	Mech. breakdown in Crop Shear	H.S. Mill	88 hrs.	6019	2775
9	Damage to MG set Bearing	H.S. Mill	26 hrs. 40 mts.	2570	1185
10	Leakage from Acid Tank No. 4	C. R. M. Pickling (Expn.)	40 hrs.	1480	766
1969-70					
1	Oil leakage from diaphram value	Coke Ovens Compressor No. 2	26-20		
2	Changing the compensator of stove No.1	Blast Furnace No. 1	26-25	1000	211
3	Winch house trouble . . .	Blast Furnace No. 4	52-50	3000	633
4	Crane trouble? . . .	SMS. O.H.D.	24-00	240	89
5	Crane No. 200 down over furnace (Elect).		22-00	220	82
6	Titler warm shaft assembly got damge	B&S Mill	34-55	4620	1826
7	Under Mech. Maintenance		24-00	3408	1347
8	Elect. Trouble with twin drive .		52-00	7956	3144
9	Fire broke out hot strike cable gallery.	H.S. Mill,	56-55	4608	3548
10	Electrical breakdown . . .		24-00	2217	1707
11	Trouble with Rl. engine set A.C. Motor.		21-15	2302	1773
12	Mech. trouble with entry drive side manipulator		17-40	2467	1900
13	Slab fell from skid of R.H. Fce. No. 1	Plate Mill	60-00	2505	2149
14	Trouble with synchroniser shaft magnet coupting		29-20	835	716
15	Trouble with A. C. Motor Engine set		42-30	1682	1443
16	Trouble with B.V. Roll bearing		53-30	1746	1498
17	Trouble with screw down gear .		39-30	1682	1443
18	Foundation base plate of coiler car broken	C.R. Mill pickling line	37-55	1748	904
19	Acid leakage in tank No. 3 .		39-00	1755	908

1	2	3	4	5	6
20	Hydraulic leakage from Uncoiler		22·05	990	512
21	Squeezer Roll No. 2 damaged		24·00	1752	906
22	Emulsion chamber broken . .	Reversing Mill	48·00	240	271
23	Fixing the floor Plate . .	Tendom Mill	22·40	529	598
24	Mech. trouble	S.S.L.—2;	24·00	151	185
25	Tank conductor trouble . .	Elect. Tinning line	24·00	204	489
26	Pot roll broken	Galvanising line	31·45	480	770

DURGAPUR STEEL PLANT

ESTIMATED PRODUCTION LOSS DUE TO MAJOR BREAK-DOWNS

	1967-69		1968-69		1969-70	
	Hrs. mts.	Prodn. Loss t.	Hrs. Mt.	Prodn. Loss t.	Hrs. Mts.	Prodn. Loss t.
C.O. Battery	1023-20	56285 300000* (33462)	1326-00	472930* (42630)	577-20	31751 (2858)
Blast Furnace	159·25	8449 (1649)	500-36	26532 (5624)	600·34	31212 (6569)
S.M.S. (Fce. Hrs.)	964-00	183161 (6197)	479-00	28101 (9976)	3335-49	63380 (22513)
Blooming Mill	122-22	14684 (6090)	131-25	15750 (6465)	442-41	53121 (21737)
Billet Mill	144-00 (own)	29301 (12599)	16·00 (Local delay)	16198 (6916)	120-00 (Local)	61895 (27667)
Section Mill	21-00	483 (295)	94-54	2183 (1543)	140-00	3220 (2303)
Merchant Mill	49-10	1326 (743)	116-00	3132 (1885)	14-00	378 (242)
Sleeper Plant	132-29	1325 (878)	40-00	400 (295)	9-00	90 (71)
Wheel Forge	616-30	6165 (6936)	1287-04	12810 (13988)	1328-59	13290 (13507)
Axle Forge	1314-45	2629 (2225)	253-21	707 (582)	1353-45	2707 (2261)
Skelp Mill			120-00	2400 (1894)	670-35	13412 (11239)

*During 1967-68 on an average 55 ovens per day down for repairs.
During 1968-69 on an average 55 ovens per day down for repairs upt October 68
Thereafter pattery No.1 completely down

NOTE: Figures in parenthesis indicate value of loss of production in thousand rupees calculated on the basis of net realisation for saleable products and transfer cost for intermediates.

APPENDIX II

Statement showing the Recommendations made by the By-Product Committee and Action taken thereof

Recommendations	Action taken
Bhilai Steel Plants	
1. One additional contrifuge is required.	This is being provided in the 3·2 M.T. Stage.
2. One naphthalene crusher to be provided if naphthalene cannot be disposed off in cake form. Departmental action suggested.	Sales have secured some orders for disposal of hotpressed nathalene in the cake form and have also given an indicaphtion that there would be enough orders in future for disposing of the monthly production.
3. A minimum of 30 days storage capacity for benzol products is recommended. Departmental action suggested.	The matter has since then been examined by CE & DB in details and it has been concluded that the existing storage capacity for 15 days would be sufficient.
4. Spare parts essentially to be imported to be procured in time unless proved indigenous parts are available.	No particular difficulty is being faced regarding getting the necessary spare parts from USSR.
5. Unkeep and general cleanliness in and around the plants will have to be improved at Bhilai Steel Plant.	Necessary steps have been taken to improve the cleanliness in the area.
6. Production pattern of mixtures of pitch oil has been laid down for Bhilai and Rourkela after studying the demands for various pitch oil products.	Sales have confirmed that there would not be any difficulty in obtaining orders on the basis of the recommendations of the Committee.
7. Pyridine bases from Ammonium Sulphate mother liquor should be recovered in the form of crude pyridine at Bhilai to start with and later on at Durgapur and Rourkela. Crude bases could be sold as such or further treated at a Central Plant. Facilities for recovery of crude bases is provided at Bokaro and a purification unit may be located at Bokaro where the Pyridine bases from all other plants may be further treated.	The matter has been examined by CE&DB. Some more details including marketing problems would have to be examined before investments are made.

Recommendations	Action taken
8. Bhilai should equip themselves for upgrading the crude anthracene obtained from Bhilai and Rourkela after confirming from M/S. Hindustan Organic Chemicals their interest in the Anthracenes Project.	For the present there is market for crude anthracene. The question of securing a firm market for upgraded anthracene is also being explored after which only a decision can be taken regarding this.
Durgapur Steel Plants	
1. Complete relining with lead sheets and acid proof tiles on the bottom and the sides of all the three mother liquor tanks. The work has already started.	Completed
2. Commplete relining with lead and acid proof bricks of all the three saturators. The work has already started.	Two saturators have been completely relined and the work for the 3rd is in hand.
3. Tube bundles of Wash oil coolers which cannot be cleaned should be replaced immediately. Plant has already placed orders for these and the same should be expedited.	Completed.
4. The cooler in the Crude Benzol Distillation Plant need repair. This is to be taken up departmentally and should be expedited.	Completed.
5. The damaged detarror should be repaired immediately and all the other detarrors need to be put in order. An outside agency may be entrusted with the job where needed.	Completed.
6. The Biological Oxidation Dephonolisation Plant is not in proper working condition because of heavy corrosion of some of the equipment. The corroded parts need replacement and the plant put in working order.	Completed.
7. Spare parts essentially to be imported to be procured in time unless proved indigenous parts are available.	Imports are being arranged.

8. In Durgapur many instruments are missing. A list of such missing instruments should be prepared by the Plant and ordered. It is necessary that they should be maintained in good working conditions.	Done
9. Unkeep and general cleanliness in an around the plants will have to be improved at Bhilai and Durgapur.	General cleanliness in and around the plant has improved.
Rourkela Steel Plant :	
1. Special spare parts are to be immediately procured from Germany for Naphthalene Presses. It may be necessary to import one screw press complete in replacement of the unit which is in a very bad condition. The order may be placed only after observing the work of the repaired presses.	No. 1 Press has been assembled and taken into operation. It is giving satisfactory production. No. 3 press has also been assembled with old spacer rings and is also in operation. Clearance has also been obtain for the foreign exchange required for spare parts of the 3rd press.
2. One pitch oil mixer should be provided together with auxilliary facilities CE&DB may be asked to make a proposal.	This is being processed.
3. Two new gas compressors may be provided in replacement of the existing units which are in bad condition.	Only one compressor which was damaged needed replacement. Orders for one new compressor have been placed on 30-3-70 and it is likely to be available in the second quarter of 1971-72.
4. Modification in the gas line inter-connection 1m.t.stage with 1·8 m.t. stage with one additional H2S Scrubber.	Contract for this work has been awarded on 31-3-70 and the work is likely to be completed by April, 1971.
5. Some of the units require replacement of material with Stainless Steel. Departmental action suggested.	Heavy Corrosion in the Carbolic Acid Plant has been checked and corroded parts have been replaced. Certain improvements have also been incorporated in the operating conditions and it is expected these would result in reduction in corrosion. There does not appear to be any immediate necessity for large scale replacements by Stainlees Steel.
6. Necessary wagon cleaning arrangements are to be provided. Departmental action suggested.	Wagon cleaing arrangements have been provided and TRR wagons are being cleaned regularly.
2. Schedule of maintenance, namely routine lubrication servicing of equipment, preventive maintenance, minor and major overhauls should be drawn up and strictly followed without major deviations as in the case of Bhilai Steel Plant.	Maintenance schedule including major and minor overhauls are being drawn up and being followd.

Recommendations	Action Taken
8. Spare parts essentially to be imported to be procurred in time unless proved indigenous parts are available.	Essential spare parts are being imported.
9. Production pattern of mixtures of pitch and oil has been laid down for Bhilai and Rourkela after studying the demands for various pitch oil products.	Sales have confirmed that there will be no difficulty in procuring orders on the basis of the productmix suggested by the By-Product Committee.

APPENDIX III

Statement showing Recommendations of the High Level Technical Committee to review working of by-Product Plant of Rourkela Steel Plant and Supply of Coke oven Gas to Rourkela Fertilizer Plant —Government's Decisions thereon and the Progress in the Implementation of the Recommendations.

Sl. No.	Recommendations of the Committee	Decision of the Government	Position of implementation as on 30th June, 1970.
1	2	3	4
1	A minimum of 45,500 Nm 3/hr of Coke Oven Gas should be guaranteed to the Fertilizer Plant and the Steel Plant should provide for burning substitute fuels, wherever possible, to ensure this supply.	Accepted	Action for burning substitute fuels, wherever possible has been initiated.
2	All the four streams of the Fertilizer Plant should be operated continuously for sufficiently long time on the ammonia producing as well as ammonia processing sides so as to bring to light bottlenecks if any.	Accepted	The new Screw Compressor from Germany is expected to be commissioned by April, 1972, By that time oil-firing arrangement to 2 of the Reheating Furnances and modification of the 1 MT Gas line in Coke Ovens would also be over. So it can reasonably be expected that by the middle of 1972 all the 4-streams of the Fertilizer Plant would be operated continuously.
3	The arrangement of by-passing of 10,000 Nm 3/hr of gas from the 1.0 MT stage coke ovens to the purification system established under the expansion would be immediately tried on an experimental basis that together about 12,000 Nm 3/hr of Coke Oven gas from the new ovens, a total of 22,000 Nm3/hr of Clean gas becomes available for mixing with the balance of unclean gas before entry into screw compressors, thus reducing the impurities entering the compressors it may be discontinued if it results in disposition, of naphthalene in their inter-cooler of the compressors.	Accepted	Action has been taken for modification of the pipelines for cleaning the entire gas.

1	2	3	4
4	The entire coke oven gas from the By-product Plant of the IMT stage should be purified for the removal of benzol and hydrogen sulphide in the expansion units for the By-Products Plant and the existing stand by Benzol scrubber and wash oil distillation units of expansion put to regular use. An additional Hydrogen sulphide scrubber with capacity for handling 35,000 Nm3/hr of coke oven gas and some inter-connecting gas lines must be provided.	Accepted. HSL should go in for the most suitable design compressors, keeping in veiw the recommendations of the Committee as and when replacement of existing compressors becomes nescessary.	By-products pipe line modification order was placed on M/S M. Koppers, Essen on 30-3-70. Order for replacement screw compressor also placed on 30-3-70.
5	If the performance of the compressors continues to be unsatisfactory inspite of the modifications mentioned at (4) above, conventional recriprocating type compressors would have to be installed.		
6	Spare parts needed to restore all the existing compressors into good working conditions must be procured on *top-priority basis*. There is at present no need to install additional screw compressors.	Accepted. If any of the compressors is found beyond economical repairs, it may have to be replaced.	Action taken .
7	For hydrogen sulphide scrubbing, potassium carbonate should be used in place of a solution of sodium carbonate to reduce the hydrogen sulphide content of gas sent to Fertilizer Plant and corrosion equipment.	Accepted.	Shut down has been taken on 28-7-70 for changing of corroded pipe lines. The scrubbing solution is being changed over from sodium carvonate to potassium carbonate. The work was completed on 5-8-70. Some foreign spares have been received. The balance is expected shortly. On receipt of all the spares, 3rd Naphthalene press will be assembled.
8	Spares for naphthalene presses should be produced immediately for optimum production of hot pressed naphthalene.		

9.	Naphthalene oil Dephenolisation Plant should soon be put into regular operation.	Accepted.	Commissioned on 17-10-69.
10.	All efforts should be made to improve the working of the Carbolid Oil precessing plant to capacity to ensure full recovery of phenol.	Accepted.	Working satisfactorily.
11.	The dephenolisation Plant, should be put into operation to ensure that the effluent from the ammoniastills is rendered free of phonols, as required by health regulations, before it is discharged into the river. Alternatively a bilogical oxidation plant should be provided for purification of the effluent liquors.	Accepted. HSL should consider the proposal for setting up the Oxidation Plant in the light of statutory limits and the anticipated composition of effluent to be discharged.	Fabrication of the curde ammoniliquor tank has been unduly delayed by the contractor. Since this work will require welding site close to the benzol tanks the trial runs of the Dephenolisation Plant had to be stopped.
12.	The cost of raw materials and services charged to the fertilizer plant should be determined on a rational basis. If for any reasons, this is not acceptable then there is no alternative but to separate the Fertilizer Plant completely from the steel plant and provide for the alternative sources of supply of syntheses gas as well as services to the Fertilizer plant with additional investment that may be necessary.	Accepted. With the effective implementation of this recommendation the question of separation of the Fertilizer Plant should not arise.	The costing procedure would be reviewed from time to time.
13.	(i) Phenol should be recovered from all streams at Rourkela and from all other sources in different units under HSL Plants to meet the rising demand therefor.	Accepted.	(i) Phenol from curde fraction is being fully recovered. Phenol extraction from ammonia liquor will commence after commissioning of the liuqor dephenolisation plant.
	(ii) Raju Committee's proposal for greater recovery of naphthalene should be implemented immediately.		(ii) Action is being taken.

1	2	3	4
	(iii) Experimental work to ensure that the anthracene recovered is of adequate a purity to meet the specifications of the ultimate consumers should be undertaken.		(iii) Experimental work has been carried out, effecting an increase in purity to 48% C.E.&D.B. is coordinating between the National Chemical laboratory and plants for the enrichment of the anthracene to the required purity to meet the demand of the ultimate consumer.
14.	Procedure for rigorous operative maintenance of the screw compressors should be established and adhered to strictly. At least one of the compressors should be run continuously for a long period of time to establish norms for major maintenance jobs.	Accepted	Preventive maintenance schedule for the screw compressors has been laid down and is being stricitly followed.

APPENDIX IV

Statement Showing yields of Various By-Products

	Bhilai Steel Plant				Durgapur Steel Plant				Rourkela Steel Plant			
	Norms as per the norms committee	1967-68	68-69	69-70 Average	Norms as per the ; norms committee	1967-68	68-69	69-70 Average	Norms as per the norms committee	1967-68	68-69	69-70 Average
Crudetar %	3·0	3·09	2·89	2·90	3·0	2·53	2·74	2·78	3·0	3·41	3·41	2·85
Benzol %	0·8	0·56	0·65	0·52	0·8	0.29	0·47	0·47	0·5 (MTP) 0·8 (EXPN)	0·81	0·46	0·34
Ammonium Sulphate %	1·1	0·75	0·98	0·95	1·1	0·73	0·90	0·88	1·1	0·48	0.77	0·68
Gas % (NM3) lb	300	306	30	303	275	296	279	271·8	275	271	267	270

APPENDIX V

Comparative statement of total inventories of Raw Materials Fininished and Semi-finished materials and stores and Spares in various plants of HSL

(In Million Rupees)

S. No.	Name of the Plant	Year	Total inventories of raw materials finished & semi-finished materials stores and spare	Value of production including depreciation & interest	Total inventories of percentage of value of production
1.	Bhilai Steel Plant	1967-68	657·9	1202·2	54·00
		1968-69	609·1	1204·8	50·00
		1969-70	608·8	1490·4	40·73
2.	Rourkela Steel Plant	1967-68	512·3	787·6	66·00
		1968-69	557.3	1065·9	52·00
		1969-70	550.0	1244·3	44·06
3.	Durgapur Steel Plant	1967-68	329·7	511·0	64·00
		1968-69	357·9	630·3	56·00
		1969-70	732·2	679·3	53·98
4.	Alloy Steels Plant	1967-68	107·0	18·7	570·00
		1968-69	133·5	43·6	300·00
		1969-70	157·5	100·3	156·94
5.	Central Coal Washeries Orgn. (excluding raw materials)	1967-68	14·7	199·4	7·25
		1968-69	16·8	238·3	7·00
		1969-70	17·8	273·1	5·99
6.	Fertilizer Plant	1967-68	17·0	64·1	25·52
		1968-69	23·4	78·9	29·68
		1969-70	23·4	64·4	36·34

APPENDIX VI

PROJECT ESTIMATES—ROURKELA STEEL PLANT (I MT)

Reasons for/factors leading to progressive increases in estimates are analysed below :

(Rs. in crores)

I.	Orginial Estimates (1965) Rs.128 crores . Revised Estimates (1957) Rs. 213 crores . . .		Increase Rs. 85 crores.
	The reasons for increases were:		
	(i) Increase in level of wages, price of raw material and freight during the period between the date of estimate and date of tender		11.69
	(ii) Improvements/additions		11.26
	(iii) Cost of Inland Transport not included in earlier estimates . . .		-
	(iv) Difference between the revised estimates mostly based on contracts concluded and the estimates contained in DPR. which were merely the opinion of the Consultants.		13.94
	(v) Provision for additional items ;		
	(a) O.M.Q.	Rs. 10.00	
	(b) Township.	14.00	
	(c) Fees to Consultants . . .	3.55	Rs. 43.00
	(d) Misc. other expenditure (outside the perimeter of the plants) . . .	15.45	
			Rs. 85.00
II.	Revised Estimates (1957) Rs. 213.85 crores . . Revised Estimates (1961) Rs. 221.33 crores .		Increse Rs.7.48 crores.
	Increases due to :		
	(a) Plant and Equipement	7·28	
	(b) O.M.Q.	4.04	
	(c) Township and water supply	0·65	
			11.97
	Less : Misc. expenditure (outside the perimeter of the plant) . . .	(—)	Rs. 4.49
		Net increase	7·48

III. Revised Estimates (1961) Rs. 221.33 crores
Final Estimates (1963) Rs. 233.18 crores } Increase Rs. 11.85

The reasons for main increases:

(a) Provision of Escalation which was not provided in the earlier Estimates . .	6.09
(b) Increase in miscellaneous expenditure (outside the perimeter of the plant) .	5.18
(c) Cost of Plant & Equipment . .	0.58
	11.85

BHILAI STEEL PLANT—I.M.T.

(Rs. in crores)

Reasons for factors leading to progressive increases in estimates are analysed below :

	Rs.	Rs.
I. Original Estimates	110·00	Increase
Revised Estimates (1957)	178·65	68·65
a. (i) Increase in size of power Plant .		3·50
(ii) Increases on account of Switch over of Refractories, Structural Steel Work for supply from the USSR.;		2·50
(iii) Provision for estimates of cost of construction, Plant Equipment and Machinery etc. which were not provided for in the DFR.		1500
b. Inclusion of the following items which were not included the original estimates		
(i) Consultants fee. .	2·65	
(ii) Water Works	2·50	
(iii) Misc. Expenditure	18·12	
(iv) O. M.Q.	10·38	
(v) Township . . .	14.00	47·65
Net increase		68·65
II. Revised Estimates (1957) . .	178·65	Increase
Revised Estimates (1961) .	199·32	20·67
a *Reasons for increases* :		
(i) Excess supply of plant & equipment and structural steel works from USSR under the variation clause of Credit Contractors.		
(ii) Increase in erection, costs of main plant & equipment and structurals of USSR and Indian plant & equipment (including erection).		20·67

(iii) Increase in the estimates of costs of Ore, Mines and Quarries.

(iv) Provision for increase in the cost of steel and Cement.

(v) Increase in miscellaneous expenditure on prospecting outside the perimeter of the plant, customs duty etc.

(vi) Increase in costs of Civil Engineering works.

(Rs. in crores)

III. Revised Estimates (1961)	199·32	Increase
Revised Estimates (1963)	202·34	3·02

(The main reasons for the increase are due to increase in the quantity of civil Engineering Works and Erection Cost etc. and custom duly rates.

DURGAPUR STEEL PLANT (IMT STAGE)

The reasons for factors leading to progressive increases in estimates are analysed below :—

I. Original Estimate (1956) . . Rs.	115 crores	Increase Rs.
Revised Estimates (1957) . . . Rs.	167 crores	52 crores.

Reasons for increase of Revised Estimates over the original Estimates :

	Rs.
(a) Increase in FOB cost in the final contract	5·99
(b) Increase in Sterling content of Technical services	3·37
(c) Increase in shipping and handling charges	1.47
(d) Increase in Indian material and work	7·57
(e) Increase in cost of Wheel Tyre and Axle Plant	3·38
(f) Other improvements/modifications	2·22
(g) Provision of new items	
(i) Township	14·00
(ii) Customs Duty, Consultancy fee, etc.	14·00
	52·00

II. Revised Estimates (1957) . . Rs.	167 crores	Increase Rs.
Revised Estimates (1961) . . Rs.	199·05 crores	32·05 crores

Reasons for increase in Revised Estimates (1961) over the estimates of 1957.

	Ks.
(a) Increase in the total estimates for site works	12·00
(b) Escalation not provided in the earlier estimates	12·00
(c) Increase in the estimates for township	3·30
(d) Increase in the estimates for FOB Plant and equipment and various other increases and minor adjustments.	4·75
	32·05

		Rs. crores;	Rs. crores;
III.	Revised Estimates (1961) . . .	199·05	Increase 2·21
	Revised Estimates (1963) .	201·26	
	Reasons for increase :		
	(a) Increase in Customs Duty		8·87
	(b) Increase in provision for Misc. items . .		2·52
	Total		11·39
	Less :		
	(i) Reduction in the final cost of various units like wheel and Axile plant, Power Plant Auxiliaries, Rolling Mills, Blast Furnaces etc. .	7·70	
	(ii) Non-inclusion of the cost of land for plant .	1·47	9·17
	Netincrease: .		2·22

APPENDIX VII

ROURKELA—1·8 MTP EXPANTION

(Rs. in crores)

The reasons for factors leading to progressive increases in estimates are analysed below :

	Rs. crores	Rs. crores
I. Original Estimates . .	77·65	Increase 35·52
1962 Estimates	113·17	

Reasons for increase in 1962 *estimate over the Original Estimates* :

(a) Increase in price level in Germany by 5% (approx.) subsequent to the preparation of the original provisional estimates and increased provision under spares (from 5% to 6%) . .	3·94
(b) Spillover of Projects from 1 MTP and *subsequently included in* 1·8 *MTP estimates*	
(i) Sinfering Plant	4·05
(ii) Second pig casting Machine	0·44
(c) *Items not providing the original Estimates*	
(i) Town ship . .	10·00
(ii) Ore, Mines & Quarries	7·00
(iii) Interest on Capital .	5·60
(d) Increased provision under suspension . . .	3·75
(e) Minor adjustment for the Plant & Equipment, freight, custom duty etc.	0·74
	35·52

II. 1962 Estimates : Rs. 113·17 crores.	Increase crores	Rs. 22·53
1963 Estimates : Rs. 135·70 crores.		

Reasons for increase in 1963 *Estimates over the* 1962 *estimates.*

(a) Interest—additional amount on account of the increase in the Project Cost. . . .	1·00
(b) Sintering Plant .	1·41
(c) *New Items* :—	
(i) Pipe Bituminising Plant	0·36
(ii) Bondamunda Link Line	0·60

(iii) Training expenses 0·44

(d) Erection . . . . . 2·58

(e) *Increased provision as a result of Contract finalisation* :

		Rs.	Rs.
1.	Plant & Equipment . . .	2·84	
2.	Spares	1·30	
3.	Freight, Insurance & Customs Duty . . .	5·02	
4.	Civil Engineering . .	3·09	
5.	Erection/Erection Supervision	2·96	
6.	Enabling Works . .	1·94	
			Rs. 17.15
			23·54
Less : Reduction in contingencies Engineering and Township etc.			(—)1·01
			Rs. 2·253

III. 1963—Estimates : Rs. 135·70 crores.
1965—Estimates : Rs. 124·48 crores. } Decrease : Rs. 11·22 crores.

Reasons for the decrease in 1965 *estimates over the* 1963 *estimates.*

Exclusion of Township Estimates .	Rs. 9·66
Other Adjustments .	1·56
	11·22

IV. 1965—Estimates approved by Board Rs. 124·48 crores
1965—Estimates approved by Govt. Rs. 105·53 crores } Decrease Rs. 1895 crores.

Reasons for the decrease in estimates as approved by the Govt. in October, 1965 over the estimates approved by the Board in Feb. '65.

(a) Reduced provision under :

(i) Contingencies	Rs. 1·65	
(ii) Expenditure during Construction	2·75	
(iii) Enabling Works. .	0·60	Rs. 5·00

(b) Exclusion of the following items.

(i) Pipe Bituminising Plant . . .	Rs. 0·35	
(ii) Ore, Mines & Quarries . . .	7·00	
(iii) Interest on loan capital .	16·60	Rs. 13·95
		18·95

V. 1965—approved by Govt. Rs. 105·53 crores
1967—approved by Board Rs. 167·40 crores
. Increase Rs. 61·80 crores

Reasons for increase in the estimates as approved by Board in 1967 over the estimates *approved by the Govt. in* 1965

(a) *Inclusion of the following items which were not included in the estimates approved by Govt.*		
(i) Wagon Repair Shop	0·54	
(ii) Special Steel Plant (Re-included) .	5·92	
(iii) Naphtha Reforming Plant	3·63	
(iv) Ore, Mines & Quarries	7·86	17·60
(b) *Increase in the provision for plant and equipment due to modifications and additions* . . .		3·70
(c) *Increase in the provision for erection due to the following* :		
(i) Increase in wage rates in Germany .		
(ii) Additional man-months		3·60
(iii) Rates adopted in the estimates sanctioned by Govt. were found inadequate.		
(d) *Increase in the provision for supervisions due to the following*:		
(i) Increase in wages (Wage Board Award)		
(ii) Increase due to payment of Statutory Bonus		5·70
(iii) Increase in the period of construction by 1 to 2 years		
(e) Increase due to devaluation of Indian Rupee in June, 1966		9·40
(f) Increase in the rates of Customs Duty . .		10·80
(g) Increase in the provision for Civil Engineering as the provision made in the earlier estimates were based on the loa l data, static calculations etc. .		2·60
(h) *Minor increases in other items and inclusion of new miscellaneous items such as* :		
(i) Recoiler for two galvanising lines .		
(ii) Oil Firing Equipment . .		
(iii) Sixty make-up water pumping . .		1·80
(iv) Slap yard crane Tong etc. . . .		
(v) Inclusion of interest on loan captial .		6·60
		61·80

VI. In order to obtain the latest estimates, further revision of project Estimates based on actuals as on 31-3-70 is under preparation in the plant. How-

ever, based upon the assessment made by the plant in Jan.'70 the estimates work out to Rs. 170·05 crores. This, however, does not include: . .

(i) Ore Mines & Quarries (Rs. 7·50 crores)

(ii) Some items like Slag Dumping Yard, Slab Yard, Coil Conveyers etc.

This represents an increase of about Rs. 11 crores over the 1967 estimates of Rs. 167·40 crores. This is accounted for by the following :

(a) Revaluation of Deutsche Mark . . .		
(b) Erection		3·3
(c) Interest on loan		1·4
(d) Increase in the cost of special Steel Plant, Naptha Reforming Plant and Wagon Repairs Shop, etc.		1·6
(e) Freight & Insurance .		0·9
(f) Plant & Equipment		0·8
(g) Supervision and Administration during construction.		0·7
(h) Civil Engineering		0·6
(k) Increase in other miscellaneous items and minor adjustments	(approx.)	1·7
	Total .	11·0

BHILAI—2·5 MTP EXPANSION

(Rs. in crores)

Reasons for factors leading to progressive increases in estimates are analysed below

I. Original Estimates—Rs. 104·60 crores
Revised Estimates (1962)—Rs. 54 crores } Increase Rs. 52·70 crores

Reasons for the increase in over the original estimates

(a) *Provision for New Items* :

1. Design Fes & Prospecting	1·50	
2. Supervision (Soviet & India) .	6·50	
3. Enabling works and works outside the perimeter	8·28	
4. Washing Plant Mines	4·50	
5. Township	8·92	
6. O.M.Q.	13·00	
(b) Increased provision under custom duty	10.00	Rs. 52.7

II. 1962 Estimates Rs. 157·30 crores
1964 Estimates Rs. 165·88 crores
} Increase Rs. 8·58 crores

Reason for increase in 1964 estimates over the 1962 estimates

(a) Increased provision under :—

1. Spares	2·12	
2. Designing & Prospecting	1·58	
3. Supervsion (Soviet & Indian)	4·48	
4. Custom Duty etc.	2·02	10·20
(b) Provision for railway siding at Hirri Mines		0·23
		10·43
(c) Reduced provision under:		
1. Enabling Works, Construction Plant & Equipment	0·19	
2. Works outside perimeter wall	1·67	1·86
		8·57

III. 1964 Estimates : Rs. 165·88
1965 Estimates : Rs. 164·35
} Decrease Rs. 1·53 crores

Reasons for decrease in 1965 estimates over 1964 estimates

Add increased provision under Mines		7·39
Less reduced provision under works outside the perimeter wall		8·92
	(—)	1·53

IV. May 1965 Estimates : Rs. 164·35
Oct. 1965 Estimates : Rs. 138·14 (Govt.)
} Decrease Rs. 26·21 crores.

Reasons for decrease in estimates as approved by Govt. in October, 1965 over the estimates approved by the Board in May, 1965.

Reduced provision under :

1. Plant & Equipment	1·89	
2. Mines	5·80	
3. Custom Duty etc.	4·02	21·17
Exclusion of Estimates for Washing and Beneficiation Plant.		4·50
		26·21

Project estimates amounting to Rs. 138·14 crores was approved by Govt. in October, 1965. Subsequently Government approved Rs. 0·57 crores in March, 1966 for expansion of locomtive facilities and again approved Rs. 0·04 crores in April, 1967 for extension of stay of Soviet Sp ecialists.

Total Govt. approved Project estimates Rs. 138. crores upto March, 1967 December, '67 Estimates (Board) Rs. 152·258 *Cr.* — Increases in estimate Rs. 13·508 crores.

N.B: The above estimates are inclusive of PMQ but exclusive of townships.

Reasons for increases :

(a) Increase in Indian and Soviet supervision due to the following reasons . . . . . Rs. 5·193 crores

(i) Revision in the pay scales (Wage Board Award) payment of Profit sharing Bonus

(ii) Extension of the stay of Soviet staff on account of modifications and difficult expansion works which had to be carried out in the existing Steel Plant.

(iii) Extension to the construction schedule due to late receipt of structure equipments materials etc.

(a) Increase due to higher statutory imposition, Customs duty . . . . . Rs. 7·400 crores

(c) Increase due to non-inclusion of provision in the earlier sanctioned estimates interest on loan capital | Rs. 1·800 "

(d) Increase due to devaluation of Indian Rupee in 1966 . . . . . 1·522 crores — 15·915 crores

Less: (i) On account of the deletion of the provision for expansion of the Administrative Building (—) 0·421

(ii) On account of change in the process of washing and screening facilities at Nandini Mines (—) 1·120

(iii) Effect of minor increases/decreases in other items like plant & equipment, enabling work etc. . . . . (—)0·866 — Rs.2·407

Net increase : 13·508

; Estimates approved by Board in Dec. 1967: Rs. 152·258 crores Estimates sanctioned by Govt. in July 1970: Rs. 151·212 Crores. — Decrease : Rs. 1·046 crores

Reasons for decrease :

(i) The estimates for Jharandali were reduced to Rs. 1·144 crores as against the earlier estimates of Rs. 2·190 crores approved by Board (—) 1·046

(Rs. in crores)

1·6 MTP EXPANSION DURGAPUR

The reasons for factors leading to progressive increase in estimates are analysed below:—

I.	*Original Estimates* : *Rs.* 66·20 *crores March* 1963 *Estimates* : *Rs.* 64·61 *crores*	Decrease	Rs. 1·59 crores.
	Reasons for the decrease in March, 1963 *estimates over the original estimates*		
	(a) New Provision in respect of :		
	(i) Enabling Works	1·20	
	(ii) Purchase Obligation . . .	0·58	1·78
	(b) Increase Provision in respect of Plant etc .		1·63
			3·41
	(c) Exclusion of following items:		
	(i) Expenditure during constrn.	2·00	
	(ii) Interest on loan capital	3·00	(—) 5·00
			(—) 1·59
II.	*March 1963 Estimates* : *Rs. 64·61*	Increase	
	June 1963 Estimates : *Rs. 69·70*	Rs. 5·09	
	Reasons for the increase in June 1963 *estimates over March* 1963 *estimates*		
	(a) New Provision under :		
	(i) Expenditure during constrn.	1·00	
	(ii) Interest on loan capital	3·00	
	(iii) Constrn. Equipment .	0·28	4·28
	(b) Additional Provision under Plants etc.		0·96
			5·24
	(c) Reduced Provision in respect of Purchaser obligations		(—) 0·15
			5·09
III.	*June 1963 Estimates* : *Rs. 69·70 crores* / *Feb. 1965 Estimates* : *Rs. 60·59 crores*	Decrease Rs. 9·11 crores	
	Reasons for decrease are :—		
	(a) Exclusion of Estimates in respect of :		
	(i) Township .	8·00	

(ii) Construction Equipment	0·28	(—)8·28
(b) Reduced Provision towards expenditure during constrn.		(—) 0·50
(c) Other adjustments		(—) 0.33
		(—) 9·11 crores

IV. February '65 Estimates : Rs. 60·59 crores
June 1965 Estimates : Rs. 58·65 crores
} Decrease Rs. 1·94 crores

Reasons for decrease are :

(a) Exclusion of provision towards interest on loan capital	3·00	
(b) Reduced provision towards enabling works .	0·20	(—) 3·20
(c) Increased provision towards plant etc. . .		(+) 1·26
		(—) 1·94

V. Project estimates approved by the Government in June, 1965: Rs. 58·657 crores } Revise Project estimates for Rs. 69·14 crores approved by the Board in May 1968 were reduced to Rs. 67·78 crores based on actuals as on 31·3·69 and were approved by Govt. in November, 1969.

Increase Rs. 9·129 crores

Reasons for increase in the estimates as approved by Government in November, 1969 over the estimates approved by them earlier in June 1965 :—

(a) Increase due to devaluation of Indian rupee in June '66	Rs. 2·537	crores
(b) Increase due to higher statutory imposition, freight, customs etc.	Rs. 2·673	crores
(c) Interest on loan capital '. .	Rs. 2·00	crores
(d) Construction equipment :		
(i) Increase in the proportionate cost on the running and maintenance of the equipment (ii) Recoveries on account of hire charges being lower than what was estimated earlier	Rs. 1·088	crores
(e) Net effect of the savings . . .	Rs. 0·831	crores
Total .	Rs. 9·129	crores

APPENDIX VIII

Summary of Conclusions/Recommendations

S. No.	Reference to para No. in the Report	Summary of Conclusion /Recommendation
1	2	3
1	2.14	The Committee regret to note that in the agreement entered into with the consultant for Alley Steels Plant (M/s Dasturco) in December, 1959, the payment of fee was linked to a certain period of time instead of providing fee for completion of specified works within stipulated period with suitable penalty clauses for non-completion of work within the time limit. Inspite of the experience of the original agreement the same defective provision was allowed to continue in the agreement for extension of consultancy services in 1965 due to non-completion of the work within the original schedule. As mentioned in paragraph 2.8 of the Report the Committee on Public Undertakings (Third Lok Sabha) recommended in April, 1966 that Government should ensure that they did not in future enter into consultancy agreements on these terms. The Committee are distressed to note that although the Government accepted this recommendation in January, 1967, the agreement with the consultants was extended twice linking the additional fees with a period of time instead of completion of the remaining work. The Committtee desire that this matter should be looked into by Government with a view to fixing the responsibility for entering into defective agreements in the course of extending the

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		services of the consultants, ignoring their own experience of the original agreement and the recommendation of the Committee on Public Undertakings.
2	2.23	The Committee regret to note that the agreement with the Consortium (M/s ISCAN) for construction of Durgapur Steel Plant did not contain suitable provisions for the supply of detailed drawings simultaneously with the completion of the erection of a unit. The result was that the essential spares for operation of the plant had to be procured from the consortium, who had no manufacturing activity of their own, resulting in avoidable payments in the nature of middle man's profit. The Committee note the statement made by the Secretary of the Ministry of Steel & Heavy Engineering that the lacuna in the agreement was due to inadequate experience at the time of such collaboration agreements. As pointed out in para 2.22 of the Report there were several deficiencies in agreements entered into with other consultants/collaborators also. The Committee, therefore, recommend that Government/Bureau of Public Enterprises should undertake a review of all important agreements entered into with consultants/collaborators by the Government/Public Undertakings and evolve guidelines in the light of the experience gained thereby, for entering into such agreements in future.
3	3.7	The total production of steel ingots in the three steel plants of HSL had come down from 70 per cent of the rated capacity in 1967-68 to 67 per cent in 1969-70. In the case of Rourkela and Durgapur Steel Plants, the production in 1969-70 had gone down as low as 61.3 per cent and 59.3 per cent of the rated capacity respectively. In Durgapur Steel Plant, the production

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		was even less than that achieved before the expansion of the plant. The production in 1969-70 was only 8.18 lakh tonnes as against 10.06 lakh tonnes in 1964-65.
	3.8	The Committee regret to note that the production was not only substantially lower than the rated capacity but even lower than the attainable capacity which according to the management had been arrived at after taking into consideration the normal gestation period and other constraints like imbalances arising out of lack of matching facilities with the chain of production. The lower production of steel as compared to capacity means higher cost of production and financial less to H.S.L. and produces a heavy impact on the whole economy. There has been considerable scarcity of steel in the market resulting in high open market prices. The import of steel to meet the demand also results in loss of valuable foreign exchange. Had the three steel plants worked to their rated capacity, an additional 18.99 lakh tonnes of ingot steel would have been available to the country. It is, therefore, imperative that urgent and effective steps are taken to improve production performance of the steel plants.
4	3.40	The Committee view with concern the shortage of refractories required by the Steel Plants which according to HSL was a serious impediment to raising production. Inspite of long established refractory industry in India HSL had to import substantial quantities of refractories at considerable cost. The orders for imports during 1970-71 were likely to be of the order of Rs. 10 crores. The Committee, however, feel that with proper planning and foresight it should have been possible to place orders

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		for the import of refractories well in time to avoid shortfall in production due to the shortage of refractories. The Committee have also been informed that for the production of high quality refractories, the Government have decided to set up a refractory plant in the public sector at Bhilai with a capacity of 1,00,000 tonnes after due consideration of the installed capacity of the refractory units in the private sector and economies of this project. It is unfortunate that an earlier proposal to set up a refractory plant of sufficient capacity to meet the requirements of the steel plants, was dropped by Government in December, 1965 after incurring an expenditure of Rs. 17.04 lakhs on the preparation of Preliminary and Detailed Project Reports.
3.41		According to the Ministry, the assessment of the situation made at that time indicated that except for carbon and/or graphite refractories there was sufficient capacity in the country to meet the demand for refractories by the Iron and Steel Industry during the Fourth Plan period. On the other hand, the Committee were informed by HSL that they were firmly convinced that without the proposed refractories plant, the steel plants will run into serious difficulty due to the inability of private sector refractories industry to meet the growing demand of the steel industry for the refractories of required quality. The view of HSL has been justified by the present serious situation caused by the non-availability of refractories of the requisite quality and quantity for the steel plants. The Committee have not been informed of the reasons which led the Government to a conclusion contrary to their own earlier decision and the views of the HSL. The Committee have

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		been informed that the decision for not setting up the refractories plant had been taken by Government on the basis of its own assessment although the Indian Refractory Makers Association had also represented to the Government that the creation of additional capacity would not be justified. The Committee, however, have the apprehension that the decision of Government was largely influenced by the representation of Indian Refractory Makers Association rather than by their own realistic assessment of the prospective demand and supply for the refractories after taking into consideration the views of HSL. The result has been that there was loss of production of steel due to shortage of refractories and avoidable expenditure on import of refractories. The Committee note that the Government have taken a decision to set up a Refractory Plant in the public sector and are of the opinion that there is need for making realistic demand surveys before deciding to set up a project or otherwise in future so that the projects are set up in accordance with the realistic demands.
5	3.47	The Committee are unhappy to note that even after it became apparent that the sub-standard performance of these locomotives was creating bottleneck in internal transport, no timely measures were taken to improve the position. Although about four years have elapsed since the Committee examined the working of the Bhilai Steel Plant earlier, the same reason namely inadequacy of locomotives for internal transport is being advanced as one of the reasons for low production. The Committee are distressed to find that it was only in the first half of 1970 that two of these locomotives were repowered with CATD—379 diesel engines to improve their performance on the basis of detail-

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		ed studies carried out by Shri Suri, ex-Director of Central Mechanical Engineering Research Institute. The Research Design and Standard Organisation of Indian Railways have suggested the replacement of existing locomotive engines by MAN Diesel engines. The Committee are unable to understand why the Central Mechanical Engineering Research Institute the Research Design and Standards Organisation of Indian Railways could not be consulted earlier to obviate the transport difficulties which have for several years been adversely affecting the working of Bhilai Steel Plant. The Committee would urge that the remedial action in the form of repowering the locomotives may be taken expeditiously if justified by the result of performance of the locomotives which have been repowered in early 1970. They would also like to be informed of the action taken and the improvement effected in the performance of the locomotives as a result thereof.
6	3.56	The Committee are not satisfied with the reasons advanced for abnormal low production in wheel and axle plant. They agree that in an integrated steel plant the overall conditions have an important bearing on the performance of a particular unit. The Committee, however, find that the production in 1969-70 in the wheel and axle plant has only been about 15 per cent of the rated capacity whereas the production of steel ingots was about 60 per cent of the rated capacity. The overall low production of steel in Durgapur Steel Plant could therefore hardly explain the unsatisfactory production performance of the wheel and axle plant. The low production in this plant not only resulted in loss of HSL but also affected the production of rail coaches and wagons. There was also drain of foreign exchange on the import of wheel sets

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		which become necessary due to low production in this plant. One of the reasons for low production as pointed out by Audit was that "there was lack of control over the production of ingots of required sizes." The result was that these ingots did not give the required number of wheel blocks and consequently there was lower yield and lower output of finished wheels. This matter has been analysed in detail in the following paragraphs. The Committee recommend that the Ministry should make a detailed enquiry into the working of this unit to find out the real reasons for abnormal low production and remedial measures should be taken to improve production performance.
7	3.64	The Committee regret to note that even after nine years of the commissioning of the wheel and axle plant, the Management had not been able to produce the steel ingots of required sizes for wheel making resulting in loss of production of wheel sets. There is also avoidable expenditure as the wheel blocks of short length had to be treated as scrap and remelted or sold. It was admitted that the difficulty of short length ingots was not of a perennial nature. That being so it is imperative that urgent and effective measures are taken to avoid the production of ingots of short length to get the required yield of wheels. The Committee view with great concern the continuous loss of production on account of short length ingots and would like to be informed if the remedial steps taken and the results achieved.
8	4.6	It is extremely disappointing to note that out of the total increase in works cost of ingot steel during the last five years, the increase due to productive materials alone has been to the extent of 87%, 81 per cent and 50 per cent in Rourkela, Bhilai and Durgapur Steel Plants respectively.

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		The Committee have pointed out in Chapter V of this Report that the cost of production of raw materials in the captive mines of Rourkela and Bhilai Steel Plants has been very high and in some cases it was even higher than the cost of materials purchased from outside sources. The rate of consumption of the raw materials has also been higher than the norms fixed. Thus strict control on the cost and usage of raw materials, refractories, etc. can go a long way in controlling the cost of production. Another major factor leading to higher cost of production is the increase in operating cost. While in Rourkela and Bhilai Steel Plants, 14% increase in cost of production was due to this factor, in case of Durgapur this was as much as 38%. The Committee have discussed in detail the question of overstaffing and lower productivity in the Steel Plants in Chapter VI of this Report. The highest incidence of operating cost in Durgapur Steel Plant is due to lowest productivity in this plant as compared to the other two plants. There is urgent need to raise the labour productivity in the Steel Plants to reduce the incidence of operating cost
9	4.11	The Committee are unable to agree with the view of the Secretary of the Ministry that since the domestic selling prices in some other countries are higher than the ex-works price of steel in India, the cost of production in these countries could be considered as high. It will be incorrect to draw any conclusion about the comparative cost of production in India and other countries by comparing the ex-works prices in India with the domestic prices in other countries for a particular month. For any meaningful conclusion, the ex-works prices should be compared with the ex-works prices in other countries.

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	4.12	The Committee would also like to point out that while comparing the cost of production in HSL with that of other producers of steel in India in the private sector, it is imperative to take into account the relatively higher degree of sophistication of the modern plants of HSL which are expected to yield higher production at a lower cost as compared to the old plants belonging to the private sector.
10	4.18	The need to reduce the cost of production of steel cannot be over-emphasised. Apart from affecting the financial working of the plant, the high cost of steel produces adverse repercussions on the manufacturing cost of the products based on steel. The Committee hope that the proposed measures mentioned above would help to bring down the cost of production. It is essential to keep a constant watch on the cost of production. The variations between the standard cost and the actual cost should be analysed periodically and remedial measures taken in cases where the cost of production is found to be higher than the standard cost.
11	5.13	The Committee trust that the linking of price with quality coupled with sampling and analysis of coal both at the receiving and despatching points would help in exercising stricter check on consumption of coal and improving the production performance of the Steel Plants. The question of coke consumption has been discussed in detail in paras 5.59 to 5.71 of this Report and the Committee's detailed recommendations are contained therein.
12	5.27	The working of the Barsua Mines was examined by the Committee on Public Undertakings (Eleventh Report-Third Lok Sabha) in 1965. The Committee desired that the reasons for the unsatisfactory working of the Barsua

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		Mines should be investigated and efforts made to increase its production and reduce the cost of raising. It is unfortunate that instead of any improvement, there has been further deterioration in the working of the mines, in spite of the fact that action was stated to have been taken on the lines suggested by the U. N. Mining Expert. The production has gone down from 55% in 1966-67 to 33% in 1969-70 and the cost of raising has increased from Rs. 18.68 to Rs. 26.49 per tonne. The increase in cost of production has made the mines uneconomic and the cost of iron ore F.O.R. Rourkela Steel Plant from this captive mine was even higher than the cost of ore purchased from outside sources during the last three years. The quality of ore raised from Barsua mines was also stated to be inferior than that of purchased ore.
		The Committee hope that the implementation of the recommendations made by the German Consultants in August, 1968 would improve the working of the mines by 1971. It is imperative that urgent and effective steps are taken to improve the working of the mines to bring down the cost of raising ore at least equal to the price of ore of similar quality available from outside sources. In the event of failure to achieve the desired objective, the Committee feel that running of these captive mines and thereby increasing the cost of production of steel cannot be justified.
13	5.36	The Committee view with concern the unsatisfactory working of the Rajhara Iron Ore Mines. The cost of raising iron ore has been much higher than the estimates during the last five years and it had gone up from Rs. 9.47 per tonne in 1965-66 to Rs. 21.64 per tonne in 1969-70—an increase of 128.5% within a period of 4 years. The most disquieting feature is that the cost of production from the mechanised mines, mecha-

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		nised at a total cost of Rs. 5.49 crores, was even more than the cost of raising iron ore by manual operations; the cost of production from mechanised mines was Rs. 18.12 and Rs. 21.46 in 1968-69 and 1969-70 respectively as against Rs. 18.46 and Rs. 13.49 in respect of manual mines.
		The two main reasons advanced for high cost of production are lower volume of production and higher percentage of fines. As against 37.5% fines envisaged in the Project Report and even as against the designers revised estimate of 45% fines, the actual fines in 1967-68 and 1968-69 were of the order of 50% of the total production. The Committee could get no satisfactory explanation for low production and such a heavy percentage of fines. They desire that a detailed technical study should be made regarding the production performance and high cost of production in these mines with specific reference to the imperative necessity of reducing the percentage of fines and to investigate into the reasons for higher cost of raising ores by mechanised methods compared to the manual ones. In case it is found that it will be more economical if these mines are operated manually, the HSL should consider the possibility of utilising the machinery somewhere else.
14	5.44	The Committee regret to note that as in the case of Barsua Iron Ore Mines, the working of the captive limestone quarry of Rourkela Steel Plant at Purnapani was also unsatisfactory. The production was much lower than the rated capacity and the cost of raising was more than double the estimated cost. As pointed out by the F.A. & C.A.O., due to shortfall in production, the Rourkela Steel Plant was facing a critical situation in regard to availability of limestone and additional expenditure had to be incurred to procure limestone from other sources resulting in higher cost of production of steel.

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		One of the reasons for low production was stated to be that the nature of deposits did not permit large scale mechanised mining because of the necessity to adhere to a particular quality specifications. This gives the impression that the management did not make requisite investigation about the nature of deposits before taking up the scheme for the development and mechanisation of the limestone quarry. The Committee are of the view that with advance planning some of the factors hampering production, *e.g.* large scale wear and tear of rubber tyres, shovel track chains on account of rough roads and non-availability of spare parts etc. could have been foreseen and timely remedial action could be taken. They desire that immediate steps should be taken to improve the working of the quarry.
15	5.52	The Committee are unhappy to note that the working of the Nandini Limestone quarry also has not been satisfactory. The production from mechanised mines was lower than the budget estimates and the cost of production was higher than the estimates therefor. What is worse is that the cost of production from the mechanised mines was even higher than the cost of limestone raised by manual operation. The Committee could get no satisfactory explanation in this regard. They desire that the reasons for high cost of production should be analysed and remedial measures taken to bring it down.
	5.53	One of the reasons advanced for low production during all the years has been that the mines operated with imported locomotives only. Those locomotives were due for capital repairs, facilities for which were not available either in the plant or mines. As pointed out in paras 3.42 to 3.47 of this Report, the Steel Plant had also suffered loss of production due to unsatisfactory working of these imported locomotives. The Committee regret to note that in spite of continuing handicaps

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		for last 4 years both from the mines and the Steel Plant, prompt measures were not taken to provide requisite facilities for repairs and maintenance of these locomotives. The Committee would like to be informed of the measures taken or proposed to be taken for repairs and maintenance of these locomotives.
16	5.58	The Committee regret to note that as in the case of other mines, the working of the manganese ore mines presented a dismal picture of very low production and abnormally high cost of production. The Committee are surprised to find that the H.S.L. accepted for exploitation those areas which are not economically mineable. The output from the mines has been about 1.5% (approx.) of the total quantity required by the Plant and the cost of raising has also ranged between 10 times to about 2 times (approximately) the cost of ore purchased from open market. These mines are hardly serving any purpose except adding to the avoidable expenditure year by year due to abnormally high cost of raising ore. The Committee, therefore, recommend that the desirability of continuing the mining of manganese ore from these captive mines should be examined in the background of its existing performance without any further loss of time.
17	5.70	The Committee find that the Mehtab Committee had suggested the coke rate of 150 kg. per tonne after taking into account the quality of raw materials available in the country. Considering the very low coke rate in other countries which was between 500 and 650 kilo per tonne, the coke rate of 750 kg. suggested by Mehtab Committee cannot be considered unattainable. On the contrary, the Committee regret to find that the actual consumption of coke has been much higher (Bhilai 813, Durgapur 922, Rourkela 939). It has surprised the Committee more to discover that the norm has also been

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		fixed much higher than the target fixed by Mehtab Committee. The Committee, therefore, recommend that efforts should be made to achieve the target of coke rate of 750 kg. per tonne through efficient operation and by adoption of improve techniques.
	5.71	The Committee also find that the rate of consumption of some of the other raw materials had also been higher than the norms laid down by the Norms Committee. Thus, the 'Fe' consumption through iron ore, sinter and scrap per tonne of hot metal in the Bhilai Steel Plant was higher than in the norms laid down. The rate of consumption of pig iron, iron ore and Ferro-manganese in the steel melting shops of all the three steel plants has also been higher. It is also noted that the Norms Committee had fixed these norms on the basis of past performance and these were considered 'achievable' under the existing operating conditions. The Committee, therefore, recommend that the norms fixed should periodically analysed in detail with a view to eliminating excess consumption and/or wastage.
18	6.9	The Committee regret to note that the actual staff strength in the works Departments of Rourkela and Bhilai Steel Plants as on 31-3-70 was about double of that provided in the Project Reports for their expansion. They are amazed, over the statement by the HSL that "the earlier estimates made in the Project Report were based on assumptions which were neither correct nor relevant to Indian Context." With the experience of one million tonne plants, it was expected that the estimates for manpower requirements would be more realistic, to serve as a yardstick for actual manning of the Steel Plants.
	6.10	The Committee also note with surprise as to why the Industrial Engineering Department of HSL had reported in 1963-64 that there was no surplus staff in H.S.L. Instead, the undertaking

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		had a shortfall against their (I.E.D.) estimate of staff requirements after expansion. On the contrary, the studies made by the Bureau of Public Enterprises and the latest studies conducted by the Administrative Staff College, Hyderabad have revealed that HSL has got surplus staff. In the face of these definite reports of independent and expert agencies, the Committee feel that it would not be safe to rely on the report of the Industrial Engineering Department of the HSL. The Committee find that the report of the HSL (IED) is based on broad studies and discussions unlike the study of the Independent agency *e.g.* Administrative Staff College, Hyderabad whose detailed work measurement studies are expected to be more scientific than the previous estimates. Consequently, the Committee have come to the conclusion that the estimates of HSL (IED) are on the high side.
		The Committee hope that the staff strength in the steel plants will adjusted in accordance with the latest studies and Government|Hindustan Steel Ltd. would take the opportunity offered by the expansion scheme of the steel Plants and Bokaro Project to gainfully employ the surplus staff as early as practicable and possible.
19	6.15	The Committee regret to note that the staff in the General Administration and Township Departments of the three Steel Plants ranged from 27% to 35% of the Staff employed in operation (Works Departments). They feel that this percentage is on the high side and there is scope for economy in personnel costs in these departments by improving systems and procedures of works. The Committee find that H.S.L. had not conducted any study in regard to the staff employed in these departments with a view to ascertain the reasons for differences in manning pattern in the three steel Plants and to effect economy in staff. However, according to HSL,

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		the O & M Sections in the plants have now undertaken detailed studies on a continuing basis in all the plants for (a) simplification of office procedures and (b) for determination of manpower requirements. The Committee desire that these studies should be completed expeditiously and the norm evolved for the staff in the Township and General Administration be adhered to strictly. The services of the surplus personnel revealed as a result of such study could be made available to other steel plants proposed to be set up in the country with a view to give them experienced staff from the inception.
20	6.22	The Committee would like to point out that in comparing the labour productivity of the modern steel plants of HSL with that of Tata and Indian Iron & Steel Companies, commissioned years ago, it is necessary to take into account the higher degree of sophistication of the plants of HSL which should results in higher production.
21	6.27	The Committee regret to note the low productivity in the three steel plants of HSL ranging between 45—79 ingot tonnes per man year. The most disturbing feature is that while it was expected that with the expansion of the Steel Plants, there would be improvement in labour productivity, the position has worsened and the labour productivity in Rourkela and Durgapur Steel Plants was even lower than 1965-66. The productivity in 1969-70 being only 54 and 45 in Rourkela and Durgapur Steel Plants respectively against the corresponding figures of 68.1 and 69 in 1965-66. As mentioned in para 6.23 of this Report the labour productivity in some of the advanced countries ranged from 156 to 247 ingot tonnes per man year. Even the Mehtab Committee appointed by Government to look into the cost of production of steel and which included representatives of Hindustan Steel and Tata Iron and Steel Company considered it possible to raise

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		the productivity to about 125 ingot tonnes per man year and above in each of the plants. Viewed in this background, the present low level of productivity in the Steel Plants of HSL cannot but be a matter of urgent concern. The Committee are informed that if the three steel plants operate at rated capacity and the present manning can be reduced/adjusted in accordance with their industrial engineering studies, it should be possible to reach a productivity level of 125,100 and 100 ingot tonnes per man year in Bhilai, Rourkela and Durgapur Steel Plants respectively. The Committee hope that HSL would strive to attain at least this minimum level of productivity.
22	6.28	The Committee also recommend that the Research and Development Divisions of the Steel Plants and the Central Engineering and Design Bureau of HSL should make a detailed study of the reasons for high productivity in other advanced countries (like Japan, U.S.A. and West Germany), with a view to ascertain the technological innovations and manning pattern etc. that account for the high productivity in their respective countries and suggest their adoption in H.S.L. Steel Plants to attain comparable productivity level per worker.
23	6.33	The Committee view with concern the unsatisfactory industrial relations in the steel plants of HSL especially in Durgapur and Rourkela Steel Plants. From the figures furnished to the Committee they find that the mandays lost due to strikes etc. in Durgapur Steel Plant during the first seven months of the year 1970-71 were as high as 1,50,821 resulting in loss of production of the value of Rs. 2.62 crores. In Rourkela Steel Plant, although the mandays lost (13,566) during the corresponding period were lower as compared to Durgapur Steel Plant the value of loss of production was stated to be much higher *i.e.* Rs. 9.08 crores. It needs no emphasis that for

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		the efficient and economic working of any undertaking it is necessary that there should be understanding and co-operation between labour and management. In the steel plants, especially, due to the inter-relationship of manufacturing processes involved and the sensitiveness of the equipment to sudden and unplanned stoppages and interruptions, the strikes, etc. cause considerable harm. There is need for a constant endeavour both on the part of the management and the labour unions to resolve differences through mutual discussion and voluntary arbitration rather than by resort to strikes, lock outs, etc.
	6.34	The Committee note the various causes mentioned by the HSL for the labour unrest in HSL and the remedial measures suggested for it. The Committee have taken up for examination this year the horizontal study of Personnel Policies and Labour Management in the public undertakings. They would, therefore, make their detailed recommendations in this regard in that Report.
24	7.4	The Committee regret to note that sustained attention had not been paid towards repairs and maintenance of the Plants and Machinery especially in Durgapur Steel Plant resulting in a large number of breakdowns. Proper maintenance of plant and machinery is a must to ensure trouble free operation of the plants as maximum efficiency free from breakdowns and non-planned shutdowns. The Committee, therefore, desire that the maintenance departments in the plants should be geared to clear the backlog of repairs and maintenance and to ensure that the preventive maintenance of all the units is carried out in accordance with the schedules laid down. Advance planning for spares should also be done to facilitate timely replacements of worn out parts.

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25	7.5	The Committee also regret to note that the Capital repair programme of locomotives in Bhilai Steel Plant suffered due to lack of heavy maintenance facilities. They feel that this handicap could have been overcome by the Plant with more careful planning and coordination in so far as repairs of locomotives is concerned. They (BSL) should have had arrangements with Railways for overhauling and repairs etc. of locomotives—a task not difficult to perform.
26	8.8	From a statement furnished to the Committee showing the yield of various by-products in three steel plants the Committee find that the recovery of various by-products had been lower than the norms laid down by the Norms Committee. The recovery of both crude Benzol and the Ammonium Sulphate during the years 1968-69 and 1969-70 has been the lowest in Rourkela Steel Plant as compared to the other two steel plants. The Committee hope that the implementation of various recommendations of the two Expert Committees appointed by HSL to examine the working of these by-product plants will be expedited to improve the working of these plants. They would like to emphasize the need to maximise production from these plants since substantial investment has been made by HSL and their performance affects the cost of production of steel and also the working results of H.S.L.
27	8.12	The Committee regret to note the unsatisfactory working of the by-product plants at Rourkela Steel Plant due to poor performance of the screw compressors. It is unfortunate that the design deficiencies in the by-product plant resulted in avoidable loss to H.S.L. As pointed out by the Kaul Committee the "introduction of untried equipment for compression of

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		a corrosive gas without provision for adequate purification introduced an element of risk into the design of the plant that ought to have been avoided." The Committee further note that the Kane Committee recommended that "the Consultants should have provided a purification system to remove Benzol, Nepthalene and Hydrogen sulphide from the coke oven gas prior to its entry into the screw compressors." It appears that the entire working of the by-product plant was handicapped since the date of installation of the plant resulting in continuous loss in production. The Committee are amazed to find that in spite of having their technical experts, neither the Consultants nor the HSL noticed such a major defect in the plant till the Kane Committee detected the defects in 1968. The Committee are disappointed to note that the substantial loss and avoidable expenditure had to be incurred on account of the defective working of the compressors. Apart from the low production of by-produtcs resulting from the defective compressors, remedial measure had to be taken by the HSL to instal a new compressor as "replacement" to the "damaged" one. For all these losses and avoidable expenditure, the Committee feel, the consultants and HSL cannot escape responsibility.
	8.13	The Committee also find that even after the Report of the Kane Committee in July, 1968, it was only on 20th February, 1969 *i.e.* after six months that the Government conveyed to H.S.L. their decision on the various recommendations contained in the Report. The recommendations of the Committee were stated to be under implementation.
		The Committee feel that Government should not delay such matters of importance where production is hampered. The Committee hope that

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		implementation of the recommendations of the Kane Committee would help to improve the working of the by-product plants.
28	8.19	The Committee regret to note that the sulphuric acid plant erected in May, 1960 at a total cost of Rs. 16.67 lakhs could not be commissioned till August, 1970. There had been avoidable delay in placing orders for sulphur burning unit costing Rs. 3.81 lakhs to make good the deficiency of hydrogen sulphide content in the Coke Oven Gas. Surprisingly it took H.S.L. a period of five years for placing orders for this unit after the suggestion was made in this regard by the suppliers. It is surprising that about 2½ years were taken only in ascertaining from the pyrites and Chemicals Development Corporation the position regarding the availability of pyrites in terms of the Government direction issued in 1963 that the existing Plants be designed/modified to use indigenous pyrites instead of imported sulphur.
	8.20	The Committee also find that the contract for the by-product plant including sulphuric acid plant under the Expansion Scheme was placed on the 4th July, 1963 with elemental sulphur burning equipment with a future provision for pyrites burning. It is paradoxical that while the orders for the Sulphuric Acid plant under the expansion scheme were placed in July, 1963 itself pending examination of availability of pyrites, the Management waited till November, 1965 for a reply from the Pyrites and Chemicals Development Corporation regarding the supply of pyrites before placing orders for the Sulphur burning unit in respect of the sulphuric acid plant already installed under the original scheme.
		The Committee are also not able to appreciate how a period of four years was allowed to elapse between the placing of order for the sulphur

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		burning unit in November, 1966 and the commissioning of the Plant in August, 1970. This is indicative of a leisurely and almost casual manner of dealing with plant operations which the Committee cannot but too strongly deprecate.
	8.21	The Committee also fail to appreciate the decision to install another Sulphuric acid plant with higher capacity while the plant installed earlier could not even be commissioned till August, 1970, not to speak of its working satisfactorily.
	8.29	The Committee regret to note the loss of about Rs. 40 lakhs suffered by the Rourkela Steel Plant due to explosion in the Naptha Reforming Unit of the Fertilizer Plant. They would like to be informed of the action taken by the HSL for the various acts of omission and commission on the part of the Contractors, etc. pointed out by the Kasturirangan Committee.
	9.11	The Committee note that the inventories in the Steel Plants of H.S.L. have shown a declining trend during the last three years and the total inventories as percentage of value of production was 43 per cent in 1969-70. However, in the case of stores and spares, the value of stock was still equivalent to 26 months on the basis of annual consumption. The Committee hope that the various measures undertaken by H.S.L. in this regard will help in bringing down the stock of stores and spares.
	9.12	The Committee also find that Alloy Steels Plant was still having heavy inventories. These were 121 per cent of the total value of production in 1969-70 as compared to 43 per cent for the H.S.L. as a whole. Heavy inventories not only result in blocking of Capital but also mean avoidable expenditure by way of inventory

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		carrying cost. The Committee recommend that a special drive be made to reduce inventories in this plant without any further loss of time. The Committee also suggest that the possibility of using computerised services for inventory control may be examined.
31	10.7	The Committee hope that the present system of the functional Board would be given a fair trial and frequent changes either in the character of the Board or its personnel, as has happened in the past, would be avoided. Now that the HSL has four functional Directors, the Committee expect the top management to have effective central control on important matters of policy and to provide suitable guidelines to the plant with a view to improve their working. It should, however, be ensured that the plant management's initiative and self-confidence is maintained by allowing them to function independently within their respective spheres of delegated authority.
32	11.17	The heavy capital expenditure on the plants of HSL is a major factor responsible for raising the cost of steel as interest and depreciation charges account for about 25 per cent of the total cost of production of steel. The Committee regret to note that there have been frequent revisions and considerable increases in the capital cost estimates as compared to the original estimates for each of the three plants of HSL not only for the original million tonne plants but also for their expansions. In order to have a proper economic appraisal of a project it is essential to prepare realistic estimates taking into account all foreseeable items of expenditure to obviate the need for frequent revision of estimates. If substantial increases in capital outlay are placed before Government for approval after the project has been launched, Government are

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		left with no alternative but to approve the increase.
33	11.18	The Committee find that one of the reasons for increase in capital cost has been the delay in construction and commissioning of the plants. There have been inordinate delays (2-3 years) in the commissioning of some of the units of the three steel plants both in the case of original one million tonne plants and their expansions. These delays result in higher capital costs on account of increased interest charges and administrative expenses during construction besides escalation in prices. The Committee recommend that steps should therefore be taken to control the time taken for the construction and commissioning of the plants by making effective use of modern net-work analysis techniques like Programme Evaluation and Review Technique and Critical Path Method. The Committee further suggest that strict control should also be maintained over expenditure to ensure that there was no wastage or avoidable expenditure on the setting up of the plants.
	11.26	The Committee regret to note that the HSL has suffered a cumulative loss of Rs. 172.83 crores by the end of March, 1970. Even after 16 years of its establishment in 1954 it has been incurring heavy losses, the loss being Rs. 10.47 crores even in 1969-70. Instead of providing any return on large capital investment (Rs. 557 crores on 31.370) for all these 16 years, the losses incurred by HSL have wiped out 31 per cent of the equity capital. Of the three main steel plants, the loss suffered by Durgapur Steel Plant has been the highest *i.e.* Rs. 83.54 crores as against Rs. 32.19 crores incurred by the Rourkela (excluding ferti-

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		lizer Plant) and Rs. 26.03 crores by the Bhilai Steel Plant.
	11.27	One of the reasons advanced for the losses is the unremunerative sales prices which have been fixed on a gross block of Rs. 1,176 per tonne of finished steel largely based on the then block of TISCO) as against HSL's actual gross block of Rs. 2,400/- per tonne after expansion of the Plants. The Committee would however, like to point out that while considering the impact of higher capital cost on the working results of the company, it is necessary to take into account the relatively higher degree of sophistication of the modern plants which are expected to yield higher production at lower cost as compared to the old plants.
		The Committee also find that there have been increases in the selling price of steel. As pointed out in para 11.23, the average ex-works net selling price per tonne of saleable steel has increased from Rs. 525 in 1965-66 to Rs. 638 in 1969-70 *i.e.* an increase of 21.5 per cent. But the cost of production has increased at a faster rate. The weighted average cost (excluding interest depreciation) per tonne has gone up to the extent of 33.6 per cent during the corresponding period. The increase in the selling price of steel has wide economic repercussions. The Committee therefore, emphasise the need to reduce the cost of production instead of having a vicious race between the cost of production and the selling price. The Committee have discussed in detail in the previous chapters of this Report the various cost raising factors *e.g.* low production as compared to rated capacity, high cost of raising raw materials in the captive mines and higher consumption rate of raw materials, over staffing lower productivity of labour, etc. They feel that there is considerable scope for reduction in

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		the cost of production of steel with the consequent advantage of improving the working results of H.S.L.
35	12.1	The Hindustan Steel Ltd., being the largest producer of steel, has made significant contribution to the industrial and economic growth of the country. Apart from providing employment opportunities to a large number of persons, the undertaking has also contributed to the growth and dissemination of technical know-how, in addition to the production of steel. The export of steel by the HSL to various countries in the world has been on the increase amounting to over Rs. 45 crores in 1969-70 which represents more than half the share of export of Indian steel. It has helped thereby in earning valuable foreign exchange and raising the image of Indian steel Industry.
36	12.2	The examination of Hindustan Steel Ltd. has, however, revealed serious deficiencies in the working of this undertaking which are summarised as follows:—
		(i) Low production in all the plants.
		(ii) High cost of production.
		(iii) High rate of consumption of raw materials.
		(iv) Overstaffing and low productivity.
		(v) Heavy capital expenditure (gross block) resulting in higher depreciation and interest charges.
		(vi) Heavy recurring losses.
		The above deficiencies have been dealt with in detail in the concerned chapters of the Report.

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37	12.3	To sum up, the Committee have come to the conclusion that to earn success the Hindustan Steel Limited should (i) maximise production, (ii) improve industrial relations, (iii) effect economy through cost control measures, and (iv) strive for fair return on investment made and obviate losses.
	12.4	The Committee are of the opinion that for the realisation of the objectives highlighted above, much will depend on the Joint initiative of HSL and the Government. The undertaking/Government should study in depth the deeprooted factors that stand in the way of production, cost control and profitability and should make a determined effort to eliminate them. The Committee have every reason to believe that this undertaking will grow into a successful enterprise and make even greater contribution to national economy provided remedial steps are taken forthwith by the undertaking/Government with imagination and firmness.

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