C.P.U. No. 165

COMMITTEE ON PUBLIC UNDERTAKINGS (1969-70)

(FOURTH LOK SABHA)

SIXTY-SEVENTH REPORT

PRODUCTION MANAGEMENT IN PUBLIC UNDERTAKINGS

LOK SABHA SECRETARIAT
NEW DELHI
April, 1970/Vaisakha, 1892 (S)
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CORRIGENDA

SIXTY-SEVENTH REPORT OF THE COMMITTEE ON PUBLIC UNDERTAKINGS (4TH LOK SABHA) ON PRODUCTION MANAGEMENT IN PUBLIC UNDERTAKINGS.

Page No.	Para No.	Line	For	Read
Title Page	-	3rd(from bottom)	DELH	DELHI
(iii)	Appendix III	1st	national	notional
(iii)	Appendix X	1st	Delete the word 'and'	
(iii)	Appendix XI	2nd	Reprorts	Reports
3	2.4	3rd	vix	viz.
4	2.6	6th	After the word 'stated' Insert the word 'that'	
4	2.7	1st	the	The
5	2.12	5th	cumbersom	cumbersome
6	2.14	7th	coordnation	coordination
7	2.16	5th	typee	type
10	3.6	8th	sufficinetly	sufficiently
11	3.7	5th	At the end of the line, Add the words "fixed more scientifically and methodically."	
11	3.7	6th	Delete the line	
11	3.7	7th	At the begining of the line, insert the words "Secondly, assessment of"	
11	3.10	10th	Plant	the Plan
14	3.23	4th	Delete 1 word 'of'	
14	3.23	11th	commonsease	Commonsense
15	3.25	4th	Undrakings	Undertakings
15	3.25	5th	quidelines	guidelines
17	3.32	12th	received	decided
22	4.16	9th	Internal	International
25	5.4	6th	After the word "Head", insert 'of'	
26	5.9	3rd	and	had
29	5.19	4th	Durings	Drugs
30	5.22	2nd	though	thought
33	6.4	12th	supported	supposed
33	6.4	13th	alove	alone
35	6.12	11th	inexusable	inexcusable
37	6.17	6th	accoun	account
37	6.17	17th	Delete the words "years of training in"	
38	6.19	8th	whether	whenever
38	6.19	12th	gone	done
39	6.24(Table)	Item(2)	27,000.0	2,000.0
40	6.25	23rd	Insert full stop after the word 'capacity'	
42	6.30	3rd	After the word 'tonnes', insert the word 'unless'	

42	6.30	5th	After the word 'deficiencies', <u>insert</u> the words 'were in the design and the performance of the catalyst. This plant"
45	6.34	9th	at (after the word and Gauhati)
52	7.7	4th	C.K.N. C.A.N.
56	7.24	12th	Technial Technical
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66	7.25	12th	qualities quantities
58	7.31	16th	After the word DGTD, <u>insert</u> the word 'to'
58	7.31	19th	<u>Delete</u> the word 'whether'
58	7.31	1st	demad demand
59	7.33	15th	<u>Delete</u> the line "crane...developed".
60	7.37	10th	Vizapatnam Vizagapatnan
62	7.41	5th	agreed agree
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81	9.27	9	After the word 'provided', insert the word 'at'
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86	10.15	7	of of
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89	10.27	-	62,668 37,219 37,533 30,655 32,576 26,576
90	10.34	8	basis basic
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96	11.8	4	analyed analysed
98	11.17	3	<u>Delete</u> line 3 and <u>substitute</u> "not prepared any Manual on Quality control for the guidance of"

98	11.18	9	suppliers → supplies
98	11.18	10	customrs → customers
100	12.1	3	not → nor
106	13.14	16	rations → ratios
109	14.5	6	cinvinced → convinced
109	14.5	15	provid- → provided
110	14.8	4	not → note
110	14.8	5	H.I.I.L. → HEIL
110	14.8	10	accuge → accrue
114	-	-	Insert the word "APPENDIX II" at the top of the Statement
116	Item 8(ii)(a)		ACN → CAN
118	Item 13(b)		Delete the word '(m. tonnes)'
118	Item 14(i)		8,20,666 → 8,02,666
119	Foot Note		HMT I & III → HMT I & II
119	Foot Note		50 crores → 5 crores
119	Foot Note		1.35 → 1.53
120	-	2	estimates national estimated notional
121	Item(i)		For 19.52, substitute 10.52 and shift figures 38,42 and
122	Item 2, Col.10		10.52 against item (i)
122	Item 3(A)(iii) (totals) (Col.5)		1583.83 → 1583.87 335 → 35
125	Item 6(B)(ii)		Delete inverted commas in Col.2 and insert 'KG'
125	Item 6(B)(ii)		Delete the figures +0.58, +2.59 and +3
126	Totals below Item(7) Col.9		43.57 → 4357
126	Item 8(iv), Col.9&10		Interchange figures 393 and 369
126	Item 8(vii) Col.6		162 → 160
127	Item 9(i),(ii) Col.11		(-)13.04 → (-)43.04, insert (+)15.81 in Col.11, Item (ii)
127	Item 9(ii) Col.12(b)		Law → Low
127	Item 10(i) Col.11		10.00 → (-)10.00
130	Item 17(total) Col.5		48.15 → 8.15
130	Item 17(ii) Col.8		150.7 → 450.7
131	Item 18(III)(i) Col.10		954 → 959
131	Item 18(III)(i) Col.11		-1.0 → -10
132	Item 20, Col.1		Sawar → Zawar After Zawar Mines, insert (concentrates)

132	Item 20	(ii)	After the word 'Smelter' insert '(Lead)'	
132	Item 20		Delete the entry showing 16261,17365 and 17294 as totals and Add as item (iii) - "Tundo Lead Smelter(Silver)- KG,3086-1425-3250."	
132	Item 21 23	Col.4 (Total)	717525	1717525
133	Item (vi)	Col.3	40.00	49.00
134	Item25(5),	Col.9	394	384
134	Item 26,	Cols. 7&8	0.48,-3.23	9.49,3.20 respectively
135	Item 28(iv),	Col.8	414	+14
136	Item 29(B)(v)	Col.4	4683	4783
143	Item 4(vi)	Col.4	463	453
148	Item 4		25	52
151	Appendix XI	3	Delete the words and figures "W.R.Q.43"	
151	Appendix XI	Item 3(i) Col.5	Late	Latest
157	Item(iii)	4	Methanical	Mechanical
158	2.21	14	of	a
163	4.21	3	Iidia	India
164	5.16	30	After the word 'management insert the word 'of'	
164	5.16	33	After the words 'As soon as', insert the words 'The Govt. are able to formulate such policy'	
164	5.19	6	held	lend
165	5.23	12	excepted	expected
165	5.19	21	known	know
166	6.14	4	predictment	prédicament
166	6.12	15	inexecusable	inexcusable
176	8.36	-	Renumber the subpara as Sl.No.41 and Para 9.6	
177	9.15	2	Delete the word 'The'	
178	9.29	6	now	new
179	10.8	5	date	data

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COMMITTEE ON PUBLIC UNDERTAKINGS

(1969-70)

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2. Shri S. C. Mookerjee—*Deputy Secretary.*
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*Appointed Chairman from 10-12-69 *Vice* Shri G.S. Dhillon, resigned.

**Ceased to be member of the Committee w. e. f. 3-4-1970 consequent on his retirement form Rajya Sabha.

STUDY GROUP V ON HORIZONTAL SUBJECTS
(1969-70)

1. Shri R. K. Amin—*Convener*
2. Shri G. S. Reddi—*Alternate Convener*
3. Shri Nand Kishore Bhatt—*Member*
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*5. Shri D. Thengari—*Member.*

*Ceased to the member of the Committee w. e f. 3-4 1970 Consequent on his retirement from Rajya Sabha.

INTRODUCTION

I, the Chairman, Committee on Public Undertakings, having been authorised by the Committee to submit the Report on their behalf, present this Sixty-Seventh Report on "Production Management" in Public Undertakings.

2. The Committee took the evidence of the representatives of eight major public undertakings on the 31st October, 1st and 3rd November, 1969 and of the officials of the five selected Ministries| Departments on the 5th November, 1969.

3. The material received from the various Ministries and public undertakings was processed at various stages by the Study Group V of the Committee.

4. The Report was adopted by the Committee on the 25th March, 1970.

5. The Committee wish to express their thanks to the various Ministries, public undertakings, and non-official organisations for placing before them the material and information which they wanted in connection with the examination of the subject. They wish to thank in particular the representatives of the undertakings and the officers of the Ministries|Departments who gave their evidence and placed their considered views before the Committee.

NEW DELHI;
April 22, 1970
Vaisakha 2, 1892 (*S*)

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

INTRODUCTORY

This study on 'Production Management in Public Undertakings' is the fourth in the series of studies on different aspects of management undertaken by the Committee on Public Undertakings. The earlier three studies were on (1) Management and Administration in Public Undertakings (Planning of Projects), (2) Materials Management in Public Undertakings, and (3) Financial Management in Public Undertakings.

1.2. 'Production Management' is one of the most important branches of Management. It aims at optimum production at the minimum cost within the shortest possible time without compromising the requirements of quality and excellence in any way. This branch of Management plays a pivotal role in the efficient running of industrial enterprises.

1.3. There has, of late, been criticism that industrial enterprises in the public sector were not being managed well with the result that under-utilisation of production capacities, lack of cost and quality consciousness and neglect of preventive maintenance leading to frequent breakdowns of plant and machinery, has been noticed in several enterprises. It is against this background that the Committee decided to examine how far the modern principles and techniques of Production Management were being made use of by public sector enterprises with a view to achieve maximum production and profitability.

1.4. The Committee called for preliminary material and written replies to the questionnaire in 1968 from all the public undertakings which had gone into production. Undertakings which were not engaged in production (*e.g.* Trading and financial enterprises, undertakings still at construction stages etc.) were not covered in the study. The Committee received written replies from all the 36 undertakings mentioned in Appendix I. On the basis of the written replies received, the Committee took the evidence of the representatives of the following eight important Undertakings:—

(1) Fertilizer Corporation of India Ltd.
(2) Heavy Electricals (India) Ltd.
(3) Heavy Engineering Corporation Ltd.
(4) Hindustan Machine Tools Ltd.
(5) Hindustan Steel Ltd.
(6) Indian Oil Corporation Ltd. (Refineries Division).
(7) Indian Telephone Industries Ltd.
(8) National Coal Development Corporation Ltd.

1.5. This was followed by the evidence of the officials of the following Ministries|Departments of the Government of India:—

(i) Department of Communications;

(ii) Ministry of Finance;

(iii) Ministry of Industrial Development, Internal Trade and Company Affairs;

(iv) Ministry of Petroleum and Chemicals and Mines and Metals;

(v) Ministry of Steel and Heavy Engineering.

1.6. The Committee have considered problems of production management which are common to all the undertakings engaged in production. Consequently, the treatment of the subject is general in its nature.

II

PRODUCTION ORGANISATION

A. Organisational set up and Coordination

2.1. The primary purpose of organisation is for coordination and control over the activities of an enterprise. The object of organisation is to create relationships which will minimise friction, focus attention on the objectives, clearly define the responsibilities of all Departments and facilitate the attainment of the objectives. Defective organisation is a drag on efficiency.

2.2. The management of production in most of the enterprises in the public sector including the Heavy Electricals (India) Ltd., Heavy Engineering Corporation Ltd. Hindustan Machine Tools Ltd. Hindustan Steel Ltd. etc. is divided into two distinct functional areas. One is concerned exclusively with direct supervision of the production process and by definition falls in the category of line management. The other encompasses the specialised functions of planning and control of production and provides the line management with staff assistance in their task of fulfilling the production and financial objectives of the enterprise.

2.3. The Committee have noticed that public sector undertakings employ three main devices to effect coordination between Production Department, Stores Department, Purchase Department, Sales Department, etc. These are (i) by providing a common head or controlling authority of various departments, (ii) by setting up representative Committees of departments and (iii) by holding coordination meetings.

2.4. During evidence of the representatives of the leading public undertakings, the representative of the Fertilizer Corporation of India Ltd. stated that each of their constituent units (*vix.* Sindri, Nangal, Trombay, Namrup and Gorakhpur) was under the charge of a General Manager. Coordination between production, materials management and sales was effected by the General Manager under whose Chairmanship periodical meetings of Departments were held. They were currently thinking of placing production, maintenance and materials management under an officer of the status of Deputy General Manager to ensure effective coordination.

2.5. The representative of the Heavy Electricals (India) Ltd. stated that in their enterprise coordination was effected by the General Manager with the three Heads of Departments, namely the Chief Engineer, Works Manager and the Commercial Manager HE(I)L had six product lines. Each product in its own right ranked to be a separate factory in itself. Periodical meetings were held at

various levels. They were, however, facing certain problems with this system. The witness admitted that this system did not enable them to formulate a profit centre or a centre of responsibility. They were now introducing a system of divisional management which meant that one Deputy General Manager would be incharge of one major product.

2.6. The working of production management organisation in the Heavy Engineering Corporation Ltd. had been examined by their own organisation as well as independent agencies like the Bureau of Public Enterprises. The improvements that have been suggested by such studies are load charts for each shop and a follow up. The representative stated coordination was effected by their Deputy Chairman who held weekly meetings with the General Managers, the Chiefs of the Purchase and Planning Organisations. HEC was looking into the question of introducing a system for correctly assessing the completion time and for effecting coordination between their units.

2.7. the representative of Hindustan Machine Tools Ltd. stated that in their enterprise coordination was maintained by the Engineering Department. General Manager held weekly meetings with the Engineering Department and Heads of others Departments. They had found their system very successful.

2.8. The representative of Hindustan Steel Ltd. stated that the Pandey Committee which was appointed to consider the problems of Durgapur Steel Plant had expressed the view that Bhilai method of production planning and control was exceedingly good. They had adopted that system in other steel plants also. He explained that in a steel plant there were several sectors, e.g. coke ovens, blast furnaces, rolling mills, etc. The coordination of production was primarily the responsibility of the General Supdt. Coordination between various Departments was achieved by the General Manager himself. In order to achieve a common production plant of the whole Corporation, they had coordination between General Managers of Steel Plants. In their case, yet another level of coordination was the Joint Plant Committee which was a coordinating body between various plants in the country, public and private sectors and between these production programmes and the national requirements.

2.9. Asked whether it was a fact that enterprises in the public sector suffer financial losses because there were too many officers and complete lack of coordination, the witness stated that coordination had three main objectives, namely, timely decision, prompt implementation and maximum participation of all concerned with decision making. These objectives required organisational characteristics conventions and practices. He thought these were evolving

in various public sector enterprises including Hindustan Steel Ltd. He was of the view that too many Committees do not solve the problem of coordination.

2.10. The Committee enquired whether there was adequate coordination at Governmental level, the representative stated "process by which consultation takes place and a decision is taken involves more than one department. It would be desirable to speed up the process." Asked whether there was inordinate delay in taking a decision, the witness replied, 'of late, we had a good deal of speedy decisions." Asked whether HSL was nearing perfection in the matter of coordination, the witness said, "Far from it" and gave a gist of the problems faced by them in the sphere of coordination. Their first problem was that of coal. This year they had built up a larger stock of coal in the critical monsoon months, when normally production in the mines went down. This had been made possible because of larger measure of coordination between them and the Coal Controller's organisation, and between his organisation and those who mined the coal. Their second problem was Railways. On days they want to move the coal, the Railways may not be in a position to provide for it or may be able to move the coal only upto a certain point. The result was that they had to divert coal from one place to another. Their third problem was raw materials. They had relied on local people to make available their requirements of raw materials in a steady stream but that did not materialise.

2.11. The representativee of the Indian Oil Corporation Ltd. stated that each Refinery had two sections, namely Technical Services side and actual production side. Technical services provided guide lines as to how production was to be achieved and what process and modification of the unit were called for. Operational side did the actual production. He added that in the case of petroleum industry, coordination was a more intensive effort and if it was not there, production would come to a grinding halt. Production programme for the three units of the I.O.C. and also, Madras and Cochin Refineries was drawn up at Chairman's level. Transport were tackled at Managing Director's level.

2.12. The representative of the Indian Telephone Industries Ltd. stated that in their enterprise coordination was done by the General Manager, Joint General Manager and the Finance Manager. He admitted that the existing arrangement had proved "slightly cumbersom" because of the very heavy expansion and, therefore, they were thinking of creating one more level at the Joint General Manager's level. This would, he thought, relieve the General Manager of the heavy burden.

2.13. The representative of the National Coal Development Corporation Ltd. stated that Kamath Committee which was appointed by Government to look into the working of NCDC had considered their broad organisational set up as "fairly satisfactory." NCDC had also compared their set up with that of the National Board of Coal Industries, U. K. He informed the Committee that they had twenty-nine large collieries spread over four States, one washery, two workshops and one coke oven under commercial production. Five large collieries and three large washeries were under development. A colliery often consists of four or five mines and was under the charge of a Dy. Supdt. of Collieries. A number of large collieries including washeries and other projects were under the administrative charge of an Area General Manager. They had nine Area General Managers at present. At the Headquarters they had a Technical Department headed by a Director(Technical), Chief Director (Technical), a Chief Mining Engineer (Production) to took after the production programme. There was a Chief Mining Engineer (Planning) to handle the planning of development projects.

2.14. He observed "well, there may be departmental frictions, delays in supply of stores, difficulties sometimes in procurement of spares,, troubles with the railway authorities, etc." While coordination among various Departments was effected through weekly or biweekly meetings at the Headquarters, the Area Manager was also brought into the picture at least once a quarter. He added if there were a large number of problems, an urgent coordnation meeting could be held. They now gave an advance information of their production or operational plan for each colliery to the Railway Board.

During the evidence of selected Ministries, the Committee enquired whether effectiveness of production Management Organisation existing in various public undertakings had been evaluated. In reply, Secretary, Ministry of Industrial Development Internal Trade and Company Affairs stated: "Primarily this production Management is the function of the undertaking itself. The recent thinking is to give maximum possible autonomy to the undertakings themselves and to hold the top management basically responsible for the proper appreciation and solution of all the management problems".

2.15. Asked what specific role does the Ministry play and what initiative does it take when management lapses came to notice, the Secretary stated that Government came to know of the production problems through monthly reports and special reports received from undertakings. Moreover, after the Board meeting Government Directors were expected to report to Government any special difficulty or problem of management faced by the undertakings.

2.16. Dealing with organisational aspect of production management in undertakings, the Director General, Bureau of Public Enterprises stated that production management organisation varied

from undertaking to undertaking and depended on the nature of the production and the typee of buyers. The Bureau had conducted studies of organisational aspects of about half a dozen selected undertakings this year. These studies embraced production, inventories, accounting, costs, marketing and all other managerial aspects of the undertakings. They had also taken up some functional areas like inventory and accounting. Study team consisted of a combined team of Bureau officials, officials of the Ministry and the Undertaking concerned to see whether "basis of the organisational set up are properly oriented to the needs of production." Asked whether Bureau had any programme of horizontal studies which cover all the undertakings, the Director General replied that there were 86 of them and it was not possible for them to cover all of them. So, they study only selected enterprises every year.

2.17. The Committeee enquired whether the aim of research studies by the Bureau was merely to find out the position existing in various enterprises or whether the studies pin pointed what was lacking in those enterprises. The Committee observed that there may be many lapses in various enterprises, and enquired whether the Bureau was able to detect all such lapses and draw the attention of Government. Director General stated, "I do admit that we perhaps do not have all the expertise that is needed to go into all those details to the fullest possible extent. That is why that we are proposing to have our own special panel of consultants. The panel he said, woud consist of leading consultants in the country."

2.18. Asked how did the Bureau ensure that recommendations made by various Committees were in fact implemented by the undertakings, Director General stated that in the Bureau they had recently set up an "Implementation Cell" whose duty it will be to ensure that "broad guide lines and broad policy decisions taken by Government are imlemented by the respective enterprises." He clarified that the Bureau was not concerned with action taken on recommendations concerning an individual enterprise. That was the function of the Administrative Ministry concerned.

2.19. The Committee enquired whether the shortcomings in the production management of public undertakings could be due to the fact that "right people were not being placed in the right places." In reply, the Director General, Bureau of Public Enterprises stated:

> "We have, like in any big place or big organisation, some very right people, some not so right people and perhaps some people who are not at all right. It will be the same story, whether you take the public sector or the private sector or the Government. So, that problem is there everywhere. The main problem is to find so many right men at one time."

2.20. Asked whether top men in the Government who were concerned with policy making had any training in the management of industry, the Director General said "so far as officers in the Ministries are concerned I can claim that many of us do have experience of industry and have spent many years in industry." He added "I think, that process is going to become very much important and common as time passes by because we have a two way traffic between the public enterprises and Government." It was, he said, their policy to educate middle level officers in the Ministries to enable them "to think in terms of industry rather than Government" by special courses, seminars, etc. He informed the Committee that the Ministry of Home Affairs and the Indian Institute of Public Administration were doing quite a lot of work in this field. As for the Bureau itself, it had hithertofore arranged seminars for public enterprises. It contemplated to take up seminars for Government officials also.

2.21. **The representatives of some of the leading public undertakings who gave evidence before the Committee admitted that the system of coordination in the Heavy Electricals (India) Ltd. did not enable the enterprise to 'formulate a profit centre or centre of responsibility'. In the Hindustan Steel Ltd. the system of coordination was 'far from nearing perfection' and 'slightly cumbersome' in the Indian Telephone Industries Ltd. etc. This indicates that coordination is not as perfect as it ought to be in major public undertakings. The Committee, therefore, recommend that all the public sector enterprises should carry out a review of their respective organisational set up and plug the loopholes that appear in the existing machinery for coordination.**

2.22. During evidence, the representative of the Bureau of Public Enterprises admitted that during their study of the working of public sector enterprises it had not been possible to pinpoint all the defects because of lack of technical expertise.

Care should be taken to see that new public enterprises which are set up have the right type of production management organisation right from the very begining.

III

PLANNING AND CONTROL

'Planning' means the technique of foreseeing or picturing ahead every step in a long series of separate operations. Each such operation is to be of maximum efficiency. Each step should be indicated in such a manner that routine arrangements suffice to cause production to happen in the right place and at the right time. Production planning is thus specifically concerned with the future and is aimed at achieving optimum production.

(A) Organisation for Planning and Control

3.2. The Committee have noticed that the arrangements for the planning and control of production vary from one undertaking to another. Majority of the public undertakings covered in this study have a separate Department or cell to look after the planning of production.

3.3 The following public undertakings do not have a separate planning cell:—

1. Central Inland Water Transport Corpn. Ltd. (Rajabagan Dockyard).
2. Fertilizer Corporation of India Ltd.
3. Fertilizers and Chemicals Travancore Ltd.
4. Garden Reach Workshops Ltd.
5. Hindustan Antibiotics Ltd.
6. Hindustan Insecticides Ltd.
7. Hindustan Salts Ltd.
8. Hindustan Teleprinters Ltd.
9. Indian Rare Earths Ltd.
10. Manganese Ore (India) Ltd.
11. Modern Bakeries Ltd.
12. National Buildings Construction Corporation Ltd. (Brick Plant).
13. National Newsprint and Paper Mills Ltd.
14. Rehabilitation Industries Corporation Ltd.

3.4. Some of the above mentioned undertakings have given the reasons as to why they do not consider it necessary to have a separate cell. F.A.C.T. and F.C.I; have stated that in a chemical industry like theirs which worked on a continuous process, a separate planning cell was not necessary. Garden Reach Workshop Ltd. have indicated that in recent years they have developed the concept of a central Planning Department. They have not indicated whether or not they have set up such a Department. In Hindustan Antibiotics Ltd. planning of production had been entrusted to production committees. Hindustan Insecticides feel that as their products are fixed and market was asured there was no need for a separate planning cell. In Hindustan Teleprinters Ltd., Planning and Production were under the charge of a common officer. Modern Bakeries (India) Ltd. are of the view that in a small organisation like theirs there was no need for a separate planning cell. Asked whether in enterprises who do not have a separate cell for planning, need for evaluation by independent agency, say, Administrative Staff College of India was not there, the representative of F.C.I. stated during evidence "In the field of production management in our industry, the problems are so complex and specialised that we have to stick to our own expertise to do this. We do bring in outsiders, but these outsiders are the experts from our other units. We constitute teams of engineers and others of other units and bring them to the problem unit for review."

3.5. The representative of the Fertilizer Corporation of India Ltd. further stated that if they had a separate department to plan production, then the responsibility of Chief of Producion would be diluted and there would be an over-lapping of functions. The representative of the Heavy Electricals (India) Ltd. also stated that there was not much purpose in setting up a separate planning cell in their industry. The representative of Indian Oil Corporation said that a separate cell already exists at each of the refineries.

3.6. The representative of the Heavy Engineering Corp. Ltd. stated that they were manufacturing "repetitive items" as well as "tailar made" units for steel plants. As far as products of repetitive items were concerned, the planning organisation of any particular shop could take care of it but when it came to manufacturing of tailor made units especially of a long-time nature, it was necessary to have a "Central Planning Cell" which would keep the prospective planning in view and load the three projects sufficinetly well in advance so that they can organise their own yearly production planning. The representative informed the Committee that in the past Heavy Engineering Corporation Ltd. depended on foreign norms for judging the completion time. They could not achieve the same with the result that load charts were frequently changed. He emphasised that realistic planning will come by experience and on the job training.

3.7. The representative of the Hindustan Machine Tools Ltd. said "According to our experience we find that in a modern factory like ours a separate production planning cell is absolutely necessary." He pointed out that by setting up a separate planning cell three advantages could be achieved. First, target of production could be staff function to servicing production "In order to keep the goals and the activity or feed back information from the shops could be obtained in a methodical way and control exercised. Thirdly, production people could fully concentrate only on production operation. Thereby they would be able to maximise their achievement.

3.8. The representative of Hindustan Steel Ltd. emphasised that production planning was clearly an activity which was very necessary and had to be carried out by groups separate from those who were concerned with production proper. Planning was, he said, a staff function to servicing production "in order to keep the goals and get the clear targets of production and not only that, but to ensure that all the sources of production are identified and summoned in time." He explained that in a steel plant they had many complexities. Every day many types of steel had to be made and in many shops. He opined, "So, where complexity exists, the planning function must be given an independent status but in a staff relationship to the main function of production." The representative admitted that while they had a reasonable group doing production planning, they did not have equally reasonable group for planning maintenance with the result that maintenance was not up to the mark in some places.

3.9. The representative of the Indian Telephone Industries Ltd. stated that they were expanding their production planning organisation because of the enlarged variety and increase in the quantum of production.

3.10. The representative of the National Coal Development Corporation Ltd. stated "Production Planning Cell at the H. qrs. of the Corporation appears to me to be a must. We have such a cell and we have found it exceedingly useful." Production Planning Cell had to work out detailed requirements of transport, machinery, manpower and materials. He added "I am inclined to think of the creation of a small cell even at the Project level. Project normally consists of four or five mines.". He informed the Committee that at present Colliery Manager prepared a detailed technical plan and sent it to the Director General of Mining. The Plant dealt with only the geological conditions and provided for precautions for ensuring safety. It did not take into consideration the economic aspects, machinery investment, etc. He assured that setting up separate planning cells at the project level would not necessarily involve any extra staff.

3.11. Asked as to whether the Planning Cells in various undertakings are staffed with trained men from the Production Department or from outside, the representative of the Hindustan Steel Ltd. stated that they drew men from those who were engaged in production but also from other fields like accounting.

3.12. **The Committee agree that it is neither feasible nor desirable to prescribe one type of standard planning organisation for application to all types of industrial activities. In industries having a continuous process for example, a fertilizer plant or an Oil Refinery, raw material enters one end of the production line and flows through a steady stream to emerge as finished product at the other end. Naturally, the problem of planning and control in such industries is simpler because the path of the material, the process sequence and times of operations are all pre-determined and are more or less inflexible. Such industries may need a different tpye of planning cell. But in tailor made or repetitive products or consumer industries need for separate planning cell exists because the operations and process of production are complex. The Committee feel that in a badly conceived Project good management is unthinkable. They recommend that the planning organisation should be capable of evolving a proper concept of planning production taking into account a realistic demand survey of the products and study of the feasibility Report.**

3.13. **Planning is a specialised function in modern industries and calls for decision making at the highest level. If there is a separate cell for this purpose, production staff can concentrate fully on production proper which may not be possible if the production staff had to handle production in addition to planning.**

The Committee recommend that each undertaking may examine the need for setting up a separate planning cell after taking into account the type of industry and other relevant factors.

3.14. **A pre-requisite for planning of production is the availability of precise information about the products in demand. The Committee recommend that public undertakings should review their existing arrangements for market research and assessment so that production can be planned according to demand and expansion of production or diversification can be undertaken in time. Strictly speaking the production management is concerned with management of production inestablished projects. An ill-conceived project with production capacities installed on the basis of unrealistic projections of demand, is bound to render the task of planning of production difficult. *The Heavy Engineering Corporation* and the *Mining and Allied Machinery Corporation Ltd*, are the two examples of such faulty Planning** abinitio.

The Committee recommend that there should be industry-wise (e.g. fertilizer, steel etc.) Top Planning Cell in each Ministry consisting of Executives of both the public and the private sector industry for the planning and control of production and to ensure that whatever targets were set in the Five Year Plans were achieved and to evaluate the functioning of the production machinery to achieve these targets.

(B) Technique of Planning and Control

3.15. Majority of the public undertakings including Bharat Electronics Ltd, Heavy Engineering Corporation Ltd, Heavy Electricals (I) Ltd., Hindustan Cables Ltd., Hindustan Machine Tools Ltd., Indian Telephone Industries Ltd., etc. follow techniques like routing, Scheduling, dispatching and follow-up (RSDF techniques) for planning and control of production. These techniques are however, not being followed in the following industries:—

(1) Steel Industry—Hindustan Steel Ltd.

(2) Petroleum Industry—(a) Indian Oil Corporation Ltd
(b) Cochin Refineries Ltd.

(3) Fertilizer Industry—(a) Fertilizer Corporation of India Ltd.
(b) Fertilizers & Chemicals Travancore Ltd.

(4) Mining Industry—(a) National Coal Development Corporation Ltd.
(b) National Mineral Development Corporation Ltd

3.16. 'Routing' means determination of the path of manufacture. 'Scheduling' consists of establishing time sequence for various operations. 'Dispatching' involves issuance of orders and the work Follow-up' means expediting the flow of work.

3.17. During evidence, the Chairman, Heavy Electricals (I) Ltd. stated that in the case of smaller products they did follow the RSDF techniques. As regards tailor made items which constituted about 60 per cent of their production, these techniques were adopted to review the progress.

3.18. The representative of Heavy Engineering Corporation Ltd. stated that they were thinking of using computers for the planning and control of production.

3.19. The representative of Hindustan Machine Tools Ltd. stated that they get the assessment of the progress of production control done with the help of an electronic computer. The production control by the conventional method would have almost been impossible.

3.20. The Chairman, Hindustan Steel Ltd. stated that "the function of production planning and production control is not merely target setting but ensuring the targets are achieved.... So, production planning is concerned with the working out of all the details and not so much with the target setting." He informed the Committee that so far as steel was concerned, the demand today out stripped the supply. It was in the Joint Plant Committee that the representatives of the plant and sales got together to evolve an overall production plan. Thereafter, the overall production plan was broken into unit plans to make sure that raw materials were available, that necessary number of shifts were run, and that the sequence in which products were to be made was properly determined that the days on which maintenance was to be carried out were properly worked out. He expressed the view that "undoubtedly that plan must come with the full concurrence of every body who is to operate it."

3.21. The representative of the Indian Oil Corporation Ltd. stated that the RSDF technique, in the context applicable to the engineering industry, was not required for the petroleum industry but some of the principles underlying it had been made use of in two of their refineries where the crude was different and a lot of blending of intermediates had to be resorted to, to produce the on specification products.

3.22. The representative of Indian Telephone Industries Ltd. stated "we have a large number of shops manufacturing a large number of components. Some services are common to the shops. The RSDF technique has proved quite useful. In fact, it is a must."

3.23. Explaining the way the production planning and control was effected in the coal mining industry, the representative of the National Coal Development Corp. Ltd. stated that an annual working of technical plan was prepared by the Colliery Manager with the assistance of mechanical and electrical engineers and other experts. This plan was sent to the Director General of the Mines Safety and the Coal Board for sanction. Conceding that this plan did not provide the satisfactory means for establishing control over the process of production or the production itself he said, "We have a system of production planning and control in an overall way. Presently, it is really a system based on commonsease; it does not follow any specific technique like routing, scheduling, dispatching and follow-up."

3.24. As regards the scope for introduction of RSDF techniques in the coal mining industry, the representative expressed the view, "My own feeling is that the concept underlying these techniques can be applied even in the mining field although it might not be necessary to use all the formulae or techniques that are being used

for planning and control of production in the mechanical engineering field." He added "sufficient thought has not been given either in India or abroad to the adaptation of the principles underlying RSDF techniques to the mineral field. I feel it would be worthwhile doing so and we are beginning to give some attention to it."

3.25. During evidence of the representatives of selected Ministries, the Committee enquired whether it was not desirable that Government should examine the existing arrangements for planning and control of production in various public undrtakings and issue some quidelines. In reply, the Director General, Bureau of Public Enterprises (Ministry of Finance) stated that so far as control organisation was concerned, the need had been accepted. He was of the view that there cannot be one uniform pattern for planning and control and that it will have to be tailored to fit different types of industries. He informed the Committee that the Bureau had issued Circulars in March, 1969 in this regard. They had started receiving replies and hoped to look into the matter on receipt of all the replies.

3.26. Referring to delays at Bokaro Steel Plant, the Secretary, Ministry of Steel & Heavy Engineering informed the Committee that they were introducing the 'Network Analysis' technique in Bokaro now. He felt that this could have been introduced there a little earlier. He assured the Committee that in future steel plants this management technique would be introduced straightway. The Committee understand that when estimated time for various activities alters, the conventional bar charts do not help much in identification of such variances nor can logical sequence of work be outlined in great detail to control a big project. Network Analysis is of great help in controlling overall planning of large projects. It envisages a logical sequence diagram which outlines the procedure in which construction should be organised. It implies that broad goals can only be outlined provided activity programme is made in sufficient detail to ensure that itemised delay is immediately, identifiable.

3.27. The Committee are surprised by the statement of the National Coal Development Corporation's representative that planning and control in their enterprise did not follow any specific techniques. The technique of Production Management is changing all over the world every day with the introduction of latest techniques. If the public undertakings are indifferent to the adoption of modern techniques of planning and control, poor production performance and defective planning may become inevitable. During the examination of different public sector undertakings the Committee found that highly sophisticated plants and machinery imported from highly industrialised countries of the world were being operated on obsolete and outmoded techniques of planning and control of production.

While it is primarily for the respective industries to decide as to whether they would follow techniques like routing, scheduling, dispatching and follow-up or any other techniques, the Committee suggest that Government should undertake a survey of existing arrangements for the planning and control of production in all the undertakings to examine how far non-achievement of targets of production or incurring of losses in each case was due to non-application of modern techniques of planning and control. Based on such a survey, proper guidelines may be issued to the undertakings highlighting the modern techniques to be followed by each group of industry.

C. Use of computers for Production Control

3.28. Some of the public undertakings, as, for example, Hindustan Steel Ltd., Hindustan Machine Tools and the Indian Telephone Industries Ltd., have installed computers. Hindustan Steel Ltd. have installed one computer in each of their plants "to aid management controls and the quality, speed and scientific soundness of management decisions." Hindustan Machine Tools Ltd. have installed an Electronic Computer to perform the "entire functions of scheduling, routing and assessment of the progress for the Production Control" because production control by conventional methods would have proved almost impossible. Indian Telephone Industries Ltd. use the Computer for inventories control and several accounting functions as well as for production planning in one Division. They are thinking of extending its use for production planning in all the Divisions.

3.29. Some other public undertakings, as for example, Bharat Earth Movers Ltd., Heavy Engineering Corporation Ltd., National Coal Development Corporation Ltd. are also considering the question of installation of a Computer.

3.30. During evidence, the Committee enquired as to what had been the experience of undertakings in regard to computers and whether other major undertakings should, in their view go in for computers for better control of production. In reply, the representative of Hindustan Steel Ltd. stated that so far the computers had been used by them largely for doing work of an accounting character. They also used computer to study the life of moulds and various other quality control problems, planning and maintenance programmes of a very heavy nature. They were pushing along to make the computer take on more and more complicated accounting work including inventory control.

3.31. The representative informed the Committee that computers were not all alike. They needed computers of a different kind for using computer technique for production control or process control. He added, "all computers are not meant to replace men. All men in the world individually cannot do certain things because it will take

them several lives to solve certain mathematical formulae. Therefore, the computer is an extension of man and not a replacement of man." Computer helped quick calculation of wages and provident funds to workers. The representative pleaded "I hope Parliament will assist us in getting computers to serve the Indian economy rather than being frightened about it."

3.32. The Committee enquired how was the use of computers by HSL, HMT, ITI etc. to be justified in the context of increasing unemployment in the country. In reply, the representative of the Hindustan Steel Ltd. stated "we cannot calculate all the variables involved in the flight of a craft to the moon from here. Those have to be converted into mathematical formulae and fed into a mechanism created by them to solve them within a short time. You feed something into a blast furnace. The iron ore is not the same every day in terms of its iron content or other materials like sulphur, phosphorus etc. but at the end you want the same type of steel or iron. What temperatures and what controls of the blast etc. will give you that desired result cannot be exactly received by furnace supervisor. He may have the feeling that a particular approach would be suitable and it may work out. If his feeling does not work out, he has to reject the output as off grade. If this method is to be replaced by a detailed analysis and scientific decision, only a computer can help."

3.33. The representative further stated that Hindustan Steel Ltd. had 1,00,000 employees. If a worker left, they had to find out how much provident fund was due to him and what he owed by way of house rent, water tax etc. It took months to gather this information. But with a computer they could pay workers' their provident fund within 24 hours. He observed "if you want to run your social system with justice, when the mass of people you have to deal with, grows beyond a certain limit, you can only do it with mechanical aid."

3.34. The Committee pointed out to the witnesses that when a computer replaced the men already employed, without adding in terms of accuracy, except that there was quickness and reduction in costs, it was there that the short term and long term aspects came in the way. The representative of the Indian Telephone Industries Ltd. stated that he had an occasion to discuss the problem in Japan. When there was heavy unemployment as a result of development of automatic devices for railway signalling etc. in Japan, the Japanese had said that it did not matter if some people had to be thrown out of employment because in the course of industrial development total employment would go up and not go down. The representative was of the view that India should take a long-term view. He said, "I am afraid we have to take a long-term perspective. We cannot go merely by the short-term problems, as it would be putting the cart before the horse and would retard progress. I agree that this is a debatable point but we have to consider that when efficiency increases, the economy improves." He felt, "eventually the employment potential will increase because computers will have to be manu-

factured, sold, marketed, serviced and operated." He thought that if some displacement of men was there on account of use of computers, the situation could be met by retraining and re-employment.

3.35. The representative of the Hindustan Steel Ltd. stated, "Computer is not like a typewriter. It's cost is such in capital terms as well as its operation costs that only a certain size of operation would justify the use of computer."

3.36. Leading industrialised countries (like Japan and U.S.) have accepted the aid of computers to control their cost of production, enforce quality control and reduce inventories to appropriate level. The Committee feel that India will have to recognise the role of Computers as an inevitable tool for industrial efficiency and progress to compete in international market. Conscious of the acute problem of unemployment, the Committee would recommend computerisation in capital intensive industries (e.g. H.S.L. H.E.L. etc.) and not the labour intensive industries. Computerisation should primarily be directed to enforce (i) inventory and management control and (ii) to cut down the cost of production.

As a matter of fact, the decision to instal a computer in an enterprise should be taken at the time of setting up the enterprise to avoid any controversy later.

The Committee reiterate that care should be taken to avoid retrenchment of labour and the staff, if rendered surplus, should be absorbed in alternative jobs in the same or allied undertakings.

3.37. The Bureau of Public Enterprises was set up in April, 1965 in the Ministry of Finance in pursuance of the recommendation contained in the 52nd Report of the Estimates Committee. The Committee find that functions of the Bureau have been considerably enlarged following the recommendations made by the Administrative Reforms Commission in their Report on Public Sector Undertakings (October, 1967). In their note furnished after the evidence, the Bureau have stated that they have 5 constituent Divisions in the Bureau, namely, (1) Production, (2) Construction, (3) Finance, (4) General Management, and (5) Information and Research. The Committee feel that with the enlargement of the functions of the Bureau, there is need for de-centralisation lest the Bureau should grow into a monolithic and top heavy administration. The Bureau may consider whether it will not be better for it to function in small working groups, each group being responsible for one type of industry.

IV

MANAGEMENT REPORTING

A. Communication System

In modern industrial enterprises, a significant portion of the time, increasing rapidly from operating levels to top management level, is spent in decision-making. The process of decision-making involves the supply and receipt of information, 'encoding' and 'decoding' messages, construction, interpretation and transmission of instructions, etc. all together known as "Communication".

4.2. During evidence, the representative of the Fertiliser Corporation of India stated that in their enterprise the formal communication system established through Office Orders, circulars, etc. had been supplemented by informal communication arrangements by which supervisors and managerial personnel met in seminars and development courses. He felt that there was scope for further improvement which could be brought about by developing a system of bringing together the managers and supervisors periodically. Asked whether there was any instance where a better communication system could have helped them to take the right decision quickly, the representative replied that they had not studied the communication problem from that point of view.

4.3. During evidence the representatives of the Undertakings informed the Committee that they were facing difficulties in establishing a sound system of communication with labour. Chairman, Heavy Electricals (India) Ltd. stated "where we feel there is still a lacuna or a gap is between the first line of supervisors and the rank and file of workers". The representative of the Heavy Engineering Corporation Ltd. revealed that they too faced difficulties in so far as communication between workers shop staff and immediate level supervisors was concerned. He felt that it will be better to have "shop committees" where workers could participate in discussions. Chairman, Hindustan Steel Ltd. stated that they had tried their best to create "production committees" in which they could associate workers to discuss production problems but had not met with much success.

4.4. The Managing Director, Indian Telephone Industries Ltd. stated that in the India Productivity Year, he had appointed a Committee to go into the communication system in the ITI. That Committee had felt that the usual meetings which the middle management and the supervisors had was quite adequate for communicating the objectives of production to labour. They had also evolved a

'grievance procedure'. There was liaison between middle management and labour through Works Committees, Welfare Committee, Safety Committee, Incentive Committee etc. The representative, however, admitted that despite these measures, there was some scope for improvement.

45. The Chairman-*cum*-Managing Director, National Coal Development Corporation Ltd. stated that in their enterprise they had 67,000 workers of whom 50,000 i.e. about 67 per cent were semi-skilled or unskilled miners. They had 942 officers of whom 730 were engineers. The task of communicating the intent and meaning of decision of management to labour had become difficult because of existence of "groupism". The witness added that despite their having workers Committee, Safety Committee, Pit Committees, Joint Management Councils, etc. he could not say whether they were any where near solving that problem satisfactorily.

4.6. Asked whether appointment of Industrial Relations Commission as recommended by the National Labour Commission would strengthen the channel of communication with the employees, the representative of N.C.D.C. said that it may not strengthen the channel of communication but would help in removing suspicions. The Chairman Hindustan Steel Ltd., however, thought that any extraneous agency, be it a Commission or a court, could intervene only in certain fairly important matters, and added that communication between labour and management was a day to day function and any third party's intervention would only create a confusion. The Managing Director, Indian Telephone Industries Ltd. expressed the view that formation of Industrial Relations Commission at the Centre and States for dealing with disputes which could not be settled at the industry level would be instrumental in removing political overtones which were given to disputes at present.

4.7. The Committee are concerned to learn that major public undertakings are facing difficulties in establishing a sound system of communication with labour. They recommend that the public undertakings should review periodically their existing communication system with a view to improve the communication with labour. Public sector enterprises being model employers are expected to set an example and owe a special responsibility to evolve communication with labour in such a way that there is greater participation or feeling of involvement by labour in the fulfilment of objectives of production management.

4.8. Dealing with the importance of physical aids in a communication system, the Chairman, Hindustan Steel Ltd. stated that Bhilai Steel Plant had the best communication system in the sense of the physical system, of an inter-com connecting every section of the plant with the control point. This system based as it was on steady minute to minute information flowing into the control point enables them to exercise effective control on production. He added that they

had not been able to incorporate that system at Durgapur Steel Plant. He expressed the view "I think, we have much more to do; we have to improve our communication system on all fronts in terms of physical aids".

4.9. The Committee enquired from the representatives whether they had any persons in their enterprises specially trained in the art and technology of communication. In reply, the representatives of the Fertilizer Corporation of India Ltd. and the National Coal Development Corporation stated that they had no person specially trained in this line but their staff had attended general management training courses where the subject of communication was also dealt with.

4.10. The importance of the role that effective communication plays in the successful and speedy implementation of the objectives of production management cannot be over-emphasised. The Committee are of the view that the communication system in the Organisation should be such as to ensure speedy transmission of vital information by pressing into service the most modern and economical means of communication. They find that there is dearth of persons trained in the art and technology of communication in most of the Undertakings and recommend that such a personnel should be raised in every Undertaking by arranging suitable training.

Training programmes may be drawn up in consultation with the Management Institutes at Ahmedabad and Calcutta.

B. Management Reporting System

4.11. During evidence, the Committee enquired whether the reports and returns being submitted to top management|Government were not far too many and in such great detail that there was a chance of salient points getting lost sight of. The representative of the Fertilizer Corporation of India Ltd. replied that the number of reports from their constituent units came to more than 80. There was no feed back from the receiving Departments. He suggested that their Corporation should be required to furnish only one comprehensive return to the Bureau of Public Enterprises. The Chairman, Heavy Electricals (India) Ltd. expressed the view that there was need for the Bureau "to have a fresh look at the returns historically going on for some time."

4.12. The Chairman, Hindustan Steel Ltd. informed the Committee that under the "Management Information System" evolved on the basis of the recommendations of the Specialised Group which worked under the Planning Commission in 1968, they were now required to send only one consolidated report from Head Office to Government on behalf of all the plants. The witness admitted that their information system had not been sufficiently elaborate to enable them to take effective managerial decisions to control inventories and to have the right inventories. They were improving it.

4.13. The Chairman, Indian Oil Corporation Ltd. stated that though they had already got the number of returns required by Government reduced, there was still some scope for reducing the number.

4.14. The Managing Director, Indian Telephone Industries Ltd. expressed the view "I do not think that an industrial organisation should have a large secretariat system. A large secretariat, I think, would be a waste of productive effort and money and perhaps we should rationalise these reports so as to reduce this burden on industry."

4.15. The Committee observed that when they were on tour to the Oil and Natural Gas Commission in Dehra Dun they had the occasion to see their "Control Room" where the system of daily reporting had been introduced. The Committee enquired whether other public undertakings had similar arrangements. The representative of N.C.D.C. confirmed that they got daily reports about production, despatches, and any other important developments etc. from the collieries by wireless followed by a post-card message. The representative of the Hindustan Steel Ltd. stated that they too got daily reports on production, despatch, labour situation, major breakdowns, etc.

4.16. During evidence of the representatives of the selected Ministries, the Director General, Bureau of Public Enterprises (Ministry of Finance) stated that so far as management control report was concerned, the Bureau had provided a form. He added "We cannot claim that it is absolutely correct, may be it needs improvement." He informed the Committee that Government had already accepted the recommendation of the Administrative Reforms Commission to evolve a rational reporting system. They were expecting a Specialist from the Internal Labour Organisation. He assured that this work would be completed within six months.

4.17. The Committee are in favour of reducing the multiplicity of Reports|Returns submitted to Top Management|Government without in any way interfering with the efficiency to take effective managerial decisions by the undertakings. In this connection, the Committee have noted that Hindustan Steel Ltd. have been able to evolve one Consolidated Report which goes from their Head Office to Government and covers all their plants. The Committee recommend that other Public Undertakings should also undertake a review of their existing Reports in consultation with their administrative Ministries and try to reduce the number of their Reports|Returns.

The Committee recommend that public undertakings should also consider the advisability of setting up a special cell, if such a cell is not already there in their respective enterprises for the purpose of study, evaluation and follow up of such Reports because utility of

such reports would ultimately depend on the capacity and the ability of these cells and the extent to which such Reports are made use of for managerial decisions.

4.18. The Committee enquired what arrangements existed in various Ministries to scrutinise and take prompt action on the Reports received from various public undertakings. In reply, the Secretary, Ministry of Industrial Development, Internal Trade and Company Affairs stated that Reports in respect of particular projects came directly to him or the other Secretary in the Ministry. The proforma of these Reports gave reasons for shortfall in production. The Secretaries went through these Reports in very great detail. If Secretaries found that there were some points which should be prominently brought to the Minister's attention such reports were put up to the Ministers. When the Joint Secretaries who are the Directors in the Companies go for meetings, they are asked to look into matters requiring attention. Each Ministry held periodical meetings with the Heads of Public Undertakings under them so that any common problems which linger on over a period of time, like labour, foreign exchange, shortage or exports etc. were reviewed in considerable detail and necessary instructions given to the Undertakings.

C. Management by Exception

4.19. From the post-evidence replies, the Committee have noticed that out of eight leading public undertakings who gave their evidence, only three, namely the Fertilizer Corporation of India, Hindustan Machine Tools Corporation and Hindustan Steel Ltd. follow the system of "Management by Exception". This system implies that instead of flooding the managements with a mass of data, only the "deviations from the standards" should be reported to top management.

4.20. The Committee enquired whether public undertakings agreed with the view that in India the system of Management by Exception focussed attention of the higher levels not on proper issues but on the trivial matters of administration. While the Fertilizer Corporation of India Ltd. and the Hindustan Machine Tools Ltd. have disagreed with this view, the Hindustan Steel Ltd. have stated, "Probably this difficulty arises from reporting all deviations in a single comprehensive report meant for all levels of management resulting in clustering of too many details thereby clouding the important deviations which require special attention." During the current financial year, HSL have made a beginning towards implementation of the system of standard costing introduced by the British Iron and Steel Industry. This system will provide for separate "tailor made" reports for different managerial levels so that attention is drawn to only those exceptions which are relevant to their responsibilities.

4.21. The Committee hope that the system of management by exception introduced in Fertilizer Corporation of India, Hindustan Machine Tools Ltd. and Hindustan Steel Ltd. would prove useful. They also recommend that other major undertakings should consider the advisability of introducing the system of providing separate tailor made reports for different managerial levels so that attention is drawn only to those exceptions which are relevant to their responsibilities.

V

MANAGEMENT ACCOUNTABILITY

(A) Fixation of Responsibility

5.1. During evidence, the Committee inquired how and in what manner the principle of accountability should be introduced in public undertakings so as to ensure effectiveness of performance at various levels of an organisation. In reply, the representative of the Fertilizer Corporation of India Ltd. stated that in a complex Chemical process industry such as their, "group efforts" controlled the production and it was, therefore, not always possible to pinpoint responsibility on individuals, except for cases of deliberate or wilful negligence.

5.2. The Chairman, Heavy Electricals (India) Ltd. stated "I am doubtful whether we would be able to pin point the accountability in the pattern prevailing in public sector today, because at what ever level you go, you find that there is dispersal of responsibilities."

5.3. The representative of Heavy Engineering Corporation Ltd. stated that it was difficult to fix responsibility because there were so many causes of failures e.g. raw materials, labour not coming upto expectations, etc.

5.4. The representative of Hindustan Machine Tools Ltd. stated that very recently they had introduced a system in their enterprise. At the beginning of financial year they fixed "own objectives" in consultation with the Head of the Department. After the target was set, there was a periodical check and at the end of the year, an assessment would be made to find out how much the Head Department had been able to achieve, and if he failed to achieve, reasons for his failure were analysed to see whether the failure was due to reasons beyond his control. The representative expressed the hope that after the system was tried for 2 to 3 years, it would be much more perfect than what it was today. He added, the whole idea was not to find a fault in particular officer but to find out the reasons why an individual could not achieve his objectives.

5.5 The Chairman, Hindustan Steel Ltd. stated that they had a daily production plan and each supervisor had to explain why it had not been possible for his particular unit to achieve that production plan. He explained, "This kind of explanation is to rectify a thing rather than to chase him and to find fault." He added, "we are quite a young organisation and too many terminations can upset these

young people. So, I think terminations have been very rarely resorted to what has been done in HSL is that they have been transferred from one section to the other and a certain amount of training has been attempted as a means of bringing up these people." The Chairman emphasised the fact that Managerial accountability was a fact but the exact measurement of that accountability in terms of quantum was difficult. There can, of course, be qualitative assessment and it was on such piece of evidence that increments were determined or promotion granted.

5.6. The Chairman, Indian Oil Corporation Ltd. stated that in the case of those whose performance was not up to the mark they were left behind in the matter of promotions and if consistently bad even their services were terminated. He clarified that this only applied to officers cadre and not to workers.

5.7. The Managing Director, Indian Telephone Industries Ltd. stated that the main spirit in an industry was team work. Management Officers could not divest themselves of responsibility for lapses at lower levels.

5.8. The Chairman-cum-Managing Director, National Coal Development Corporation Ltd. stated that in their enterprise the responsibility was defined and if there was any lapse in performance, the explanations of colliery Managers, were called for.

5.9. During the evidence of the representatives of selected Ministries, the Committee enquired whether Government shared the view that crisis in management of public sector undertakings and arisen because managements were not accountable for performance and no sanctions, worth the name existed for ensuring effectiveness of performance and, if so, how Government proposed to make the principle of Management Accountability more effective.

5.10. In reply, Director General, Bureau of public Enterprises stated that Government had given a lot of thought to this matter. He said "while we believe that public enterprises should have full freedom and autonomy for day to day operation, there would be a certain amount of accountability to the over all performance." He added, "This we propose to do by a system of management by objectives at particular levels, not merely at the top level of the management also at lower levels of management." He expressed the view that the only way to make the particular management responsible was "evaluation of performance against targets."

5.11. When it was pointed out that targets were set by the managements themselves, the Director General stated that the Board of Directors had two representatives of the Government also. So, Government would naturally have full authority to point out

why targets had not been achieved. He emphasised that "the target should not stop as between the Government and the top executives. The targets would have to be set at all levels of decision making and action taking within the enterprises."

5.12. The Committee pointed out that some times political climate, non-availability of foreign exchange or even a power cut may stand in the way of management in achieving the targets and if this happened, it would be difficult to hold a management responsible for shortfall. Director General agreed that if broad objectives were given, a management could be made responsible if there are no other intervening factors."

5.13. As regards the policy of sticks and carrots in public enterprises, the Director General said, "While we have enough sticks to punish executives who are lax, there are not enough carrots for people who do good work. We should have a system where sticks and carrots balance each other. Rewards for good pertormance should be a little more than what they are." Asked what punishment had Government inflicted so far except transfer in the event of bad performance, the Director General stated that they had dismissed even General Manager of Steel Plants.

5.14. The Secretary, Ministry of Steel and Heavy Engineering stated that what the Director General, Bureau of Public Enterprises had said was certainly the framework within which they intended to function, there was always a fairly large element of discretion and judgement which had to come in. Giving the example of the Fertilizer Project of Rourkela he informed the Committee that while it was still under the guarantee performance and was being erected by the suppliers, one of the Boilers burst. It had to be decided as to who—Management or Supplier was responsible for that accident and to what extent. But who-so-ever may be responsible, the accident delayed the achievement of target. He added that during the "Rourkela Bandh" and "Orissa Bandh," people went on stoning the houses. Blast furnace had to be cooled down and it took many days to revive it. When things like these happened, General Managers could not be held responsible. Secretary, Department of Industrial Development added "If it is due to the inadequacy of the management, the Ministry will not hesitate to take action."

5.15. The Committee enquired whether conduct Rules applicable to the Civil Services were also applicable to the staff in public undertakings, the Secretary, Ministry of Steel & Heavy Engineering replied in the negative but stated that appointment Order of the staff in the public Sector contained a provision for termination of service on either side. Director General, Bureau of Public Enterprises informed the Committee that there was no difference between the public and private sector in so far as the provision regarding

termination of service was concerned. He stated that the services of the General Manager, Durgapur Steel Plant were terminated after giving three month's notice. On being asked as to how it was ensured that the power of terminating an employee's services in this manner was not abused, the Director General said, "Performance is something which is quantifiable and can be judged over a period, whether it is good, bad or indifferent. It is not the subjective judgement of one person."

5.16. During evidence, the representatives of most of the leading public undertakings argued that the principle of management accountability was difficult to be enforced because (i) production is a team work based on group effort, (ii) there is dispersal of responsibilities in the existing pattern of public sector, (iii) causes of failure are varied and (iv) qualitative measurement of accountability is not possible. These arguments are not convincing. If these are accepted, it will tantamount to grant of complete immunity from accountability:

Considering the present low level of productivity and the heavy financial losses being incurred by major public undertakings year after year, the Committee are convinced that public enterprises were not pulling their full weight to ensure that the principle of management accountability was implemented in letter and spirit without fear or favour. The Committee, therefore, strongly recommend that Government must formulate a clear policy and see that responsibilities of each level of management were clearly defined in unambiguous terms and laid down in black and white so that whenever any act of omission or commission came to light it was possible to fix responsibility and bring the persons concerned for the lapse to book. They also emphasise that the policy so framed must make the Top Management of every public sector enterprise fully responsible for over all performance particularly the production performance. As soon as Government are able to formulate such a policy, the same may be placed before the Parliament. Effectiveness of the policy must be kept under close watch by Govt. and Parliament kept informed of the results achieved.

(B) Criteria of Judging Performance

5.17. The Committee observed that if the criteria of profit or loss was not there, how could performance of the public undertakings be judged. In reply, the Director General, Bureau of Public Enterprises stated, "I do not think this popular impression that the profit motive is totally absent in public sector is correct." The Committee pointed out that this was not their impression. On the other hand, it was felt that there should be profits and that was why when there were losses, there was so much of uproar in Parliament. The Director General stated that the public undertakings which made

profits were considered by them as performing their work satisfactorily whereas reasons for unsatisfactory performance of undertakings which incurred losses were gone into.

5.18.The Committee enquired how the performance of an Undertaking like Hindustan Steel Ltd. could be judged as it cannot make profits since the price of Steel was controlled. The Secretary, Ministry of Steel and Heavy Engineering stated that apart from Profit there were other criteria also. For instance, comparison of the works costs, the input per ton of Steel, the output as against the target and so on. The Director General, Bureau of Public Enterprises informed the Committee that" these things are studied in depth by the Audit Board and by a system of inter-firm comparisons" and added "As a matter of fact, we are very ambitious in this regard, and in this regard we have written to all our Ambassadors abroad to send us the corresponding data from other countries also, so that we could make those comparisons."

5.19. **The heavy financial losses incurred by major public undertakings e.g. Hindustan Steel Ltd., Heavy Engineering Corporation Ltd., Mining & Allied machinery Corp. Ltd., Heavy electricals (India) Ltd., Indian Durings & Pharmaceuticals Ltd., over the years, lend weight to the impression that the criteria of profitability was getting gradually eroded and whittled down. If this drift from profitability is allowed to continue, there was every likelihood that the gains of planned economic development in India may be offset by the heavy losses incurred by public sector enterprises. The Committee view this development with great concern. They, therefore, strongly recommend that Government must impress upon all the public sector enterprises the need to avoid losses and ensure profitability i.e. a decent return on investments. As a matter of fact, the norm for profitability should be laid down at the time of setting up the project itself so that the Parliament and the country know in advance as to the precise period during which an enterprise is expeced to reach the break even point. Should an enterprise fail to reach that stage within the stipulated period and continue to incur losses even after the gestation period is over, the Committee feel that the Government should examine whether such an uneconomic enterprise is to be allowed to continue.**

(C) Management Objectives

5.20 The Committee enquired whether there was any concrete instance where the Ministers gave clear objectives to an enterprise and said that if they were not achieved, the General Manager would have to go. In reply, the Director General said, "This management objective concept is something which is coming up just now. It will have to be trial and error method for us."

5.21. The Committee asked whether introduction of management by objectives would be possible in the present set up of public sector enterprises without conferring more powers, administrative and financial, at every level of management. The Director General, Bureau of Public Enterprises stated that the question of delegation of powers had two broad aspects viz. (a) Delegation of powers from Government to Undertakings and (b) Delegation of powers within the enterprise itself. He stated that Government had conferred wide powers on Public undertakings during the last one year or so. He added "If you compare the powers that we have now conferred on the public enterprises with the powers that the corresponding public enterprises in Britain or France or some other countries have perhaps it will be a little surprising to know that our enterprises have now greater autonomy and greater opportunity." He admitted that in some cases delegation of powers had not been fully effective because it needed a change in the Articles of Association of the enterprises. Anyhow, the process was on. He hoped that 'within a short time, all the enterprises will be able to exercise all the powers.'

5.22. As regards delegation of powers within the enterprise itself, the Director General though that it will depend on the type of enterprise, single or multi-unit, type of operation, lines of communication, reporting system etc, and observed, "Perhaps the tendency in our country particularly on the part of the multi-unit enterprises is to decentralise but in single-unit enterprises which are located at one place, it is rather difficult to say what the pattern is."

5.23. The Committee note that Government have recognised the importance of management by objectives concept. They are however, unable to appreciate why 'it will have to be trial and error method.' They recommend that Government should evolve a clear cut plan to indicate as to how and in what manner the Government propose to proceed in the matter so that nothing is left vague and undefined. Unless a clear picture is placed before the enterprises by Government, the Committee are unable to see how the enterprises can be expected to work out the management objectives concept in its right perspective.

D. Managerial Cadre

5.24. The Committee enquired whether time was not ripe for creating a special profession of public administrators for public sector enterprises. In reply, the Director General, Bureau of Public Enterprises said, "The question of a managerial carde for the public sector is something which is engaging our attention. As a matter of

fact, in the Committee of Secretaries, we have discussed this particular questions as to how to build managerial cadre for the public enterprises, and this is something which we are considering very seriously."

5.25. The Committee are of the view that unless a Managerial Cadre consisting of persons of proven ability, integrity, managerial talent, initiative and above all faith in the role of the public sector in national economy is established to man senior positions of responsibility in the public sector enterprises, problems arising in the realm of production management cannot be satisfactorily tackled.

VI

PRODUCTION CAPACITY

(A) Under-utilisation of capacity

6.1. From the Statement of utilisation of installed production capacities furnished by the Bureau of Public Enterprises (Ministry of Finance)—Appendix II, it has been noticed that during 1968-69, the only major public undertakings which worked to 100 per cent of their installed capacity were (1) Nangal Unit of the Fertilizer Corporation of India Ltd. (Heavy Water Production), (2) Kiriburu and Bailadila Iron Ore Projects of the National Mineral Development Corporation Ltd., and (3) Gauhati Refinery of the Indian Oil Corporation Ltd.

6.2. The capacity utilisation was the lowest in the case of (1) Heavy Engineering Corporation Ltd. (Heavy Machine Tools Plant—2.2 per cent, Heavy Machine Building Plant—(i) Mechanical 11 per cent (ii) Structural—22 per cent, Foundry Forge Plant—13 per cent (2) Bharat Heavy Electricals Ltd. (minimum Oil Circuit Breakers—6 per cent), (3) *H.M.T. Factory, Hyderabad (8.2 per cent) (4) Antibiotics Plant of the Indian Drugs and Pharmaceuticals Ltd. (Penicillin 6 per cent Streptomycin 9 per cent) and (5) Mining and Allied Machinery Corporation Ltd. (9 per cent).

(I) *Steel and Heavy Engineering Industries*

6.3. During 1968-69, capacity utilisation in terms of ingots in the steel plants was 68 per cent at Bhilai, 67 per cent at Rourkela 50 per cent at Durgapur and 40 per cent at Alloy Steel Plant. Explaining the reasons for non-achievement of full rated capacities, Hindustan Steel Ltd. have stated that the speed with which the rated capacity was reached in any individual unit depended upon the nature of the unit, the level of technology and the time taken by the operating as well as the maintenance staff to acquire on the job skills necessary for the attainment of rated capacity operation on a consistent basis. Steps being taken by H.S.L. for attainment of rated capacity include intensive training to their technical personnel both in their plants as well as abroad and employment of foreign commissioning personnel with Indian under studies in each case so that problems of production and maintenance were quickly mastered.

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*per cent utilisation in terms of value, however, was 30.6 per cent.

6.4. During evidence, the representative of HSL stated that Bhilai Steel Plant could not achieve rated capacity for want of right type of refractories, delay in timely replacement of locomotives, etc. The witness conceded that replacement of locomotives some of which were more than 10 years old should have been planned by them earlier. Rourkela's rated capacity was said to be 1.8 M.T. but actually that capacity did not exist today. Its available capacity in terms of steel would be 1.3 M.T. Rourkela needed more equipment. Some of its units were new and, therefore, full development would take time. The main problem faced at Rourkela was that of inadequate maintenance apart from various other problems. Durgapur's rated capacity was supported to be 1.6 M.T., but its actual capacity in terms of steel alove and rolled material may not be more than 1.1. M.T. Three out of four coke oven batteries at Durgapur had been damaged.

Rebuilding of one battery took two years. At this rate, it would take six years to rebuild these batteries. Durgapur also had the problem of poor maintenance of the Mill where the rolling was done on ingots. It was due to poor maintenance of these mills, that billets were in short supply in the country. The representative assured the Committee that Bhilai would reach its rated capacity in 1970-71 and Rourkela by the middle or end of 1971. He could not give any dead line for Durgapur because there the batteries had to be rebuilt.

6.5. The Committee observed that while they were on a tour of Bhilai Steel Plant, they were informed that structurals were being sold to Russia at below 45 per cent of the unit cost and enquired whether the situation had shown any improvement. The witness replied that the structurals and the rails functioned as a single unit. Internal demand for heavy structurals was somewhat feeble. They had to seek foreign market to make full utilisation of heavy structural capacity. They had a fairly good order from the Soviet Union. The prices were fixed annually by reference to international price.

The prices at which they sold structurals since last year covered variable costs. The Mill capacity for Rails was 5,00,000 tons of 13 metre rails corresponding to Indian Railways' specifications. Indian Railways need about 1,20,000 tons from Bhilai. They had, therefore, a surplus capacity. They had been able to get a fairly good export market for rails. World markets do not follow Indian specification either in regard to profiles or in regard to lengths etc. and to the extent their present facilities have to be adjusted in order to undertake production for export, utilisation is not optimum.

As far as the products of Rourkela were concerned, the products will not be sufficient to meet the internal demand. Internal demand for pipes, however, would vary from time to time. It was, therefore, necessary for them to seek some external orders for pipes. They were not sure what would be the position from the middle of 1970.

6.6. During 1968-69, the capacity utilisation in Heavy Engineering Corporation was (1) Heavy Machine Building Plant,—Mechanical 11 per cent., structurals 22 per cent., (2) Foundry Forge Project—13 per cent. and (3) Heavy Machine Tools Plant—2.2 per cent. Factors responsible for non-achievement of full capacity are said to be non-installation of full complement of plant and machinery, shortage of skilled supervision personnel and workers, limited supply of castings and forgings from Foundary Forge Plant to the Heavy Machine Building Plant, low productivity, teething troubles, pattern of orders being different from that contemplated in the Detailed Project Report. To overcome these difficulties, HEC is introducing incentive schemes, making regular arrangements for training, etc.

6.7. During evidence, the representatives of HEC informed the Committee that in respect of Heavy Machine Building Plant there is gap in orders of 8,000 Ton for 1971-72 but beyond 1972-73, their orders position was practically bleak. The representative was of the view that unless Government sanctioned expansion of Bokaro to its second stage, there would not be enough demand for HEC. The representative of Hindustan Steel Ltd. and National Coal Development Corporation Ltd. agreed with this view. The representative of NCDC added "Today NCDC is not geeting steel. HEC is not getting steel for its own fabrication." If this position continued and steel expansion did not come about, the country will have to import steel in large quantities.

6.8. The representative of HEC indicated that their Heavy Machine Building Plant was expected to achieve its full capacity in 1974-75 provided they got sufficient orders with adequate lead time and the order were more for standard items. The cycle of manufacture of some of their items was 2½ years. Pattern making time in their industry was also more.

Foundary Forge Plant was expected to achieve its full capacity in 1975-76 if all factors relevant to attainment of rated capacity e.g. making of patterns, acquisition of skills, attainment of efficiency, etc. were taken care of.

6.9. The Committee observed that HEC's production must have been built up on certain demand projections and enquired as to how was it that the demand projections had gone so wrong that HEC was able to utilise only 7 per cent of its capacity. The witness replied that their capacity had been built on the expectation that steel capacity in the country would rise by one million tonne every year.

6.10. During the evidence of selected Ministries, the Secretary, Ministry of Steel and Heavy Engineering referred to the two "Classic cases" of under-utilisation of capacities, in his Ministry, namely the Heavy Engineering Corporation Ltd. and the Mining and Allied Machinery Corporation Ltd. and stated, that under utilisation in these two cases arose "because the expectations of demand, on the

basis of which these capacities were created, did not materalise. For example, Heavy Machine Building Plant of H.E.C. was set up for fabricating equipment of one million ton every year for the Steel Plants but owing to various reasons including recession the Steel Plants were not being set up at that rate. The capacity of the Mining & Allied Machinery Corporation Ltd. was created primarily for the coal industry but the programme of mechanization of Coal Industry did not materialise. He admitted that the third Plan target of 90 million tonnes of coal was obviously an over estimate because even today production was only 65 to 70 million tons and there was no shortage of coal. In order to attain greater utilisation, MAMC was already engaged in fabricating equipment for ore-handling at ports and contemplated one or two other lines. He said, "we are hoping that the expansion of Bokaro to 4 million tons would continue which will keep us booked for another 2½ to 3 years."

6.11. The Committee enquired whether Hindustan Steel Ltd. exported steel goods of the value of Rs. 40 crores in 1968-69 only after fulfilling the home demand. The representative of the Ministry of Steel and Heavy Engineering stated that in 1968-69 the demand for Steel in the country was not as high as it was now and hence there was no difficulty in that year. He admitted that the problem which the Committee had in mind would arise in the current year i.e. 1969-70 because the demand for steel in the country was now very heavy. Conflict between foreign and home demand was not there in respect of all the products of H.S.L. For example, Bhilai rail mill had capacity of 5,00,000 tonnes a year whereas the demand of the Indian Railways was about 1,50,000 tonnes. There would, therefore, be no difficulty in exporting rails to other countries. They had secured orders from South Korea, Iran, Argentina, etc, There was, however, conflict of demand in other cases, e.g. billets. Demand for billets in the country was very heavy and the damand for export of billets was equally heavy. In such cases, the representative, said "We are only exporting to the minimum possible extent to remain in the export field so that our place as an exporter is not entirely taken up by other countries and we are not forgotten."

6.12 During the course of their visit to one of the leading steel manufacturing company in the private sector, the Committee were informed that their steel Plant was working at 90 to 95 per cent of its capacity even though some of their machines were installed several years ago. The Committee are alarmed to find that the Steel Plants of the Hindustan Steel Ltd. are working at only 50 to 68 per cent of their rated capacity. If a new enterprise faces teething troubles during the gestation period and is unable to reach full capacity in the initial years, it is understandable. The Committee feel that for an established and experienced Steel industry like the Hindustan Steel Ltd., it would be inexusable if they fail to ensure

operation of plant at the rated capacity and attain break even point inspite of the existence of a great demand for steel in India and abroad and the rise in the steel prices.

6.13. It is true that Steel Plants of Hindustan Steel Ltd. are facing problems of inadequate or poor maintenance, right type of refractories, non-availability of spares, etc. but then these are the very factors which the management of every industrial enterprise was expected to take care of while planning its production on sound and prudent business principles. Now that the management of Hindustan Steel Ltd. has identified the presise factors due to which rated capacities could not achieved by them in the past, the Committee recommend that the management of Hindustan Steel Ltd should focus attention on those factors and run the plants at their optimum capacity by remedying them. A developing country like India can ill afford the luxury of allowing these expensive steel plants to run at uneconomic levels of utilisation.

6.14. The Committee are of the view that Heavy Engineering Corporation Ltd. and the Mining and Allied Machinery Corporation Ltd. are finding themselves in this unhappy predicament primarily due to the inaccurate and "overambitious" demand projections made before installation of their production capacities. The Secretary of the Ministry of Steel and Heavy Engineering admitted during evidence that "expectations of demand, on the basis of which these capacities were created, did not materialise." If the projections of demand go wrong by a narrow margin, one could ignore it but when the projections do not materialise to the extent of 90 per cent it only indicated that either the existing machinery for demand assessment was not equal to the task expected of it or the techniques employed or the economic data relied upon for this purpose were totally wrong. The Committee recommend that Government should (i) examine the existing machinery for demand projections, the techniques employed for assessment of demand etc., and (ii) initiate positive steps to gear up the machinery for making demand projections so that production capacities were installed or expanded only to the extent warranted by sound and scientific assessment of demand.

The Committee reiterate that the Government should ensure in future that no undertaking should be launched unless a scientific and accurate assessment of demand has been made by the Government and a proper scrutiny of Feasibility Studies and Project Report has been made.

(ii) Heavy Electricals and Machine Tools industries

6.15. During 1967-68 actual production in Heavy Electricals (India) Ltd. was of the order of *Rs. 13.80 crores, as against their installed capacity of Rs. 33.65 crores the over all shortfall in the achievement of installed capacity being 59 per cent. Ultimate installed capacity of HE(I)L would be Rs. 60 crores by 1973-74.

*These figures relate the finished product only. Aggregate output including other jobs was, however Rs. 23.01 crores as against their target of Rs. 24·27 crores.

6.16. Factors responsible for non-achievement of installed capacity were lack of development of skills, failure of indigenous supplies which put their production programme out of gear and the capacities installed could not be achieved, lack of orders in some of their product lines. H. E. (I) Ltd. have stated that the difficulty of development of skills will solve itself in course of time. Once the optimum efficiency was reached by mastering the skills, it would be maintained. They are carrying out standardisation of some of their product lines, resorting to part import of materials and making aggressive sales efforts to ensure realisation of optimum capacity.

6.17. During evidence, the representative of H.E. (I) L explained that their rated capacity of 33.6 crores and the short-fall of 59 per cent in the achievement of rated capacity calculated on the basis of the actual output in 1967-68 was "more than half way, through the gestation period". He added that gestation period in their industry was seven years essentially on accoun of three conditions, namely, the machinery they could make in a year, skills and technology to be established and the size of the machine they could make. The representative thought that while considering the question of achievement of rated capacity, one should not lose sight of the fact that machine like electric motors were being made for the first time in the country. Nearly 80 per cent of the work content in their industry had got the human skill. Elaborating the range of efforts being made for development of skills, the representative stated the recruitment of skilled artisans was made by them through the Industrial Institute and thereafter they were given 1½ years of training in years of training in HE(I)L Training Institute. When they started the labour efficiency was 20 per cent. but now it was about 50 per cent. and in sections where they had incentive scheme the efficiency had gone up to 65 per cent.

6.18. The installed capacity of all the five factories of Hindustan Machine Tools Ltd. was 5,000 standard machine tools worth Rs. 25 crores per annum. They had been able to achieve upto 80 per cent. of that capacity in 1965-66 but now due to recession in the engineering industries and consequent lack of demand, they had about 40 per cent. of idle capacity. The installed capacity of their watch Factory was 3.6 lakh watches. During evidence, the representative of HMT explained that they were trying to attack the problem of lack of orders in two ways, namely (a) finding a product for the market and (b) finding a market for the product. He added that in their industry some of the production capacity was utilised in the production of "intangible things". For example, in order to make prototypes and other things, components were to be made from the same place. Certain amount of their capacity was utilised in that way. When a new product came to the shop, the efficiency of the person working on a machine went down. It took time before he got used to new type of product. This absorbed a portion of their capacity and yet it was not reflected anywhere.

6.19. During evidence, the representative of the Ministry of Industrial Development, Internal Trade and Company Affairs explained that there were certain undertakings under his Ministry, as for example, the Hindustan Photo Films Mfg. Co. Ltd., where the problem was how to cope with the demand. As regards Hindustan Machine Tools, the representative stated that throughout the 15 years period, the demand for machine tools had been rising steadily and noticeably and referred to the classical statement, "Whether there is a recession in any country in the world, the first manufacturing industry to suffer is the machine tools manufacturing industry. What is worse is that it is also the last to pick up." He thought that HMT had gone a "very creditable job." It was able to realise its part fully to contribute successfully to the target of Rs. 30 crores set for the indigenous Machine Tool industry as a whole, for the Third Plan. It studied what sort of machine tools were being imported and took up their manufacture. They had the advantage of fresh acquisition of machine tools in the shops of the Defence Ministry.

6.20. As regards Heavy Electrical (I) Ltd. Bhopal, the representative of Ministry of Industrial Development, Internal Trade and Company Affairs stated that each unit of that undertaking was big enough to be a factory in itself. There was a decline in the utilisation of capacity in transformer, switchgear and Heavy Electrical Units, etc. due to recession but now the capacity was picking up. When there was slackness in off take, switch gear unit took up the manufacture of rectifiers. They were also trying to get some work from Defence. There was, however, some deficiency in utilisation of capacity on the thermal side. Heavy Electricals (I) Ltd. Bhopal had contracted with Associated Electrical Industries, U.K. for component materials for 8 sets of 120 MW each but they had received firm orders for four sets and expected to receive orders for 2 more. There were gaps in utilisation on the thermal side in the case of both Hyderabad and Hardwar Units of Bharat Heavy Electricals Ltd.

6.21. The Committee enquired whether it was advisable to set up huge factories like the one at Hardwar with no orders or demand for the products to be manufactured. The representative stated that "whether it is steel or electric plants, they are put up at various points of time, depending on assumption that have been made of certain overall rates of growth, but unfortunately these rates of growth have not materialised till now."

6.22. The Committee pointed out that the Switch gear Unit, Hyderabad of the Bharat Heavy Electricals Ltd. sold goods worth about Rs. 2.1 crores but sustained an accumulated loss of 95 lakhs which meant that out of the capital investment of Rs. 1.9 crores, Rs. 95 lakhs had gone. The loss incurred was so great that entire paid up capital would have been eaten up by this time. In their

note furnished after the evidence, the Ministry of Industrial Development have stated that capital cost estimate of the Project sanctioned by the Government was for Rs. 190 lakhs comprising of Rs. 175 lakhs for Air-Blast Circuit breakers and 15 lakhs for minimum oil contraction breakers scheme. As against this, the Swtichgear unit of BHEL suffered losses of Rs. 16.57, Rs. 32.05 and Rs. 49.64 lakhs during 1966-67, 1967-68 and 1968-69 respectively. The accumulated loss in 1968-69 was thus Rs. 98.26 lakhs. Bharat Heavy Electricals Ltd. had capacity for producing 8 or 9 sets of 55 MW but they had firm orders for one or two. For 110" MW sets, they had orders for 4 only whereas their capacity was for 2 more.

6.23. The Committee find that the problem being faced by the Heavy Electricals (India) Ltd. and the Hindustan Machine Tools Ltd. is the same, that is, lack of orders for their products. This confirms the impression that demand survey was not made accurately before setting up these undertakings. The recession in Engineering industries had been with us for a number of years. Had these Undertakings made aggressive sales efforts right from the beginning of the recession, they would have surely been able to counteract recession to a greater extent. Anyhow the Committee hope that all the Undertakings including these two, would reinforce their efforts not only to tap domestic but also foreign markets. The Committee also wish to emphasise that public undertakings should periodically review their product mix to bring it in line with the changing pattern of market demand.

(III) *Petroleum and Chemicals Industries*

6.24. The following units of the three-Refineries of the Indian Oil Corporation Ltd. did not work up to their full rated capacities during the year 1967-68:—

Name of the Unit	Rated capacity	Actual capacity achieved	Percentage shortfall in 1967-68
1	2	3	4
		(Figures in thousand tonnes)	
(I) GAUHATI REFINERY			
(1) Kerosene Refining Unit . . .	230·2	73·30	68%
(II) BARUNI REFINERY			
(2) Atmospheric and vacuum Distillation unit No. I & II. . . .	27,000·0	16,29·62	18·5%
(3) Kerosene Refining Unit No. I & II .	600·0	291·07	51·5%
(4) Coking Unit	600·0	563·28	6·1 %
(5) *Lube Oil Block* (started from Feb. 68)			
(i) Phenol Extraction Unit . . .	188·9	36·44	80·7%

1	2	3	4
(*ii*) Dewaxing Unit .	130·9	21.51	83·6 %
(*iii*) Contract filteration unit .	47·9	7·81	83·7%
(*iv*) Bitumen Unit . . .	149·6	2·17	98·5%
(III) GUJARAT			
(6) Atmospheric Distillation Unit No. I&II .	2,000·0	1782·59	10·9%
(7) Atmospheric Distillation Union No. III (Started in Sept. 67).	1,000·0	135·70	86·4%
(8) Catalytic reforming Unit . . .	300·0	285·61	4·8%

6.25. During evidence, the representative of the Indian Oil Corporation Ltd. informed the Committee that the non-operating of the Kerosene Refining Unit at Gauhati Refinery had not affected the over all capacity of the refinery itself. Some pressing factors had compelled them not to run that unit at the full capacity because they needed inferior kerosene for the local market and also for transporting all the products in the pipelines system. As regards the Lube Oil Block at the Barauni Refinery, the representative stated that it was a complicated unit and they had to do lot of experimentation before they could produce the product for which there was market. With reference to Bitumen Unit it had been earlier stated that though it was commissioned in November, 1966, it could not be operated smoothly due to quality and capacity difficulties. Some modifications as per Soviet recommendations had been made. Quality problem was still under examination in consultation with the Soviet specialists and Central Road Research Institute. During evidence, the representative revealed that from the quality of crude they can produce bitumen to meet the I.S.I. specifications but there are some serious defects. It did not bind the road well except between an altitude of 4,000 and 6,000 ft. for which the demand was very limited. Atmospheric Distillation Unit No. 1 & 2 at Gujarat Refinery was now running at more than 2 million capacity which was higher than the design capacity over all performance of refineries of the I.O.C., however, was as under during 1968-69:—

Refinery	Design capacity in term of crude throughput	Capacity achieved in 1968-69
Gauhati .	0·75 M.T.	0·803 M.T.
Barauni	2·00 M.T.	1·767 M.T.
Gujarat	3·00 M.T.	2·958 M.T.

6.26. During 1967-68, various units of the Fertilizer Corporation of India Ltd. achieved the following capacities:—

(A) *SINDRI*

	Rated capacity	Capacity achieved	Percentage shortfall
	(Tonnes)		
(1) Ammonia (Old Plant) .	96,000 Annual	full	Nil
(2) Amm. Sulphate (Old Plant)	3,55,000 Annual	3,39,061 (1956-57)	4·49%
(3) Ammonia (New Plant) . .	189 Daily	171	9·53%
(4) Double Salt (New Plant)	400 Daily	200	50%
(5) Urea Plant (New Plant)	70 Daily	70	Nil

(B) *NANGAL*

Product	Rated capacity	Max. attainable capacity	Shortfall
(1) Calcium Ammonium Nitrate (C.A.N.)	3,18,160 (25% N_2)	3,05,532	4%
(2) Heavy Water	14·11 tonnes	12·5 tonnes	11%

(C) *TROMBAY*

Product	Rated Capacity	Actual production as % of R. C.	Percentage shortfall in 1967-68
	(tonnes)		
(1) Urea	99,000	58	42
(2) Nitrophsphate 16:13	2,70,000	25	75
(3) Suphala 20:20	1,80,000	59	41
(4) Methanol	30,000	32	68

(i) *Sindri's Ammonia Plant (New)*

6.27. It had been stated by the F.C.I. that the new Amonia Plant at Sindri achieved the capacity of 171 tonnes of daily production as against its rated capacity of 189 tonnes and that this shortage was expected to be made good by "50 tonnes Naptha Gassification Unit." The Committee enquired whether the Naptha Gassification Unit had gone into production. The representative of the F.C.I. replied that it had not gone into "steady commercial production." It had, however, been commissioned by the end of February, 1969, *i.e.* about 6 weeks behind the schedule. This commissioning was under the control of contractors who will provide the performance guarantee up to March, 1970.

(ii) *Sindri's Double Salt Plant (New)*

6.28. The Committee enquired the reasons due to which the New Double Salt Plant at Sindri had achieved only 50 per cent of its rated capacity. The representative of the FCI replied "there is a major deficiency in the Double Salt Plant. The capacity demonstrated in the formal guarantee test by the plant supliers was only 347 tonnes as against the contracted capacity of 400 tonnes. The contracting firm had been penalised and the penalty amount had been collected. Double Salt Plant was being operated at reduced load due to continued shortage of Ammonia, the intermediate product.

(iii) *Trombay's Ammonia Plant*

6.29. The Committee observed that the achievement of rated capacity in 1967-68 at Trombay ranged from 25 per cent to 59 per cent in respect of its products and asked for the reasons for that shortfall. The representative replied, "the rated capacity at Trombay is only in theory; it will be so until the engineering deficiencies and the raw materials qualities are corrected. Technical Committees have gone into this and until those deficiencies are removed, it will remain like that." He informed the Committee that Ammonia Plant had achieved 76 per cent in 1967-68 and 90 per cent. in 1968-69 of the "attainable capacity" which was 86,000 tonnes. The production in the other plant, that is, Urea Complex and the fertilizer plant was really dependent on the availability of ammonia. The ammonia plant controlled the production of the entire complex.

(iv) *Trombay's Methanol Plant*

6.30. As regards the Methanol Plant, the representative stated that though its contracted capacity was 30,000 tonnes, the maximum "attainable capacity" was only 18,000 tonnes the corrective steps were brought into use. On being asked whether these were mechanical defects, the representative stated that the deficiencies had achieved 60 per cent of attainable capacity in 1967-68 and 85 per cent of that capacity in 1968-69.

Representative of FCI informed the Committee that generally speaking they do not have any idle capacity in their enterprise. The example of that exception was the Sulphuric Acid Plant at Trombay which had remained idle because of change in technology of production. Though new technology did not entail use of sulphuric acid, yet they had made efforts to sell sulphuric acid to the extent market was available.

(v) *Trombay's Expansion*

6.31. The Committee enquired whether Trombay had any programme of expansion of its existing production capacity. The representative stated that the plan for expansion of Trombay had been approved by the Government based on which a loan agreement with the USA had been executed. The Plan was to raise the present capacity from 82,000 tonnes in terms of nitrogen to nearly, 2,00,000 tonnes. The justification for expansion was two fold *viz.* (i) high capital cost of the existing plant, and (ii) devaluation. Trombay's capital cost in terms of annual nutrient capacity was about Rs. 3,750. To compete with project like Madras, Durgapur and Kota that must be reduced to Rs. 2,000 or Rs. 2,500. This reduction could be brought about only by massive expansion. This made expansion of that type and diversification necessary. The Committee pointed out that the justification that devaluation had increased their capital cost was just "shadow accounting". In order to justify the demand for expansion of capacity, what had to be proved was that market round about was more than what Trombay could satisfy now or they had underutilised capacity and if it was utilised fully, the cost would be reduced considerably or they had some advantage in regard to labour or technology as compared with other units. On being asked whether the fact that in the next 4 or 5 years, prices may rise and Trombay's cost may be more than that of Madras had been taken into account, the representative stated, "We allowed for it and came to the conclusion that with an expansion of that type and with judicious diversification into more remunerative products, we can bring down the incidence of capital cost to the level of Madras, Durgapur, Gujarat, etc. in the course of the next 3 to 5 years." The representative expressed the hope "If our agricultural plans proceed in the manner as projected in the plans, when Trombay is expanded, its capacity would not be adequate to meet the demands within the Trombay's marketing zone."

6.32. The Committee enquired whether instead of expanding the Trombay Unit, it would not be better to start a new Fertilizer Unit, say, at Ratnagiri where the demand would be much nearer. The representative explained that setting up a new plant would involve 35 per cent investment on infrastructure which would be saved if Trombay was expanded. On being asked whether Trombay would be able to compete if like Trombay, Madras also went in for expansion. The representative stated that despite any further expansion

of other Plants, they would be able to compete because in the economic marketing zone, they will have an edge over other competitors who were not within that zone. They were adopting very latest technology in the expansion, with the result that their investment per tonne would be lower in the newer plants. In the expansion, not merely the technology would be new but they would have advantage of the economies of scale. Their ammonia unit at Trombay was for 175 tonnes per day. But they had provided for 1000 tonnes per day in a single unit. Madras was 750 tonnes, Gujarat at 500 tonnes and Durgapur 600 tonnes. He assured the committee that they had taken care to see that not only they adopt a sound technology but also made full advantage of the economics of scale.

6.33. The Committee are surprised at the statement of the representative of the Fertilizer Corporation of India made during evidence that the rated capacity at Trombay Unit was only in theory and that the attainable capacity was lower than the rated capacity. The Committee recommend that managements must regard the attainment of rated capacity as their supreme task and make strenuous efforts towards that end by rectifying design or engineering deficiencies in plants, if any, and creating optimum conditions under which the plants could work at their full rated capacity. To regard the rated capacity as only a theoretical proposition and not a practical possibility by the undertakings is a tendency which can only result in de-rating the rated capacity to the lower level of attainable capacity. The Committee feel that such a tendency of the undertakings has to be discouraged because if it is allowed to continue there will be let up in the efforts of the managements to reach the optimum capacity.

Should the undertakings find it impossible to operate the plant at the full rated capacity, they should reduce their rated capacity to the attainable capacity only with concurrence of the administrative Ministry concerned and the Ministry of Finance invariably. The Committee view the statement of the representative of the Fertilizer Corporation with alarm and feel that an act of derating the capacity of the plant at Trombay to the lower level of "attainable capacity" was rather unjustified. They recommend that public undertakings should acquire plants of only the proven rated capacity after rigid performance tests because once a defective plant was acquired it became a liability for all time to come even if the contractor paid the penalty under the contract. Payments to contractor should depend on his demonstrating the rated capacity of the plant and machinery.

6.34. During the evidence of Ministries the representative of the Department of Petroleum stated there was only one Refinery of the

I.O.C. namely, the Barauni Refinery which was working to a lower capacity partly because of non-availability of crude oil from Assam Oil fields and partly because of lack of a good pipeline. In their reply furnished after the evidence, the Department of Petroleum and Chemicals have stated that at present there was only one pipeline, belonging to Oil India Ltd., for the supply of Assam crude to the two public sector refineries at Gauhati at Barauni. The pipeline capacity was 2.75 M.T. per annum upto Gauhati and 2 M.T. per annum upto Barauni. This line was designed to transport oil India's crude only. By middle of 1968 ONGC's Lakwa Oil field also became ready for trial production. This gave rise to two difficulties. First, Oil India's pipeline built in capacity could accommodate ONGC's crude upto 10 per cent only. Secondly, Lakwa's crude was a high wax crude and posed a problem in transportation through the pipeline during winter. The later difficulty was over-come by mixing Oil's conditioned crude with ONGC's unconditioned crude. Actual transportation of lakwa crude started in August, 1968, at the rate of 100 tonnes per day. In March, 1969, it was decided that Oil will transport 685 tonnes per day of lakwa crude through its pipeline from April, 1969 onwards. This was the maximum quantity of ONGC's crude which OIL's pipeline could transport, being dependent on the capacity of the pipe-line and on the extent to which OIL's conditioned crude could be mixed with ONGC's unconditioned crude. In actual practice, however, as against the planned transportation of 1,67,000 tonnes during April, 1969 to November, 1969 the actual transportation was 98,000 tonnes only. This was mainly due to the fact that the off-take of the two refineries did not materialise according to schedule. The transportation of ONGC's and OIL's crude had accordingly to be suitably adjusted to meet this fluctuating demand of the two refineries.

6.35. The Committee are perturbed to know that Barauni Refinery of the Indian Oil Corporation Ltd. had been working far below its design capacity. The reasons for this are stated to be inadequate supply of crude from the Assam Oil fields and the limited capacity of the Oil India's pipeline. From the note furnished after the evidence, the Committee find that during April to November, 1969, as against the planned transportation of 1,67,000 tonnes, actual transportation was only 98,000 tonnes. This was mainly due to the fact that the off-take of the two refineries did not materialise according to schedule. The Committee recommend that Government should give their serious attention to this problem and explore an abiding solution on a long term basis. But as this may take some time the Committee would suggest that in the meantime, efforts should be made to improve the programming of transportation so that even with the present capacity of the said pipeline it may be possible to transport more oil in a planned manner and according to such schedule of off-take as may be agreed upon by mutual consultations between the Oil India and Indian Oil Corporation.

Shortage of Gas Cylinders

6.36. During evidence of Ministries, the Committee pointed out that when they were on a tour to Baroda, they had the occasion to see the gas cylinder industry and were informed that shortage of a particular type of steel had held up the production of gas cylinders. In reply, the Secretary, Department of Petroleum and Chemicals stated that the main difficulty about steel had been got over. IOC had placed orders for cylinders on HMT for fabrication. The witness assured the Committee that as soon as delivery of cylinders from HMT started the production of LPG would be stepped up. From the note furnished to the Committee by the Department of Petroleum and Chemicals after the evidence, it is however, noticed that IOC have not placed orders on HMT. They are conducting negotiations with HMT about the price. It is only on completion of present negotiations regarding price, Indian Oil Corporation Ltd. would place orders for six lakh cylinders on Hindustan Machine Tools Ltd. The schedule of supply of these cylinders would be 50,000 in the year 1970-71, 70,000 in 1971-72 and 80,000 per year thereafter from 1972-73 to 1977-1978.

6.37. The Committee view with great concern the fact that negotiations between the Indian Oil Corporation Ltd. and the Hindustan Machine Tools Ltd. for the purchase of Gas Cylinders have had a protracted course and displayed a lack of sense of urgency. Shortage of Gas Cylinders has affected the common user in the country although there is no shortage of gas. Capacity to undertake manufacture of Gas cylinders already exists in the Hindustan Machine Tools Ltd. Owing to the protracted delay in negotiations between the two undertakings, the spare capacity to manufacture gas cylinders has remained unutilised. If the differences between the two public sector enterprises could not be settled at their own level, the Committee are unable to see why the two administrative Ministries namely, the Ministry of Petroleum & Chemicals and Mines & Metals and the Ministry of Industrial Development, Internal Trade and Company Affairs could not help these two enterprises to come to an early settlement. The Committee recommend that such inter-undertaking negotiations leading to inordinate delays should be promptly sorted out at inter-ministerial level.

6.38. The Secretary, Deptt. of Petroleum and Chemicals stated that on the Chemicals side, Rishikesh Plant of the Indian Drugs and Pharmaceuticals Ltd. was working below capacity because of (i) certain technological difficulties, and (ii) lack of demand for some of the products. They were examining the possibility of exporting some of their products. The Committee were informed that two Russian Teams had already come and studied these problems.

He said, "their findings have been quite promising and the management also is fairly hopeful that most of these technological difficulties would be solved and they expect that production will stabilise." As regards market promotion he said, "I think further work of market promotion will have to be done and we are doing that also as actively as possible.."

6.39. Surgical Instruments Plant of the IDPL was also working below its capacity because of "lack of demand from Hospitals. Combined with that, to some extent, the instruments are not being found quite suitable by the medical profession." The representative stated that the contention of some of the Doctors was that the surgical instruments of IDPL were the best but they were too heavy. The Doctors were not used to them. He added "perahps, in the USSR with whose collaboration these were produced, the Doctors had been used to that type of instruments." The Committee observed that in Africa, some of the Doctors used to say "thicker the needle, better it is." But in India, as there was a little more sophistication, the saying here would be "thiner the needle, better it is." The Committee enquired whether production at the Surgical Instruments Plant of I.D.P.L. had helped in stopping import of these instruments, the witness stated that some specialised instruments were being imported, but not those of the lines in which the Surgical Instruments Plant was producing.

6.40. The representative also informed the Committee that they were studying the possibility of diversification at the Surgical Instruments Plant. The proposed diversification may not be in the line of surgical instruments, it may be different. The Committee observed that it was an elementary thing to assess the demand before going in for production. In reply, the representative stated that a number of surgeons were consulted before the prototypes were adopted for production but now this "slight difference of opinion" in the profession had arisen. On being asked how the difference of opinion could be termed as "slight" when there was so much of surplus capacity, the witness stated that difference was only in respect of some of the instruments and not all. He thought that "if the original plan for expansion of family planning had gone through, there would have been much more demand."

6.41. The Committee enquired whether the instruments, before undertaking manufacture of the same were displayed before the medical profession before undertaking their manufacture and if not, who was to be blamed for this lapse.

The representative stated, "it will be wrong to assume that even if all these detailed studies that one wanted to be made in the initial stages before the prototypes were made, the instruments would have been popular because the type of instruments keeps on changing, and new types of instruments are designed and they are better and more sophisticated."

6.42. The representative stated that in the case of surgical instruments Plant, there was no D.P.R. and no detailed market study. A Committee of Surgeons which had gone into the matter, rejected some and accepted other "but it turned out that out of these accepted. surgeons who are not so eminent are not willing to use the same. A number of State Governments have passed them in greater or lesser numbers. Some 35, some 60 etc. It is not as if there has been complete rejections." He assured the Committee that there would be no more rejection because now "no production will be made unless there is a demand."

6.43. The Committee have noted the assurance given by the Secretary, Departments of Petroleum and Chemicals that in future no production at the Surgical Instruments Plant of IDPL would be made unless there was a demand. The Committee are of the view that other public sector undertakings should also adopt this wholesome principle as basic to their planning of production so that whatever production was undertaken it was invariably against firm indications of clear demand and found a ready market. In the meantime possibility of diversification and alternative use of manufacturing capacity should be explored and made ready. If the demand fluctuates for a short period, the normal production in a year should not be upset and the annual target of production should not be lowered.

B. **Loss of Production on account of Underutilisation of capacities**

6.44. In their Note furnished after the evidence the Ministry of Industrial Development, Internal Trade and Company Affairs have informed the Committee that they have not estimated the extent of loss on account of underutilisation of capacities in public undertakings under the control of their Ministry. Their view is that no useful purpose was likely to be served by such assessment because maintenance of production without guarantee of disposal through sale would merely result in a cumulation of stocks and problems arising therefrom. They, however, did study the causes which resulted in underutilisation of capacities and gave suitable suggestions to public undertakings e.g. diversification to suit changing pattern of demand, development of greater degree of inter-dependence, etc. The Ministry of Steel and Heavy Engineering have also not made any such assessment in respect of Public Undertakings under their control. They have stated that "While notionally there was a loss of value of production there was also corresponding saving in inputs."

6.45. The Ministry of Petroleum and Chemicals and Mines and Metals have however assessed the notional loss in the value of production on account of underutilisation of capacities in public undertakings under their control. (Appendix III).

According to this assessment, there was an estimated loss of about Rs. 24 crores on account of under-utilisation of capacities in respect of undertakings under their control.

6.46. The Committee are of the view that assessment of loss in value of production on account of under-utilisation of capacities in various public undertakings even if notional, would have given an idea of the extent of loss which could have been averted if the Undertakings had been able to operate their plants, at full capacity under optimum conditions and assured demand. If the notional loss in the case of undertakings under the control of one Ministry, namely, the Ministry of Petroleum and Chemicals, Mines and Metals could be Rs. 24 crores and that too in one year (1968-69) such loss would surely be much larger if the notional loss in respect of undertakings under the control of other Ministries had also been assessed. The assessment made by one Ministry is enough to reveal the gravity of the problem of gross under-utilisation of capacities in various public undertakings and points to the need of evolving some radical measures. Present sporadic attempts being made by each Ministry to deal with this problem without any degree of coordination cannot be expected to make any significant contribution to solve this vexing problem. The Committee, therefore, strongly feel and suggest that a high level Expert Committee be appointed by Government to make a thorough and systematic assessment of under-utilisation of capacities, to detect the causes of underutilisation in each case and suggest remedial measures, both long term and short term, to minimise the incidence of underutilisation in various Public Undertakings.

VII

PRODUCTION PERFORMANCE

A. Shortfalls in achievement of Targets of production

7.1. A statement showing the targetted and actual production in various public undertakings during the years 1965-66, 1966-67 and 1967-68 (3 years) is appended to this Report. (Appendix IV).

(i) *Cases of more than 75 per cent shortfall*

During 1965-66, there was no undertaking in whose case percentage shortfall in the achievement of target of production was more than 75 per cent but in 1966-67, there was one undertaking namely, the Photo Films Manufacturing Co. Ltd. in whose case over all shortfall in achievement of targets was 87.01, the shortfall in the individual items being 86.91 per cent in respect of Cine films and 100 per cent in respect of Medical X-Ray. The reason for shortfall was that trial production of Cine film started only in December, 1966 and commercial production was established by the Collaborators during June, 1967 only. Similarly, the commercial production of medical X-Ray film was established by the collaborators only in May, 1968.

During the year 1967-68, while the Photo Films Manufacturing Co. Ltd. were able to better their performance in as much as their over all shortfall in achievement of targets for 1967-68 was only 28.65 per cent, there was one public undertaking, namely the Heavy Electricals Equipment Plant, Hardwar of the Bharat Heavy Electricals Ltd. (80 per cent shortfall) in whose case shortfall was more than 75 per cent. Heavy Electricals Equipment Plant, Hardwar went into partial production in 1967-68 and had set a target of 227 Electrical Machines but they could manufacture only 46 Electrical Machines because of delay in receipt of components from Russian Collaborators. During their tour to the Hardwar Unit in September, 1969, the Committee were informed that Hardwar Plant had taken up progressive manufacture of components at the Plant and now they had reached a stage when they would need only 55 per cent of imported components as against 97 per cent of imported components required by them in the early stage of manufacture of motors.

(ii) *Cases of shortfall between 50 to 75 per cent.*

7.2. During 1965-66, there were two public undertakings, namely Fertilizer and Chemicals Travancore Ltd.:, and the National Mineral Development Corporation in whose cases the overall shortfall in the achievement of targets was between 50 to 75 per cent, FACT's short-

fall in individual items with reference to their original targets was Amm. Sulphate-76 per cent, Amm. Phosphate 83 per cent, Superphosphate 6 per cent, Amm. Chloride 66 per cent and NPK Mixtures 27 per cent. They had, however, revised the targets and the shortfall with reference to the revised targets came to 23 per cent both for Amm. Sulphate, and Amm. Phosphate and 12 per cent for Amm. Chloride. It has been stated that reasons for these shortfalls were (i) Labour unrest in the form of "go-slow" total strikes etc. for 3 months, (ii) seasonal power cuts from November, 1965 leading to total close down in February, 1966 and power interruption upsetting plants and increasing down time.

The targetted capacity of Kiriburu Project of the National Mineral Development Corporation Ltd. was 20 lakhs tonnes of sized ore per annum. But the actual production achieved in 1965-66 was only 8.48 lakhs tonnes, the shortfall being 57 per cent. It was explained that the targetted production of million tonnes of sized ore at Kiriburu Project was based on an anticipated lump recovery of 60 per cent. The lump recovery in actual practice was 50 to 55 per cent only and hence the shortfall in production. Kiriburu Project has, however, been able to better its performance because shortfall in production came down to 11.25 per cent in 1966-67 and only 4.9 per cent in 1967-68.

7.3. During 1966-67 and 1967-68, the overall shortfall in achievement of targets of production ranged between 50 to 75 per cent in the case of Mining and Allied Machinery Corporation Ltd. MAMC had set a target of 10,000 tonnes for 1966-67 but its production was only 4,536.4 tonnes resulting in shortfall of 54.6 per cent. Its target for 1967-68 was 17,600 tonnes but it attained a production of 5,076.1 tonnes resulting in shortfall of 71.2 per cent. It has been stated that the targets were prepared on the basis of anticipated demands of various mining equipment. In many cases, sufficient orders were not received by the Corporation. Other factors responsible for these shortfalls are said to be longer production cycle due to diversification in products, imbalanced loading of shops, etc.

(iii) *Cases of shortfall ranging between 25 to 50 per cent.*

7.4. Shortfall in the achievement of targets of production ranged between 25 to 50 per cent in 1966-67 in the case of the following undertakings:—

1. High Pressure Boiler Plant, Tiruchi (BHEL) (in respect of Valves).
2. Fertilizers and Chemicals Travancore Ltd.
3. Heavy Engineering Corporation Ltd.
4. Barauni Refinery of the IOC.
5. Neyveli Lignite Corporation Ltd. (Fertilizer Plant).
6. Praga Tools Ltd.

During 1967-68, there were only two undertakings, namely, Garden Reach Workshop Ltd. and the Hindustan Photo Films Mfg. Co. Ltd. in whose cases the shortfall ranged between 25 to 50 per cent.

7.5. In all other cases either there was no shortfall or the shortfall in the achievement of Targets during 1965-66, 1966-67 and 1967-68 was below 25 per cent.

7.6. To sum up the overall position was as under (Appendix V):

	1965-66	1966-67	1967-68
1. No. of Undertakings (including Units) in whose case shortfall in achievement of production targets was more than 75% .		1	1
2. More than 50% but less than 75% .	2	1	1
3. More than 25% but less than 50%	1	6	3
4. Less than 25%	11	19	16

Shortfalls in achievements of targets during 1968-69

7.7. From the notes received from major public undertakings after the evidence, (Appendix VI) the Committee have noticed that during 1968-69, the Nangal Fertilizer Plant exceeded its targets of production in respect of both C.K.N. and Heavy water, Sindri Fertilizer Plant registered a shortfall of 11 per cent in respect of Double salt and Trombay Fertilizer Plant suffered a shortfall of 16 per cent in respect of Methanol. It has been stated that the main reasons for low performance of Methanol Plant was poor quality of raw material, increase in plant maintenance, non-availability of sulphuric Acid from the PPC Plant at Sindri.

7.8. In the case of Hindustan Steel Ltd., the shortfalls in production were less than 10 per cent in respect of Pig Iron production at Bhilai, and Rourkela but 10 per cent in respect of saleable steel items manufactured at Durgapur.

7.9. Heavy Electricals (India) Ltd. had 100 per cent shortfall in production of Rectifiers but this was due to the fact that this was a new product and production could commence only in 1969-70. The shortfall in the case of steam Turbines, water Turbines and control gears was 38 per cent, 27 per cent and 20 per cent respectively."

7.10. All the three refineries of the Indian Oil Corporation Ltd. operated at more than their design capacities. Throughout in Million Tons was Gauhati (0.803 MT), Barauni (1.767 MT) and Gujarat (2.958 MT) as against their design capacities of Gauhati (0.75 MT), Barauni (1.7 MT) and Gujarat (2.75 MT).

7.11. National Coal Development Corporation Ltd. were able to achieve production of 12.61 million tonnes as against their target of 13.08 million tonnes, the shortfall coming to only 3.6 per cent. During the previous year their production was only 10.35 million tonnes.

7.12. In the case of Indian Telephone Industries Ltd. the shortfall in production in respect of manufacture of telephones (all types) was only 3.3 per cent.

7.13. Heavy Engineering Corporation Ltd. has three Projects. While their Foundry Forge Project and Heavy Machine Building Project registered shortfall of 23.26 per cent and 20.49 per cent respectively, the performance of their third project, namely, the Heavy Machine Tools Projects was rather poor. It could produce only 8 Machine Tools as against the target of 33 Machine Tools resulting in shortfall of 75.76 per cent. It has been explained that this shortfall was mainly due to inadequate supply of castings and forgings.

B. **Reasons for non-attainment of targets**

7.14. While specific reasons for non-attainment of targets of production vary from undertaking to undertaking and from year to year, the Committee find that the main reasons advanced for non-achievement of targets can be grouped under the following four categories. *viz.*:—

(i) Fall in demand for products.

(ii) Frequent Breakdowns of plant and machinery.

(iii) Difficulties in procurement of spares and components, Raw Materials, etc.

(iv) Labour troubles.

7.15. During evidence of public undertakings, the Committee enquired whether it was not possible for management to foresee such common factors so that there was no shortfall in the achievement of targets of production. While the representative of the National Coal Development Corporation Ltd. agreed that all these factors could be foreseen the representative of the Indian Oil Corporation Ltd. thought that one could not foresee major breakdowns. The Committee pointed out that normally wear and tear of machinery was known and provided for. At the most some percentage of shortfall in production could be allowed for major breakdowns which ought not to be a major reason for non-attainment of targets. The representative of Hindustan Steel Ltd. stated that there was some times uncertainty about the supply of raw materials. For example, Hindustan Steel Ltd. had covered themselves by placing requisite orders on the manufacturers of refractories but one major refractory unit had a strike for six months with the result that they had to make

frantic efforts to pursuade the Government to allow import of refractories. He said, "the facilities are so tightly balanced that a little dislocation somewhere had its repercussions right through the whole system. In some of these matters we hardly have any flexibility. If we fail in supplying steel, the engineering industry has its adversity."

7.16. The foregoing account of non-achievement of targets of production makes a distressing reading. There have been instances, [for example, (i) Hindustan Photo Films Mfg. Co. in 1966-67, (ii) Heavy Electricals Equipment Plant of Bharat Heavy Electricals Ltd. in 1967-68, and (iii) Heavy Machine Tools Projects of Heavy Engineering Corporation Ltd. in 1968-69] where percentage shortfall in achievement of targets had been more than 75 per cent. Shortfall ranged between 50 to 75 per cent in the case of Fertilizers and Chemicals Travancore Ltd. in 1965-66, and Mining and Allied Marchinery Corporation Ltd. in 1966-67 and 1967-68. The Committee feel that either there is something basically wrong in the mechanism of fixation of annual production targets or the arrangements for follow-up of production are deplorably inadequate. Should the undertakings fix realistic targets after making a thorough assessment of all factors of production and proper follow-up of production plan is done, there should have been no reason why the shortfalls should be as high as 75 per cent. The Committee do agree that breakdowns of plant and machinery could not be predicted with any degree of certainty. Labour troubles too may erupt rather suddenly, sometimes putting the production out of gear. But these factors, however, uncertain, should not make such a material difference in the long run. The Committee suggest that public undertakings should streamline their machinery for target setting so that targets of production were more realistic than what they had been in the past.

C. Fixation of Annual Targets of Production

7.17. During evidence, the representative of Fertilizer Corporation of India stated that in their enterprise targets of production were estimated by the Chief of Production in consultation with the Chief of Maintenance and the Materials Managers. After these were reviewed at various levels, they were finally approved by the Board of Directors. Government were continuously kept informed of the actual production and where revision of the original targets was called for, the reasons therefor. Asked whether in the matter of fixation of national targets for fertilizer industry, the Planning Commission consulted only the administrative Ministry or whether the Fertilizer Corporation of India was also consulted to ensure that whatever national targets were fixed they were realistic and attainable, the representative replied "we do not come in direct contact with them. We have no direct discussion with the Planning Commission."

7.18. Heavy Electricals (India) Ltd. stated that they manufactured equipment only against specific orders. Their main customers were (i) Electricity Boards (ii) Railways for electric traction equipment and (iii) Industry—both private and public sector. Electricity

Boards consumed about 60 per cent of their production, Railways and Industry taking only 20 per cent each. In Heavy Engineering Corporation Ltd. targets of production were approved by the Board and any revisions were also reported to the Board.

7.19. The representative of Hindustan Machine Tools Ltd. stated that final decision about targets was taken at the level of Board of Directors. Government were kept informed about the target and achievement by monthly reports. Asked whether there was any pressure from Government to produce more, the witness stated that that was always there.

7.20. The representative of Hindustan Steel Ltd. stated that after the Board decided the targets, there were detailed discussions with the Government and an agreed budget of what was to be achieved was set out. The Government was always kept in the picture. It was not as if Government's consent was required. Asked whether there was delay on the part of Government in realising their difficulties and taking action on matters concerning Government, for example allotment of foreign exchange etc. the witness replied, "I would not say excessive delay in taking action, but the process of taking action is rather slow, they are very active." The witness added that during the last 18 months there has been considerable improvement in the speed of operation.

7.21. The representative of the Indian Oil Corporation Ltd. stated that so far as formulation of annual target was concerned it was more an exercise for the management at the top level in which the Board and the Government were also involved.

7.22. In so far as the Indian Telephone Industries was concerned, their main customer was the Posts and Telegraphs which consumed about 80 per cent of their production in terms of value. Hitherto-fore I.T.I. had to forecast the requirements of the P&T but in the Fourth Plan P&T had been able to give a more or close estimate of their requirements for various types of equipment.

7.23. The representative of National Coal Development Corporation Ltd. stated that targets of production were reported by them to the Government but Government approval was not taken and was not considered necessary.

7.24. The Committee find that at present public undertakings are completely free to fix up annual targets of production at whatever level they consider necessary and to revise them. Government was merely kept informed. The Committee feel that this practice needs review. Under the existing practice there was every possibility of an undertaking fixing lower targets than the rated capacity and thus covering up its poor performance. The Committee recommend that

Annual Targets of production should be fixed after taking into account all the relevant factors into consideration particularly the demand as assessed by the Planning Commission, market surveys conducted by the enterprise itself, the rated capacity of the plant and machinery etc. Enterprises having Technial Directors on their Board of Directors should, wherever possible, take advantage of his objective technical appraisal of production capacity. The Committee are of the view that Undertakings should be free to fix annual targets of production so long as they are equal to or near the rated capacity. But if an undertaking wants to fix a target lower than the rated capacity inspite of there being a clear demand for the products, it should get prior approval of Government. This will give an opportunity to Government to satisfy itself whether deviation from rated capacity in a particular case is justified or not.

D. Spares and Components

7.25. From the replies received from various public undertakings, the Committee find that the main difficulties faced by public undertakings in the matter of procurement of spares and components from indigenous sources are (i) poor quantities of indigenous spares (ii) higher price of indigenous spares as compared to imported ones and (iii) where qualities of spares and components are small or where the spares are non-standard ones, indigenous manufacturers do not feel inclined to undertake their manufacture. The Committee therefore enquired whether these difficulties could not be overcome by providing technical assistance to indigenous manufacturers with a view to help them to improve the quality of spares and where the qualities of spares required were small, by ordering for larger quantities of spares so as not only to meet immediate but also future requirements. In reply, the Fertilizer Corporation of India and Hindustan Machine Tools Ltd. have stated that ordering of larger quantities of spares would go against the concept of controlling inventories. What the Heavy Electrical (India) Ltd. do is to either manufacture the spare parts themselves or resort to import. In their opinion, this was the most economical course. Heavy Engineering Corporation Ltd. bulk their requirements of spares and components together to work out an economic lot for easy procurement.

7.26. Indian Oil Corporation Ltd. have expressed their inability to club their requirements of all the Refineries together as the refineries excepting Gujarat and Barauni Refineries had been built with collaboration of different countries with the result that the equipments installed in Refineries are of different standards and codes. Hindustan Steel Ltd. placed orders for 2 to 3 years requirements with phased supply in case the annual requirement did not constitute an economic order size.

7.27. In their note furnished after the evidence, the Ministry of Industrial Development, Internal Trade and Company Affairs have stated that Government are aware of difficulties being experienced by public sector undertakings. Government had already advised the undertakings of the desirability of setting up "ancillary industries" to feed the requirements of spares and components for main plants. The scope for participation of small sector in the ancillary industries field was continuously receiving Government's attention. In order to solve the problem of high cost of indigenous spares, it was proposed to set up a number of Associations of small group of entrepreneurs with diverse types of capacities in close proximity to large industrial complexes for meeting the requirements of spares and components etc. at more economic prices. Reply received from the Ministry of Steel and Heavy Engineering indicate that the Import Substitution Committee in their Ministry will, among other things, consider the extent to which requirements of similar items of spares components and sub-assemblies could be consolidated.

7.28. The Committee agree that development of ancillary industries combined with the efforts to pool requirements of various groups of industries in Public sector holds the key to the solution of the problem of procurement of spares and equipment. They hope that no efforts would be spared by Government to promote ancillary industries.

(E) Foreign Exchange

7.29. Some of the public undertakings *e.g.* Fertilizers and Chemicals Travancore Ltd., Hindustan Machine Tools National Coal Development Corporation Ltd., etc. have indicated that procedural formalities involved in getting DGTD's clearance and in the allotment of foreign exchange took a long time with the result that sometimes the production was held up or affected. During evidence, the representative of the Ministry of Finance stated that for the purpose of import control policy, the entire range of industries had been divided into priority and non-priority areas. This policy was introduced in 1966 and was being maintained since then. There were 59 industries in the priority area. The same procedure applied to both the private public sectors.

7.30. Asked whether there was no scope for improvement in the existing procedure, the witness replied, "No, I am not suggesting that. If we have specific types of instances where it is found that certain aspects interfere with production, those are being looked into immediately." The witness admitted that as available free foreign exchange was limited and that utilisation of aid funds depended on procedures attached to each type of aid this involved a kind of delay. The Secretary, Ministry of Industrial Development. Internal Trade and Company Affairs observed that change in the procedure attached to aid funds was not entirely in their hands and any change had to be brought about by the concurrence of the donor country. He

informed the Committee that there were cases where manufacturing Units reported serious difficulties about allotment of foreign exchange, etc. to the Ministry and they in turn took up the matter with the Ministry of Finance. He observed, "some times we succeed."

7.31. The representative of the Directorate General of Technical Development informed that their procedure of clearance had been streamlined from March, 1968. The salient features of the new procedure are (i) nomination of specific officers in the DGTD for dealing with specific public undertakings (ii) fixation of time limit of 30 days for giving clearance and (iii) short circuiting method of arranging a meeting between officers of DGTD and the concerned undertaking (iv) it was no longer necessary for the demanding unit to go to the DGTD in the first instance. They can issue an advertisement straight away in the Indian Trade Journal and within 45 days if the indigenous manufactures do not respond effectively, the import is cleared. The witness also informed the Committee that as an additional safeguard against delays in clearance, the DGTD has laid down that whenever a project was conceived, right at the beginning, they must associate in their discussions and negotiations with foreign parties, an officer from DGTD ensure that they do not unnecessarily commit themselves to the import of raw materials, components or capital goods which would be available right now or by the time the project came to fruitation. Asked whether what was the number of applications, still pending for more than 30 days, the witness said, "I would not be able to give statistical answer to the question. But from the number of cases that come to the notice of the Ministry, I would say that the percentage is of a very low magnitude."

7.32. The Committee hope that the new procedure (in para 7.31 of Report) evolved by the DGTD in March, 1968 in the matter of giving clearance from indigenous angle would go a long way in mitigating the hardships faced by public sector undertakings in getting such clearance. They suggest that efficacy of the new procedure should be kept under constant watch by Government to ensure that production of no public undertaking was held up or affected on account of any undue delay in DGTD's clearance and allotment of foreign exchange.

(F) Product Diversification

7.33. When recession occurs and the demad for products falls, the remedies available to an industrial enterprise are to meet such a situation by export promotion and product diversification. Some of the major public sector enterprises have already evolved and taken in hand product diversification programmes to utilise their capacity rendered idle consequent on the onset of recession. For example, the product diversification programme of Hindustan Machine Tools Ltd. includes manufacture of (i) printing machinery covering single and mutli-colour presses letter presses (ii) Heavy and medium Duty

Presses, Brakes, sheet metal machinery, (iii) Tractors (iv) Expansion of existing watch factory and setting up a new watch factory at Srinagar, and (v) components for small car project as and when it comes up. Hindustan Steel Ltd. had also taken to diversification. Bhilai had developed a number of new sections like Rails for export, crane, Shell Bars, Hammer Plates, etc. Bhilai had also developed crane, Shell Bars, Hammer Plates, etc. Bhilai had also developed Tonnage Special Steels. At Rourkela a variety of quality wheel had been developed and plans are on hand for the manufacture of cold rolled grain oriented high silicon electrical steel sheets. HSL had also finalised plans for development of "TORSTEEL". Some of the important diversifications of Heavy Electricals (I) Ltd., were silicon diode rectifiers, thyristor power units, coreless tractors, transductors, 11 and 33, K.V. metering units, electronic equipment. A significant contribution is the engineering manufacture of nuclear reactor components. Fertilizer Corporation of India Ltd. also not lagged behind. The fertilizer production at Sindri at present limited to the manufacture of nitrogenous fertilizers, was being diversified to include phosphatic and complex fertilizers. On completion of Sindri Rationalisation Scheme, the facilities at Sindri would be equipped to produce a wide range of complex fertilizers composition. In their reply, Heavy Engineering Corporation Ltd. have stated that they had not made any detailed study regarding product diversification.

Proposals for Tractor Manufacture

7.34. During evidence of public undertakings, the Committee enquired whether undertakings had been quick enough to formulate and implement product diversification programmes. In reply, the representative of Hindustan Machine Tools Ltd. said, "The recession, unfortunately came rather suddenly, that is where we were caught. If watch factory was not with us, the situation would have been much worse. I hope you will kindly change your impression that measures to counteracting recession were not taken earlier but were taken late." Asked what had been the fate of HMT's proposal for manufacture of Tractors at Pinjore, the witness stated that the Ministry had not given their clearance to that proposal as yet.

7.35. During the evidence of Ministries, the representative of the Ministry of Industrial Development, Internal Trade and Company Affairs said, "when the recession came, frankly, I do not think we were prepared for it." About HMT the witness observed, "HMT management had been, if I may say so, ready enough and responsible enough to see what are the conditions for replacement where old lines of manufacture had gone to the background."

7.36. Asked whether Government had any mechanism which will anticipate recession or lack of demand and switch on to diversification in time, the Secretary Ministry of Steel and Heavy Engineering stated, "the only answer is diversification, but it is not a process

which can be introduced on the turn of a switch." "Diversification", he continued, "had to be done by a thorough process of engineering studies and demand studies in the things to be manufactured, which takes a long time."

7.37. Secretary, Ministry of Steel and Heavy Engineering added that effect of recession was felt more by the undertakings on the engineering side, *e.g.* Heavy Engineering Corporation Ltd. and Mining and Allied Machinery Corporation Ltd., than on the Steel industry. He informed the Committee that these Engineering Corporations had taken a number of steps by way of diversification to improve utilisation of capacities in their enterprises. For example, H.E.C. is acquiring know-how for palletisation, MAMC had started production of equipment for ports to be developed in the Fourth Plan *e.g.* Kandla, Vizapatnam, Madras and Goa. Negotiations were being carried on with both the Russians and U.A.R. authorities to allow the H.E.C. to supply equipment for the Steel Plant being built in the U.A.R. with Russian collaboration. H.E.C. and MAMC were also making a Joint bid for supply of wagons to the USSR. A consortium of HEC and MAMC along with some of the structural engineering units was being put up to make a bid for turnkey jobs. He admitted that these efforts had been made mainly by the undertakings themselves, but with the help of their Ministry. Asked what had been the fate of HMT's proposal to manufacture tractors, the witness replied that their Ministry had not taken a decision as yet.

7.38. Reply received from the Ministry of Industrial Development, after the evidence indicates that the idea to take up manufacture of H.P. 20 Tractors in the public sector was mooted in 1963. A decision to set up a project for the manufacture of "Zetor-2011 Tractor" was taken by the Ministry of Industrial Development with the concurrence of the Planning Commission and the Ministry of Finance. A provision of Rs. 1.5 crores was accordingly included in the second Czech credit for financing this tractor project which was negotiated in May, 1964. After obtaining preliminary estimates for the project from M|s. Matokov of Czechoslovakia and discussions with the Ministries|Departments concerned, approval of the Negotiating Committee of the cabinet was obtained in August, 1965, to enter into an agreement with the Czech Agency for the preparation of D.P.R. The agreement which was signed on 28th August, 1965 provided for the submission by the Czech Agency of a Detailed Project Report in two parts. It was open to Government to decide after examination of Part I of the Report whether to proceed with the project or not and accordingly decide whether or not to commission Part II of the Report. In pursuance of a decision taken at a meeting of the cabinet Committee on Industries on 22nd September, 1966, an Inter-Departmental Committee was set up to examine the possibility of manufacturing tractors in the public sector by utilising the existing engineering facilities in the country. The

Committee recommended that manufacture of 20 HP tractors by utilising the spare capacity available in the engineering industry was feasible. According to them, the design for a tractor could be developed by MAMC with the assistance of CMERI.

7.39. The production Committee of Secretaries at its meeting held on the 29th September, 1966 decided that the feasibility and economic viability of the tracor project could be usefully discussed only after the receipt of Part I of the DPR.

7.40. Part I of the DPR was received in May, 1967. It envisaged a project for the manufacture of 12,000 tractors plus 20 per cent spare parts with a capital investment of Rs. 23.48 crores including a foreign exchange component of Rs. 2.645 crores. The examination of the Report in consultation with the DGTD and NIDC revealed that there was considerable scope for reducing the capital investment as a number of components and semi-finished products for which manufacturing facilities were provided in the project, could be brought out from units already established in the country. The Czechs generally agreed with this assessment and in the light of discussions submitted two supplementary reports in October, 1967 and January, 1968 respectively. In the latter case, the cost of the project had been brought down to Rs. 10.64 crores with a foreign exchange component of Rs. 2.61 crores. At the Inter-Departmental meeting held on the 11th April, 1968 it was observed that in the report submitted by M|s. Motokov, the selling price of the tractor had been estimated at Rs. 14,500 whereas the selling price for the MAMC tractor estimated by the Committee was about Rs. 18,000. It was decided to scrutinise the estimate of cost of prouction for the two models further. In August, 1968, it was reported that in collaboration with CMERI, MAMC had developed their own design of 20-HP tractor—since named 'Swaraj' and maunfactured a few proto types. These proto types had been sent to Bundi, Ludhiana and Pantnagar for tests and trials. On 26th September, 1968, HMT approached Government with a proposal to manufacture Tractors at its Pinjore unit where there was substantial spare capacity.

On 3rd December, 1968, the NIDC was commissioned to prepare a project report for a joint venture so that the idle capacity of both MAMC and HMT could be harnessed. The terms of reference to the NIDC included an examination of the feasibility of manufacture of either Zetor-2011 in the joint venture project or Swaraj-20 designed and developed by the MAMC|CMERI. NIDC submitted their Report in April, 1969 to the MAMC and H.M.T. After considering the Report of NIDC, H.M.T. submitted a concrete proposal on 12th August, 1969 for manufacture of 1,000 Zetor tractor in the first year (annual production to be raised to 12,000 during the fifth year) in technical collaboration with the Czech Agency. CMERI also submitted a proposal for the manufacture of 12,000 'Swaraj' tractors

per year in two distinct phases. The Ministry of Industrial Development now proposes to discuss these proposals at an Inter-Departmental meeting before taking a final decision on the choice of a model to be taken up for production. It has been stated that the choice of the tractor model has to be made after a careful examination of all the relevant factors including performance and specifications. consumer acceptance ability to compete with other models, time needed for commercial production, investments to be made, cost of production, selling price, etc.

7.41. The Committee are surprised at the way the proposal for manufacture of tractors in the public sector was handled by Government at various stages resulting in an inordinate delay. The delay primarily appears to be due to indecision of the Government coupled with lack of feeling of urgency. The Committee agreed that proposals to undertake new lines of manufacture as part of diversification programme need careful examination of all the relevant factors but they feel that such avoidable delays should be avoided in future.

7.42. The Committee feel that public undertakings had not formulated their diversification programmes in time to check the impact of recession. Had they done so, there would not have been gross underutilisation of capacity in major public undertakings.

VII

LABOUR

(A) Labour Utilisation

From the year-wise statistics showing the percentage labour utilisation to the total available labour hours during the last three years, i.e., 1965-66, 1966-67 and 1967-68 furnished by the Undertakings (Appendix VII) the Committee find that extent of labour utilisation in 1967-68 as compared to 1966-67 as improved in the case of the following Undertakings:

1. Bharat Electronics Ltd. (from 98 to 98.7 per cent)
2. Bharat Heavy Electricals Ltd. High Pressure Boiler Plant. Tiruchi.(from 85.7 per cent to 91.30 per cent) and Switchgear Plant, Hyderabad (from 85.50 to 91.3 per cent).
3. Fertilizer Corporation of India Ltd. (Sindri Unit). (from 88.22 to 88.50 per cent).
4. Heavy Engineering Corporation Ltd. (from 83.3 to 86.7 per cent).
5. Hindustan Teleprinters Ltd. (from 89 to 95 per cent).
6. Indian Telephone Industries Ltd. (from 88.34 to 99.02 per cent).
7. Neyveli Lignite Corporation Ltd.
   (i) Mines Project (from 84.72 to 87.90 per cent).
   (ii) Fertilizer Plant (from 88.26 to 89.84 per cent).
   (iii) Power Plant (from 87.12 to 88.20 per cent).
8. Praga Tools Ltd. (from 72 to 96 per cent).

Utilisation of labour in the case of the following Undertakings has, however, gone down during 1967-68:—

1. Heavy Electricals (I) Ltd. (from 95 to 93.00 per cent).
2. Hindustan Machine Tools Ltd. (from 83 to 73.4 per cent).
3. Hindustan Zinc Ltd.
   (i) Zawar Mines (from 89.74 to 85.97 per cent).
   (ii) Tundo Mines (from 70 to 69 per cent).
4. Neyveli Lignite Corporation Ltd. (B & C Plant) (from 87.64 to 83.56 per cent).

5. Indian oil Corporation Ltd.

(i) Barauni Refinery (from 89 to 87 per cent).
(ii) Gujarat Refinery (from 84.07 to 80.40 per cent).

8.2. Some Undertakings *i.e.* Hindustan Antibiotics Ltd., Hindustan Cables Ltd. and Indian Rare Earths Ltd. have not biven yearwise details of labour utilisation but they have indicated extent of labour utilisation in general terms. Utilisation of labour in Hindustan Antibiotics Ltd. was 82 to 90 per cent, in Hindustan Cables it was 80 to 90 per cent, in Indian Rare Earths Ltd., it was 70 per cent.

8.3. Some of the Undertakings have explained reasons why they are not maintaining such record. For example, Fertilizers and Chemicals Travancore Ltd. have stated that in a process plant which is highly automatic, one could not assess labour utilisation directly. Even when the plant was down, the operators assisted in getting the plant on line. Trombay and Nangal Units of Fertilizer Corporation of India Ltd. have stated that question of maintaining such a record does not apply to operational staff in a chemical Plant. Trombay Unit has, however, admitted that such analysis does apply to maintenance and materials handling staff. They have initiated preliminary studies to develop systems of controlling manpower utilisation.

8.4. Hindustan Steel Ltd., have stated that in an integrated steel plant, interruption in the working of any one equipment can result in connected equipment being idle. Because of the specilised technical skills necessary for the various departments it was not always possible to shift men from one section to the other in such cases for short period and at a short notice. Managerially, therefore, the measurement of labour utilisation in terms of idle hours has limited significance. In a capital intensive industry like steel equipment utilisation had greater significance.

8.5. National Coal Development Corporation, National Buildings Construction Corporation Ltd. and National Instruments Ltd. also have not kept detailed reports regarding labour utilisation has compared to the total available hours.

8.6. The Committee enquired whether it was not desirable that Undertakings like FCI, HSL, NCDC etc. should also maintain record of labour utilisation in some form or the other. In reply the FCI have stated that their Industrial Engineering Departments have taken up the matter.

8.7. Hindustan Steel Ltd. have informed that in their current project of revision of incentive schemes detailed studies have been undertaken in order to determine manning required for different work groups. One such manning has been done the incentive scheme would incorporate the element of labour productivity index

in addition to other components of production efficiency. The labour productivity index will also help in reducing overtime and inducing men to work with less than the standard manning on occasions of heavy absenteeism. HSL are of the view that these measures would help ensure proper utilisation of labour in different work groups. They propose to have necessary records to measure labour productivity to different work groups.

8.8. National Coal Development Corporation Ltd. have stated that the records are kept by them in each mine showing number of persons employed in different shifts and the quantity of coal produced. This enabled them to determine "output per man shift" at the coal face, in the mine generally and overall including administration personnel.

8.9. The Committee regret to note that the level of labour Utilisation has gone down in the case of Heavy Electricals (India) Ltd., Hindustan Machine Tools Ltd., Hindustan Zinc Ltd., Briqueting and Carbonisation Plant of Neyveli Lignite Corporation Ltd., Barauni and Gujarat Refineries of the Indian Oil Corporation Ltd. When the labour utilisation in an enterprise touches as low a level as 70 per cent its productivity and profitability are bound to be affected. The Committee, therefore, hope that these enterprises would investigate into the reasons for this fall in labour utilisation with a view to evolve effective measures to improve labour utilisation.

8.10. Some of the public undertakings as, for example, National Buildings Construction Corporation Ltd., National Instruments Ltd. are not maintaining record showing the extent of labour utilisation. Garden Reach Workshop have started keeping such record from April, 1968 only. Hindustan Steel Ltd. have undertaken studies to determine manning for different work groups. Fertiliser Corporation of India have also undertaken industrial engineering studies to evolve systems for controlon labour utilisation. The Committee are convinced that effective labour utilisation is vital to production and profitability. They fail to understand how could the managements of these undertakings succeed in keeping an eye on the trend of labour utilisation in the absence of labour utilisation record. The Committee recommend that all undertakings should maintain Labour utilization record in suitable from so that they may be able to locate areas of under-utilisation of labour in time and take remedial measures. Labour utilisation indices should also be accompanied by indices of labour productivity in the interest of maximising production and keeping a timely check on the persistent tendency to overstaff.

(B) Productivity of Labour

8.11. Productivity means "production per man". It is concerned with the "relationship between output and the effort required to achieve it or expressed in another way, with the quantity of output per unit of input."

8.12. The Committee enquired from the Undertakings covered in this study as to what in their opinion were the main factors responsible for low productivity and what measures were being taken by them to promote "productivity consciousness" at all levels. Replies received from various public undertakings in this regard indicate that some of the important factors responsible for low productivity of labour had been absenteeism, lack of motivation, lack of effective supervision, general industrial unrest, inter-union rivalries, overstaffing, industrial traditions such as provision of helpers and lack of training for improvement of skills, etc.

8.13. Steps undertaken by Public Undertakings to promote productivity consciousness include Incentive Schemes to create motivation, formation of Production Committees, In-plant training, etc. Hindustan Steel Ltd. foster a healthy competitive spirit by inter-plant Comparisons of productivity. Apart from organising labour etc, they also make comparisons with other steel plants in India and abroad to highlight the gap that has to be made up in the field of labour productivity. Hindustan Antibiotics Ltd. exhibit educational films on Productivity techniques to workers under the auspices of National Productivity Council, Poona.

8.14. The labour productivity in steel industry is measured in terms of ingot tonnes per man year in works. The labour productivity in the three steel plants of Hindustan Steel Ltd. during the last three years was as under:—

	1966-67	1967-68	1968-69
	(Ingot tonnes per man-year in works)		
Bhilai Steel Plant	83	77	74
Durgapur teel Plant	50	47	48
Rourkela Steel Plant . . .	56	50	58

The differences in the labour in terms of ingot tonnes between the years 1966-67 and 1968-69 are stated to be mainly due to the onset of recession and the figures in the last few months show improvement as will be seen from the following:—

	Quarterly Average			
	April June 68	July Sept. 68	October Dec. 68	January March 69
BSP	68	74	78	76
DSP	50	40	47	55
RSP . . .	61	57	58	58

8.15. The Committee asked as to how was it that labour productivity in steel plants in India was around 70 tonnes of ingots per man per year as against 200 tonnes in Japan and 150 tonnes in US, West Germany and France. In their post-evidence reply, Hindustan Steel Ltd. have stated that in this comparison like was not compared to like and have pointed out that labour productivity in terms of ingot tonnes per man year was only a very abroad indicator of overall labour utilisation and that it was not fair to use this broad indicator as a tool for inter-firm comparisons because of the difference in the "organisational set up of steel plants" in India. Steel plants in India had to have a large complex of Repair Shop facilities, provision of maintenance services as against sub-contracting adopted in the West. Moreover, this indicator took only the production upto ingot stage and did not take into account the sophistication of the finishing that is undertaken in a steel plant. Over-staffing and traditional practices like Helpers etc. also contributed to low level of productivity.

8.16. Hindustan Steel Ltd. have a programme to improve productivity in their steel plants over a continuing period by reaching target levels of production as soon as possible, introducing incentive schemes which will induce shedding of extra manpower wherever present and attempting of job-combination with higher scales of pay designed to reduce overstaffing.

8.17. In their reply, Ministry of Steel and Heavy Engineering have *inter alia* stated "the Government have not made any detailed analysis f the reasons for low productivity in this country as compared to some of the foreign countries." The Bureau of Public Enterprises has also not made any special study of man-productivity industry-wise.

8.18. This gives the impression that hitherto Government have not taken an active interest in this important task. The Committee suggest that the Government should arrange special study of man productivity industry-wise without any loss of time.

8.19. In the Coal industry, the level of productivity is expressed in terms of "output per Manshift". In their post evidence reply, the National Coal Development Corporation Ltd. have stated that although their average output per manshift was higher than the average for all mines in India, it was still much lower than comparable figures for other countries. Thus while the average output per manshift for all mines of the National Coal Development Corporation Ltd. was only 0.79 tonne in 1968-69, it was 1.46 tonne in France (1966), 1.69 in Poland (1966), about 2.12 tonnes in U.K. (1968-69), 3.42. tonnes in West Germany (1967) and over 16 tonnes

in U.S.A. (1966). NCDC are of the view that in the mining industry, productivity is affected among other things by the geological conditions encountered and as such no strict comparison between the OMS figures of one country and another would be valid. NCDC have admitted that even where they had resorted to mechanisation, their output per Manshift was lower than in the developed countries due to factors like (i) deficiencies in the skill of workmen, (ii) faults of organisation management and (iii) poor maintenance of equipment. Due to inadequate and erratic flow of spares, labour practices, etc.—NCDC propose to fill up their gap in productivity by prograssive mechanisation of mines, intensive training, introduction of improved labour practices, incentive schemes, advance planning for supply of spares of imported equipment.

8.20. Existence of a wide gap in the productivity levels of key industries (e.g. Steel and Coal Mining) between Indian and foreign countries is a source of great concern to the Committee. Such gaps if permitted to continue would be injurious to the development of export markets of Indian Steel and other products which would be soon available for exports. The Committee recommend that public undertakings should adopt improved and modern management techniques capable of raising the level of productivity.

8.21. The Committee are apprehensive that in their anxiety to raise productivity, the quality aspect may be lost sight of by the Undertakings with the result that greater rejections and off grade production would become inevitable defeating the very purpose of productivity. Equal importance should, therefore, be accorded to the qualitative aspect of productivity. Parametres to productivity should be so fixed as to take into account production in comparable units in India and abroad. Productivity norms and incentive schemes should be applied from the beginning.

(C) Over-staffing

8.22. One of the factors of low productivity is overstaffing in public sector undertakings. According to a survey conducted by the Bureau of Public Enterprises, the surplus staff employed in all the public undertakings was estimated to be 15,000 as on 30th September, 1967 as per the details given below:—

	(Estimated)
(1) Hindustan Steel Ltd.	9,214
(2) Indian Oil Corpn. Ltd.	2,131
(3) Heavy Engineering Corpn. Ltd. (F. F. Project)	986
(4) Indian Drugs & Pharmaceuticals Ltd.	760
(5) Bharat Heavy Electricals Ltd. (Tiruchi)	594
(6) Life Insurance Corpn. of India	445
(7) National Mineral Development Corporation Ltd.	313
(8) Hindustan Aeronautics Ltd.	135

8.23. Apart from the above mentioned undertakings Hindustan Machine Tools Ltd. had about 2,000 surplus men, Sindri Unit of Fertilizer Corporation of India Ltd. had 1,324 surplus employees. Mining and Allied Machinery Corporation too had some surplus staff. In their post evidence replies, the following undertakings intimated their estimated surplus staff as under:—

	No. of Surplus Staff	Annual cost of retaining surplus staff
		Rs. lakhs
1. F.C.I.	160	6·0
2. H.S.L.	1500	75·8
3. I.O.C.	490	50·0
4. N.C.D.C.	1500	40·00 ,,

8.24. The Committee are of the opinion that existence of surplus staff adversely affects productivity and profitability of an enterprise. They recommend that the staff strength in the initial stages should be determined most carefully after carrying out scientific manning studies and a thorough assessment of workload. Such studies should be entrusted to independent bodies like the Managements Institutes or Institutions like The National Productivity Council for making an objective assessment.

8.25. Re-deployment of surplus staff deserves the primary attention of the undertakings. The Committee feel that they could be absorbed against future expansion or against future retirements. Voluntary retirement schemes may be introduced on attractive terms if necessary and transfer of staff to other sister enterprises could also be considered.

(D) Iabour Management Relations

8.26. During evidence, the representative of most of the leading Undertakings informed the Committee that their main problem in the sphere of labour management relations was multiplicity of unions and inter-union rivalries. For example, the Fertilizer Corporation of India Ltd. had 16 unions. Hindustan Steel Ltd. had 24 registered unions at Bhilai Steel Plant, 12 unions at Rourkela Steel Plant, 5 unions at Durgapur Steel Plant, 3 unions at the Alloy Steel Ltd. and 5 unions in the Central Coal Workshops. Existence of rival unions led to, as it were, a regular competition in making demands.

8.27. Asked as to how the ideal of "one enterprise-one union" could be achieved, the representative of the Heavy Engineering Corporation Ltd. stated, "if agitational methods are adopted by

labour, it is extremely difficult to have this one union. It is only by education over long period that we can get it". The representative of the Hindustan Steel Ltd. also favoured this approach and said, "if you ask me for a way out, I would only say that we have to undertake a long programme of educating people at the national level. Truce is one way of dealing with that problem."

8.28. The Committee were informed that Heavy Electricals (India) Ltd. had a Joint Council. Fertilizer Corporation of India Ltd. had made an attempt to form a Joint Management Council at their Nangal Unit in 1966 but had not met with success owing to difference of opinion among the different sections of the recognised union.

8.29. Labour Unions placed their demands before the Managements from time to time. The representative of Hindustan Steel Ltd. was of the view that in a backward economy, there was a general desire to improve the standard of living and, therefore, one should expect a regular flow of demands. He informed the Committee that they suffered serious damages in three Coke Oven batterries in Durgapur "arising out of certain situation in which men would not work or would not inform the officers who control them whenever they are absent". Recently, some men in Durgapur first switched off the water supply which was meant for cooling the controlling system. He observed "it may be good to have a strike once in ten years but what happened at Durgapur was 23 interruptions in a single day". The ignot production per man year at Durgapur was, therefore, about half of what it was at Bhilai. He said "A steel Plant is not like textile mills of a small workshop—may be any analogy may not be altogether correct—so that in a steel plant due to the high temperatures involved we cannot suddenly switch on or off equipment without causing serious damage to plant and equipment. Sudden stoppages cause damages. In other words, continuous operation demands a sense of responsibility on the part of labour and the management to keep the production going."

8.30. During evidence the Secretary, Ministry of Steel and Heavy Engineering stated that labour management relations was one of the major problems. The Ministry of Labour had already laid down certain guidelines and brought out a Hand Book for the guidance of the management of the public sector undertakings. Asked whether labour relations in the Steel Industry were given special attention by Government, the witness stated that Labour Ministry had various Committees of which Steel Committee was one. Recently, a meeting of Steel Committee was convened to discuss the question of revision of the existing agreements. The Secretary, Ministry of Petroleum and Chemicals added that when Dr. Channa Reddy was in the Steel Ministry, he tried to evolve a

special code of conduct for the steel industry but unfortunately nothing came out of that because there was no agreement on implementation of certain basic conditions.

8.31. Asked as to how strikes or stoppages of work could be avoided in the interest of steady production, he said, "I think it is time that we should try once again to have national truce for three years. Some consensus of opinion has got to be obtained at the national level so that a certain method of pursuing the demands is not in any body's interest."

8.32. Of the many demands faced by the Managements, two deserve mention. One is that Undertakings should recruit only the "sons of the soil" *i.e.* the local people. This demand had been made by the workers of Barauni Unit of the Fertilizer Corporation of India Ltd. The labour trouble at Barauni had assumed serious proportion. The post evidence reply of the Fertilizer Corporation of India indicates that a detailed letter was addressed to the Secretary of the Ministry as early as 12th August, 1969 about the labour situation at Barauni and demanding that factory site be declared a prohibited area and a properly officered CRP Unit be posted there.

8.33. During the evidence of the selected Ministries, the Secretary, Ministry of Industrial Development, Internal Trade and Company Affairs stated that according to a circular issued about five years ago the then Ministry of Commerce and Industry had laid down that recruitment to Class III and IV posts in public undertakings may be made through regional Employment Exchanges and to Class I and II posts by advertisement on an All India basis. While this ensured that by and large "sons of the soil" would get employment, it did not prevent an outsider residing at the place to get himself registered with the local employment exchange and get recruited. The representative thought that to provide that only local people should be recruited in public undertakings would be against the Constitution of India.

8.34. The second demand was from workers of the Heavy Electrical (India) Ltd. They wanted that there should be no disparity between leave rules and working hours of office workers and factory workers. The Committee were informed by the representative of Heavy Electrical (India) Ltd. that in foreign countries, every worker whether industrial or non-industrial had to put in the same number of hours. Even in India, as for example, in Bharat Heavy Electricals Ltd. every one from the General Manager downwards had to work for 48 hours a week.

8.35. **Labour-Management relations is a very sensitive area of management activity. The situations to be faced in this field are complex and calls for human understanding, foresight and tact on**

the part of managements. The Committee feel that management of public sector enterprises should continue to strive to secure the active cooperation of labour towards improvement of production since a contended labour alone can be expected to give their best.

8.36. Demands received from labour unions should be considered by the Managements with sympathy without much loss of time and decisions taken on the merits of each demand. Effective steps should be taken by the Managements to establish rapport with the workers and creating in them "a sense of belonging". Proper forums should be established where officers at various levels of management can meet and inter-mingle more often with various groups of labour. This is only one of the ways to remove the "Psychological barrier" between the managements and labour.

Top Management should provide a responsible and responsive leadership, drive and initiative in this direction.

IX

PLANT AND MACHINERY

(A) Procurement and Installation

9.1. Replies received from various undertakings covered in the study have revealed that there have been a number of cases of delays in procurement and installation of plant and machinery. To cite only a few cases, there was a delay of about 1 year and 10 months in procurement of Foundry Forge Plant (2nd Stage) in the case of Heavy Engineering Corporation Ltd. In case of Coke Oven Plant and Skelp Mill for Durgapur Steel Plant (1.6 M.T. Expansion) the procurement was delayed by about 2 years 2 months and 2 years 6 months respectively. While the delay in respect of Coke Oven Plant occurred on account of delay in the supply from indigenous suppliers, the delay in respect of Skelp Mill was due to labour trouble in contractors establishment, non-availability of matching steel, etc. The delay of 1 year and 11 months in respect of procurement of Steel Melting Shop at Rourkela (I.8 M.T. Expansion) was caused due to delay in shipping. In the case of Hindustan Photo Films Mfg. Co. Ltd. bulk of plant and machinery which was scheduled to be supplied by the Collaborators by May, 1963 was actually received by April, 1965 causing a delay of 1 year and 10 months. This delay is stated to have occurred because at construction stage it was found necessary to redesign one of the production blocks on raft foundation instead of pile foundation. Similarly, equipment for the first, second and third stages of Barauni Refinery which were to be supplied by December, 1961, July, 1962 and March, 1964 respectively was actually delivered by the Collaborators in July, 1964, June, 1963 and March 1966 respectively.

9.2. Installation of Coke Chamber lift at Gauhati Refinery of the Indian Oil Corporation Ltd. was delayed by 3 years and 9 months because the main contractor for erection of Refinery had left when this was received. I.O.C. succeeded in finding out another contractor but he too left the job incomplete. A delay of 8 to 12 months has been reported in the installation of plant and machinery at Bailadila Project of National Mineral Development Corporation Ltd. Delay in this is stated to have been caused due to delay in supply of power from the Madhya Pradesh State Electricity Board. Installation of Fertilizer Plant at the Neyveli Lignite Corporation Ltd. was delaved by 2 years and 3 months, because of delays in procurement of steel and completion of civil works.

9.3. Some of the Public Undertakings *e.g.* Bharat Electronics Ltd., Bharat Heavy Electricals Ltd., Indian Rare Earths Ltd. and Fertilizer Corporation of India Ltd. (Trombay) etc. have indicated that they follow the "Programme Evaluation and Review Technique" (PERT) for coordinated planning of procurement, installation and commissioning of plant and machinery. The Committee enquired as to how was it that inspite of following that technique there have been so many cases of delays. In reply, the Fertilizer Corporation of India Ltd. have stated that though PERT was effective, there were limitations of its use under conditions in India because delays arise in agencies and for services which are outside the control of those who administer PERT Programme. Though Heavy Engineering Corporation Ltd. realise that PERT was an effective technique for proper control and review on completion schedule, they had utilised it only for some specific important orders for completion on schedule but not for procurement, installation and commissioning purposes. Question of using PERT in the case of Hindustan Machine Tools Ltd. does not arise as in their opinion PERT was useful in case of new projects only. Hindustan Steel Ltd. have used PERT for certain repetitive jobs like Blast Furnace relining; steel making furnace relining, Roll changing where the sequence of work and other parameters were clearly known. As far as major expansion of the integrated steel plants was concerned, PERT can, in their view, be introduced only with the help of a computer. HSL have already trained a large number of their officers| engineers in the application of this technique.

9.4. Indian Oil Corporation have been depending merely on Bar Charts etc. The technique in the form of crital Path Method is being utilised in connection with the Haldia Refinery. They propose to introduce it for other projects also.

9.5. National Coal Development Corporation Ltd. are considering to introduce this technique progressively in their development projects.

9.6. **The Committee recommend that public undertakings should make effective use of management techniques like Programme Evaluation Review Technique in order to guard against possible delays in the procurement, installation and commissioning of plant and machinery. They would suggest that an adequate number of their officers and engineers be specially trained in the application of this technique.**

(B) Maintenance System

9.7. Maintenance activities are classified as under:—

(1) *Shift Maintenance*: consisting of running repairs, scheduled inspection, minor replacements and adjustment of parts.

(2) *Planned Preventive Maintenance*: (minor and upto intermediate categories) consisting of revision planned and breakdown repairs, replacement and modifications.

(3) *Construction and Heavy Maintenance*: consisting of major revisions, major planned and breakdowns, major replacements and modifications work.

(4) *Capital Repairs*: consisting of substantial repairs and replacement work involving a long shut down of the plant and machinery, for example Blast Furnace relining, capital repairs of rolling mills etc.

9.8. 23 out of 38 public undertakings have set up separate Maintenance Departments in their enterprises in order to have a centralised set up for the care and maintenance of plant and machinery (Appendix VIII). Some of these public enterprises *e.g.* Bhilai Steel Plant, Trombay Unit of F.C.I., H.E.C. are following a "partially recentralised system" of maintenance whereunder shift maintenance consisting of running repairs, scheduled inspection, minor replacements and modifications have been placed under the charge of operation Departments so that the centralised maintenance Department could devote all their attention on construction and Heavy Maintenance and capital Repairs. The Committee have been informed by Hindustan Steel Ltd. in a note furnished after the evidence that this had ensured better coordination between operation and maintenance wings, timely and prompt attention to equipment failure and prevention of operational malpractices etc. This system is proposed to be extended to other steel plants of H.S.L. Existing staff strength of Maintenance Departments is as given in Appendix IX. Asked whether new system would not result in increase in the staff strength, Hindustan Steel Ltd. have admitted that this would normally require more man power, but as it would ensure more effective maintenance, and therefore, a better equipment availability and the overall economics would be in its favour.

9.9 As partially decentralised system of maintenance has been introduced only now and that too only by a few undertakings, its effectiveness can be judged after watching the performance of this system over a period of time. While this system of maintenance can be effective since minor maintenance jobs could be undertaken on the spot without much loss of time, it was likely to increase the

existing strength of Maintenance staff. Whatever be the new system of maintenance, the Committee recommend that unreasonable increase of staff strength on this ground should be positively resisted by the undertakings.

The Committee emphasise that planned preventive maintenance in Public Undertakings should be placed on a more scientific footing in the light of experience gained and after making sure that the system did not lead to duplication, over-lapping or over-staffing.

(C) Maintenance Manuals

9.10. Instances are not lacking when the public undertakings did not obtain Maintenance Manuals from the suppliers of Plant and Machinery with the result that these had to be prepared by the undertakings for the guidance of their technical staff. For example, in the Foundry Forge Plant, wherever Maintenance Manual had not been supplied, these were being prepared by the Heavy Engineering Corporation Ltd. Similarly Heavy Electricals (India) Ltd. are also having necessary Maintenance Manuals either obtained from the suppliers or prepared by them.

9.11. The Committee recommend that public undertakings should insist on and invariably obtain Maintenance Manuals from the suppliers of plant and machinery as a matter of standard commercial practice so that the time and labour involved in preparation of these Manuals by the undertakings was saved.

(D) Maintenance Experts Cadre

9.12. Foreign experts were called for at Nangal Unit of the Fertilizer Corporation of India Ltd. for overhauling of compressors of proprietary make. At Trombay, foreign experts were requisitioned for overhauling of liquid oxygen pumps, the type of which had only been used at Trombay. The expenditure incurred in the last six years at Nangal was Rs. 0.47 lakhs and at Trombay for the last three years the expenditure was Rs. 1.1 lakhs on this account. Similarly at Gorakhpur Unit, the services of six Japanese Experts have been retained for a period of six months at an expenditure of Rs. 5.6 lakhs Fertilizer Corporation of India is of the view that as both Trombay and Gorakhpur Units have sophisticated equipment it would be desirable to have experts to do these repairs initially for a certain period.

9.13. Hindustan Steel Ltd. also depend on foreign experts during first major overhauls or capital repairs of major metallurgical units or complicated machineries like Blast Furnaces, Turbo Blowers Mill equipment, etc. HSL's reply indicates that according to their established policy, they post under studies in all places where foreign experts are employed. In order to augment the maintenance of their personnel, their staff visit the sister plants during major capital repairs to study the planning and actual work.

9.14. In their post evidence replies, the Ministry of Steel and Heavy Engineering and the Ministry of Industrial Development, Internal Trade and Company Affairs have stated that Government was fully conscious and subcribed to the need for the public undertakings to develop their own cadre of Indian experts for such works. Facilities for technical training for the purpose as provided for in the collaboration agreement or in pursuance of schemes devised and operated by international agencies under the auspices of the United Nations, etc. were being availed of.

9.15. The Committee are unhappy to note that the giant Public Undertakings like Fertilizer Corporation of India Ltd. and Hindustan Steel Limited which by now have already acquired a number of years standing in their respective fields should still be dependent on foreign experts to advise the local technicians on major over-hauls and repairs of their plant and machinery. They regret to note that adequate attention has not been paid ab initio **for the development of their own carde of maintenance experts to handle major overhauls. capital repairs etc. The Committee, therefore, recommend that the Government might consider the desirability to draw up a scheme for development of a cadre of maintenance experts in all the major undertakings so that India's dependence on foreign experts is reduced to the barest minimum and self reliance is developed in the field of maintenance of Plant and Machinery.**

(E) Preventive Maintenance

Periods of Break downs and loss in production

9.16. It has been estimated that in 7 public undertakings alone the total loss in production on account of breakdown of plant and Machinery during the last three years was more than Rs. 703 lakhs as per details given below:—

Name of the P.U.	1965-66	1966-67	1967-68
		(Rupees in lakhs)	
1. Bharat Earth Movers Ltd.	0·34	0·46	0·60
2. Fertilizers & Chemicals Ltd.	..	53·50	76·72
3. Sindri Unit (FCI)	82·29	31·69	62·21
4. Garden Reach Workshop Ltd.		0·29	0·48
5. Heavy Electricals (India) Ltd.		4·50	4·20
6. Foundry Forge Plant7 (HFC)	..		3·50
7. Neyveli Lignite corpn. Ltd.	58·00	240·7	83·90
TOTAL	140·63	331·14	231·61

9.17. Hindustan Steel Ltd. have not indicated the extent of loss of production because, according to them, loss of production due to breakdowns only cannot be segregated in an integrated steel plant. In another reply, it has been stated that HSL's integrated system of work provides alternative methods of carrying on the work or allows some reserve stocks at intermediate points in between the processing Department to ensure the continuity of production of subsequent units in the event of a failure in the earlier unit.

Mazagaon Dock Ltd. have stated that they had not compiled information of loss in production in terms of quantity or value or in terms of manhours lost. Praga Tools Ltd. have intimated that as they do not have large integrated plants but only individual machineries, they had not been maintaining any statistics in this regard.

Shut Down Periods

9.18. In process type of industries, as for example, Oil Refineries and Fertilizer Plants, the period for which the plant is required to be shut down for annual care and maintenance is sometimes stipulated in the Detailed Project Report itself. For example, the Committee have noticed that the actual shut down period of plant and machinery were more than the limits set in the DPR in respect of the following Units of the Indian Oil Corporation Ltd.:—

	Provision in DPR	Actual period of shut down 1965-66	1966-67	1967-68	1968-69
	(Days)	(Days)	(Days)	(Days)	(Days)
INDIAN OIL CORPORATION LTD.					
(Gauhati Refinery)					
(i) Kerosene Treating Unit .	35	140	130	63	..
(ii) Coking Unit .	53	65½	36	31½	54½
(Barauni Refinery)					
(iii) AVD Unit No. II	35	7	51	..	..
(iv) Cocking Unit	65	88	85	43	30
(Gujarat Refinery)					
(v) Atmospheric Unit I .	30	..	..	49	..

9.19. Asked what were the reasons for higher down-time in these units and whether it indicated neglect of preventive maintenance, the Indian Oil Corporation Ltd. have explained in their Note furnished after the evidence that higher down time was not due to any neglect. For instance, operation of kerosene Refining Unit of

Gauhati Refinery was controlled by the superior kerosene production limited due to Iomex disposal. However, they did have higher down time due to the troubles faced in the compressors and spare availability limitations. As regards coking Unit of that Refinery it had been stated that during 1965-66 in order to reduce the flare in the wake of Pakistan's aggression, *vis* breaking was tried in the Unit. This led to emergine in P-2 pump requiring maintenance for about 11 days.

9.20. The main reason for higher down time in 1965-66 and 1966-67 in Coking Unit of Barauni Refinery, was modifications carried out in April|May, 1965 for production of on grade furnace oil and in November|December, 1966 for increasing the capacity from 1,400 tonnes per day to 2,000 tonnes per day. Barauni Refinery were able to bring down the shut down days of this unit in 1967-68 and 1968-69 below the level indicated in the DPR "due to improved operation and maintenance resulting in high operating cycle"

9.21. The Committee have also noticed that actual shut down time of Urea Complex Fertilizer and Methanol Plants at Trombay Unit of Fertilizer Corporation of India Ltd. was on the high side. Details are given below:—

Break up ofs hut down time (in number of equivalent days)

Product	Year	Break-down	Fuel/ limit-ation	Annual shut down	Other reasons	Total
1. Urea	1966-67	76	96		16	188
	1967-68	30	80	15	48	173
2. Complex Fertilizer	1966-67	135	38	..	113	286
	1967-68	36	58	16	112	222
3. Methanol	1966-67	147(I)			..	147
	1967-68	150	..	16	102	268

Commercial production of Methanol started in October, 1966 and effective operating days available were only 173.

In their note furnished after the evidence, Fertilizer Corporation of India Ltd. have explained that the reasons for high incidence of shut down in the Methanol Plant at Trombay were (i) design deficiencies in the Reformer Furnace, and (ii) Failure of the Catalyst provided by the plant suppliers.

9.22. The Committee, have noticed that the range of down time in Blast Furnaces and Steel Melting shops at various steel Plants of Hindustan Steel Ltd. was in excess of the average norm. The details are given below:—

	Average Norm	Plant	Range of down time during the last 3 years
(i) Blast Furnace . . .	350 days or 4·1%	(a) Durgapur	4 to 4·3%
		(b) Bhilai .	4 to 9 3%
		(c) Rourkela .	6 to 11·6%
(ii) Steel Melting Shop . .	330 days or 9·6% downtime	(a) Durgapur .	27·2 to 30%
		(b) Bhilai .	21·3 to 28%
		(c) Rourkela .	15·22 to 22·5% (O.H.) 28·5 to 40%

9.23. In their Note furnished after the evidence, Hindustan Steel Ltd. have expressed the view "down time does not necessarily indicate ineffective preventive maintenance". According to them operational delays, and pre-mature breakdowns due to use of poor quality of indigenous spares and refractories also contribute to down time.

9.24. In December, 1968, the Bureau of Public Enterprises conducted a sample survey of the incidence of equipment downtime and the consequent loss of production in the Chemical, Fertilizer and Steel industries. The result of that survey indicated that "the organisation for systematic preventive maintenance, programmed repairs and replacement of equipment and close co-ordination between production departments deserved a closer examination."

9.25. **From the foregoing details, it is apparent that actual down time of various units of the Indian Oil Corporation Ltd., Fertilizer Corporation of India Ltd. and Hindustan Steel Ltd. had been far more than the limits envisaged in the Detailed Project Report or the norms laid down in this behalf. It is rather surprising that during 1967-68 Urea, complex Fertilizer and Method Plants at Trombay remained down for a total period of 173 days, 222 days and 268 days respectively due to Breakdowns, Fuel limitation, Annual shut down, other reasons, etc. Similarly, steel melting shops of various steel plants of H.S.L. were down from 15 to 40 per cent of the time as against the average down time of 9.6 per cent of such shops. As high down time of plant and machinery results in loss in production and ultimately affects the cost of production also, the committee recommend that the undertakings concerned should examine**

the sytem of maintenance in force in their plants, identify the weaknesses and determine the corrective steps required to be taken to remedy this state of affairs without any loss of time.

The Committee view it with great concern that despite the fact that steel, Fertilizer and Petroleum industries in the public sector have had a number of years experience of the working of plants, the downtime had been excessive to such an extent. They recommend that in future the Annual Reports of all the public sector enterprises should contain a para indicating (i) the extent of down time each year, (ii) the loss in production suffered on account of down time and (iii) steps which the enterprise intend to take to arrest the rising trend in down time so that Government and the Parliament remained in touch with standards of preventive maintenance in the plants in the public sector.

The Committee are unable to accept the plea that in an integrated plant like Steel, it is not possible to quantify the loss in production on account of down time of plant and machinery and hope that HSL would be able to develop a system which would enable them to quantify the loss in production on account of shut downs in their plants.

(F) Plant Layouts

9.26. Plant layout is the arrangement and the location of production machinery work-centres, and auxiliary facilities and activities (*e.g.* inspection, handling of materials, storage and shipping) for the purpose of achieving efficiency in manufacturing products or supplying consumer services. Its objective is to integrate materials, machinery and men for economical production.

9.27. The Committee have noticed that only a small number of public sector undertakings, as for example, Fertilizer Corporation of India Ltd., Garden Reach Workshop Ltd., Hindustan Antibiotics Ltd., Indian Telephone Industries Ltd., Praga Tools Ltd. etc. have made a study of plant layouts of comparable enterprises in India or abroad. These studies proved of immense help. For instance, based on such studies the Fertilizer Corporation of India Ltd. had been able to reduce the extent of general facilities in their new units at Gorakhpur, Durgapur and Trombay than those provided Sindi and Nangal. Similarly, Central Engineering and Design Bureau sent out terms of Engineers abroad to study plant layouts in Europe prior to preparation of detailed project reports for Durgapur and Rourkela expansions. Studies made by the Praga Tools Ltd. of plant layouts abroad has revealed a new type of layout called "Machines around Men". In this layout, the operator's time during the operation in the case of an automatic machine was utilised to run other machines. Praga Tools have introduced the new concept in a small way and have achieved some success.

9.28. Some public undertakings namely, Rajabagan Dockyard of Central Inland Water Transport Corporation Ltd., Sindri Unit of Fertilizer Corporation of India Ltd. and Garden Reach Workshop Ltd. informed the committee that their existing layouts were not satisfactory and needed improvements. Steps were under way to effect inprovements.

9.29. **The Committee recommend that all major public undertakings should carry out studies of plant layout of comparable enterprises in India and abroad. Such a comparative study can be a useful exercise for the managements to acquaint themselves with new ideas on plant layouts for improving their own layouts to ensure free and quick flow of materials and facilitate better production in their plants.**

X

COST CONTROL

(A) Cost Control Schemes

10.1.Cost is a monetary symbol of efficiency and productivity The object of cost control is to economise and control efforts and inputs in the production process. Cost is best controlled 'on the spot' where it is incurred. Control presupposes measurement, and measurement requires a norm or a standard.

10.2. Majority of the public undertakings, including the Fertilizer Corporation of India, Heavy Electricals (India) Ltd., Heavy Engineering Corporation Ltd., Hindustan Machine Tools Ltd., Hindustan Steel Ltd., Indian Telephone Industries Ltd; National Coal Development Corporation Ltd. etc. have introduced cost control schemes in their enterprises. There are, however, some undertakings for example Central Inland Water Transport Corporation Ltd., Hindustan Photo Films Ffg. Co. Ltd., Hindustan Salts Ltd., Mining and Allied Machinery Corporation Ltd., Modern Bakeries, Ltd., National Instruments Ltd., Parga Tools Ltd. etc. where cost control schemes have either not been introduced or if introduced the same had not been developed to make them effective.

10.3. Cost control schemes of some of the public undertakings for example, Bharat Electronics Corporation Ltd., Fertilizer Corporation of India, Heavy Engineering Corporation Ltd., Hindustan Machine Tools, Ltd. Hindustan Steel Ltd., Nayveli Lignite Corporation Ltd. follow the principle of "Responsibility Accounting." The system of responsibility accounting envisages sub-division of departments into "Cost centres." Actual expenditure of each cost centre is compared with the budgetted expenditure and standard cost and variances are analysed. Head of each cost centre is responsible for exercising control on cost and explain the reasons for variation. For instance, in Hindustan Steel Ltd., whose costing system is based on the uniform cost system designed by the British Iron and Steel Federation. the operating expenditure is first allocated to certain specified "cost Centres" (Department|Processes|Sub-processes), duly broken down under cost elements and then reassembled in a 'Cost carrier Account' to work out the cost of product in a particular month.

10.4. Some of the public enterprises, as for example, Bharat Heavy Electricals Ltd., Cochin Refineries Ltd;, FACT, Heavy Electricals (India) Ltd. Bhilai Steel Plant, Indian Oil Corporation Ltd.

Neyveli Lignite etc., follow "integrated system" of financial and cost accounts. Integrated system avoids the necessity of maintaining two separate sets of Accounts.

10.5. Only 12 out of 38 public undertakings have introduced standard costing system (Appendix X) Heavy Electricals (I) Ltd. have stated that standard costing is not practicable in a jobbing industry. Hindustan Antibiotics Ltd. feel that it was difficult to introduce standard costing system in a biothemic multi-product indutsy involving numerous processes and products. According to Hindustan Shipyard Ltd., standard costing was not possible in shipping industry because ships to be built were not identical. Since conditions differ from mine to mine, standard costing was not feasible in the mining industry as well.

10.6. During evidence of selected Ministries, the Committee pointed out that whatever cost accounting system the public undertaking had, it should be used for management objective, otherwise, if the cost figures were put on the shelf, the very object of a cost accountancy system would be defeated. Director General Bureau of Public Enterprises agreed that it was very much a tool in decision making at the management level and assured the Committee that while studying enterprises in depth, they would look into that aspect also. He added that they had already laid down that cost data should be placed before the Board every quarter.

10.7. **The Committee are surprised to note that some of the public sector undertakings, for example, the Hindustan Photo Films Mfg. Co., Hindustan Salts Ltd, Mining and Allied Machinery Corporation Ltd, Modern Bakeries (India) Ltd. National Instruments Ltd., Praga Tools Ltd. have not developed any cost control scheme so far.**

The Committee are of the view that in the absence of a satisfactory cost control scheme it is unthinkable for the management of any enterprise to keep an eye on the trends of cost of production and to take timely remedial measures. They recommend that all the undertakings should take early steps to instal effective cost control schemes suited to their respective industries within a specified period and furnish a report to Government.

10.8. **The Committee are unhappy to note that in the past, the studies made by the Bureau of Public Enterprises did not cover the important question as to whether the managements of public sector enterprises had made use of cost data for management decisions and if so to what extent.**

(B) Availability of Cost Accountants in India

10.9. During evidence of selected Ministries, the representative of the Bureau of Public Enterprises stated that in India while there

were Cost Accountants available at junior level now, at the senior level, they were not available. They had to make the best use of the few who were available.

Asked whether Bureau had some senior Cost Accountants who would go over to various public undertakings and advise them what was wrong and where, the witness stated that they were actually trying to develop that expertise.

10.10. **The Committee recommend that Government should make arrangements in consultation with the Institute of Cost and Works Accountants of India, Calcutta for harnessing and proper orientation of Cost Accountants in India to equip them to man senior level positions.**

(C) Control on Cost of Production

10.11. The Committee have noticed that actual cost of production of the products of the undermentioned public undertakings was in excess of the cost estimates given in their respective Detailed Project Reports (Appendix XI):—

1. Hindustan Steel Ltd.
2. Hindustan Teleprinters Ltd.
3. Proga Tools Ltd.
4. Fertilizer Corporation of India Ltd.
5. Neyveli Lignite Corporation Ltd.
6. National Mineral Development Corporation Ltd.
7. Fertilizers and Chemicals Travancore Ltd.
8. National Coal Development Corporation Ltd.

10.12. In some of the items, the actual cost of production in 1967-68 had risen to more than 200 per cent over the DPR estimates as for example, production of Coke at Bhilai (304 per cent), and Durgapur (374 per cent) and production of Ingot Steel at Durgapur Steel Plant (201 per cent) of Hindustan Steel Ltd. Actual cost of Production of Leco by the Neyveli Lignite Corporation Ltd. in 1967-68 was 313 per cent more than DPR estimate.

10.13. Hindustan Steel Ltd. are of the view that there is no valid basis for comparing the costs of production as per project report with the actual costs because (i) raw materials prices were indicated to the consultants on a very rough basis since the concerned mines for iron ore, limestone et. had not been opened up at that time and actual cost of extraction was not known, (ii) the cost estimates were based on very rough and provisional prices for such bought out materials as sulphur, spare parts, mill rolls, etc., (iii) the sources of supply of coal envisaged in the project Reports have

undergone several changes which have affected the costs, (iv) township and administrative overheads do not form part of these cost estimates and (v) there are also variations in the basis of which the project Report cost have been worked out by the consultants and the basis adopted for calculating actual cost.

10.14. During evidence of leading public undertakings, the representative of the Fertilizer Corporation of India Ltd. stated that each case of deviation in cost with that envisaged in the DRP had to be evaluated and one could not draw any general conclusion. Giving an example, he said that Sindri Plant was designed with the quality of 93 per cent purity gypsum and the consumption was commuted at 1.6 tons per ton of sulphate. But as the actual purity of gypsum was less than 80 per cent, the consumption thereof had gone up to 1.9 to 2.0 tons per ton of sulphate. This had resulted in lower ammonia efficiency. Actual consumption of Naphtha at Trombay was also in excess.

10.15. The representative of the Heavy Electricals (India) Ltd. expressed the view that cost of production in India is not comparable with cost of production in foreign countries because conditions in foreign countries and India were different. He added that they were selling 20 to 25 per cent of their products in competition with the private sector. They were not only able to secure a good share or orders for switch gears and transformers but also a good price. He felt that if the Government expected them to sell Generators at landed cost they should be given duty coverage at least to the extent of 30 per cent of the landed cost otherwise they should be left free to sell their products on a competitive basis.

10.16. The representative of the Heavy Engineering Corporation Ltd. thought that if once they achieved production at about 65 to 70 per cent of their capacity, they would, at that stage, be in a position to supply equipment at landed price. They were rather at a very low level of production at present.

10.17. The representative of the Hindustan Machine Tools Ltd. stated that as in any other engineering Industry, they exercised control on the cost of production in a conventional way based on the Time and Motion Study, Cost of the material, overhead price, etc.

10.18. The representative of the Hindustan Steel Ltd. was of the opinion that cost reduction depended on a number of factors, some of which were beyond their control. For example, ash content in the coking coal was steadily rising. They were anxious to see that the cost of raw materials was controlled because that is where the cost control should start. They were also engaged in keeping control on inventories and spares. The witness admitted that throughput which they were getting from costly equipment like blast furnace was only 1.1 ton per cubic metre. This was lower than the throughput achieved in Steel Plants in Japan.

10.19. The representative of the Indian Oil Corporation Ltd. stated that it was difficult to compare their cost of production with other units as the processing schemes were different and the investments on some of the items like, self-contained townships, power houses, etc. were additional *vis-a-vis* other units in private sector.

10.20. The representative of the Indian Telephone Industries Ltd. informed the Committee that as theirs was a labour intensive industry, the cost of production was pretty low. As a matter of fact, they earned more profits on exports than on their internal sales.

10.21. The representative of the National Coal Development Corporation Ltd. advanced the view that as comparison with DPR cost was difficult, the only way to determine whether the cost of production was reasonable or excessive was by determining standard cost under each component of cost, e.g. lubrication, power, wages, salaries, etc. He admitted that NCDC had not made a detailed study of the comparable cost of production in their units and the private sector units in India or abroad. He added that though their average capital cost per tonne was Rs. 80 as against Rs. 16 in the case of private sector mines, the output per manshift of NCDC was better as compared with the OPS of private sector mines. The Committee pointed out that as OMS would very from mine to mine, it could not be accepted as basis for comparisons. OMS was different for a deeper mine and a shallow one.

10.22. During the evidence of selected Ministries the representative of the Ministry of Industrial Development, Internal Trade and Company Affairs admitted that, "it is a fact that in many of our projects, our prices are higher by various margins than the corresponding prices in other countries." Explaining reasons for rise in costs, he said that the prices were a little high to begin with, until the production was established and until the skills were picked up. There were some factors *e.g.* price of raw materials over which they had no control. For instance, non-ferrous metals like Nickel was selling at staggeringly high price. They were also at a disadvantage in so far as components were concerned. He said that criteria of landed cost cannot be applied in all cases because in many cases such cost was difficult to assess as, for instance, electrical equipment or equipment for steel plants which are not quoted off the shelf. The witness informed the Committee that prices of many machine tools and engineering goods compared reasonably with prices anywhere in the world and that was why India had been able to establish exports in those fields in recent years.

10.23. The Committee understand that in pursuance of the recommendations of the Administrative Reforms Commission Government have since decided to constitue a high power Bureau of Industrial Costs and Prices. This body will act as a watch dog on costs and prices and will advise Government on cost reduction, industrial efficiency and prices in the industrial sphere.

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10.24. The Committee feel that comparison of the actual cost of production with the cost estimates stipulated in the Detailed Project Report is a useful exercise and cannot be ruled out altogether simply because some of the assumptions made in the DPR had undergone a change or some factors were lost sight of at the time of drawing up the DPR.

10.25. The Committee are unhappy to note that cost of production had increased in some cases (e.g. coke and ingot steel in the case of Hindustan Steel Ltd, Leco in the case of Neyveli Lignite Corporation Ltd. etc) to more than 200 to 374 per cent of the cost estimates given in the DPRs. Hindustan Steel Ltd. has explained the reasons for this abnormal rise in cost of production on the ground that "raw materials prices were indicated to the Consultants on a very rough basis" and that the cost estimates of bought out items were based on a very rough and provisional rates with the result that such extra-ordinary escalation in cost of production became unavoidable. They recommend that all public sector undertakings should make concerted efforts to bring down the cost of production to fair level by setting right the deficiencies, if any, in organisation and management and developing cost consciousness at various levels of management. Regarding further projects, the Committee strongly urge that the DPRs should be drawn up most carefully on a realistic and practical basis for assessment of cost estimates. The Committee feel that reduction in the cost of production would enable the public sector enterprises to offer their products at fairly competitive prices in the international markets.

(D) Control on Rejections

10.26. Value of Rejections in some of the major public undertakings was as under:—

	1965-66 Rs.	1966-67 Rs.	1967-68 Rs.
Heavy Electricals (I) Ltd. (Total value of rejected components)	2,67,942	3,25,585	3,79,931
Heavy Engineering Corp. (Foundry Forge Plant)	2,06,861	(Total rejection during last 5 years)	
Hindustan Machine Tools Ltd.	15,20,200	14,73,979	10,58,928
Mining & Allied Machinery Corporation Ltd. :			
A-Iron Foundry	..	4,01,000	422,000
B-Steel Foundry	..	4,69,000	5,781,000

NOTE :— In 1968-69 value of rejections increased to Rs. 7·11 lakhs and Rs. 8·53 lakhs in respect of Iron Foundry and Steel Foundry shops of MAMC)

10.27. Quantity of rejections within Plant in Hindustan Steel Ltd. was as follows:—

Plant	Unit	1965-66	1966-67	1967-68	1968-69
Bhillai .	. Tonnes		22,736	15,625	11,993
Durgapur	,,	10,129	9,422	8,687	8,491
Rourkela	,,	5,279	5,061	6,343	6,092
		15,408	62,668	37,533	32,576
. . . .		1,11,834	1,38,454	1,08,903	1,06,329

Durgapur(Sleeper Plants Nos. Fish Plate Plant, wheel Plant Axle Plant)

NOTE :—Rejections went up at Rourkela in 1967-68 because the checker work of the recuperators in the soaking pits had developed cracks due to ageing, resulting in air infiltration and oxidation leading to higher rejections.

10.28. Asked whether it will not be better to lay down some permissible limit on rejections so that whenever rejections went beyond that limit, causes could be investigated, Heavy Electricals (India) Ltd. have stated that they agree such a procedure would be useful. They propose to introduce such norms shortly as the process technology gets established in different products.

10.29. Heavy Engineering Corporation Ltd. consider that laying down a permissible limit would only allow the shop floor staff to produce scrap to that limit. Laying down a very low permissible limit, in practice, was difficult and also bad psychologically. HEC however, compile statements showing the extent of rejections in different departments for necessary review and remedial measures.

10.30. Hindustan Steel Ltd. have stated that the proportion of rejections depended upon the specification of materials rolled. For instance, special steels and export orders entailed relatively higher proportion of rejections. They feel that given the variations in product mix, it would be difficult to indentify specific bench marks for evaluating the quantum of rejections. Nevertheless, they compare the performance as to rejections with the best performance attained with reference to specific ranges of products and use such comparisons for control purposes.

10.31. The Committee are of the view that public sector enterprises should evolve some permissible limit for rejections so that whenever rejections go beyond that limit causes could be analysed and remedial measures taken. The apprehension voiced by the

Heavy Engineering Corporation Ltd. that laying down of a higher limit may allow the shop floor staff to reach that limit and laying down a lower one may present practical difficulties appears to be an unreal one. If the limit that is laid down is neither high nor low but a realistic one, the difficulty which the Heavy Engineering Corporation have in mind will in all probability not arise. Similarly, the difficulty referred to by the Hindustan Steel Ltd. that special steels and export orders require a higher percentage is a one which can be overcome by laying down a separate norm for such items. The Committee, therefore, recommend that all public sector undertakings should lay down norms for rejections for each item or category of items so that the management becomes aware of the increase of rejections well in time and devise remedial measures before it is too late.

(E) Control of Consumption of Materials

10.32. The Committee have noticed that actual consumption of materials had been more than the normal limit in some of the major public sector enterprises. For example, in 1967-68 and 1968-69, consumption of raw materials especially coke (dry) for blast furnaces in the Steel Plants of HSL was more than the norms suggested by the "Norms Committee" appointed by HSL in March, 1968 under the Chairmanship of Shri C.S.N. Raju, OSD, CE&DB, Ranchi (Appendix XII). In their post evidence reply, HSL have expressed the view that the existing arrangements for exercising check on the consumption of materials were quite satisfactory but improvement was a continuous process.

10.33. Asked why consumption of Coke in Steel Plants of HSL ranged from 839 to 962 KG per tonne of Hot Metal, whereas the consumption ratio was 500 KG in Japan and from 600 to 700 KG in other major steel making countries, HSL have replied that the average ash in the coal was much higher in India as compared to Japan. Secondly, the adverse alumina silica ratio in the Iron Ore and the poor quality of lime stone considerably increase the slag volume per tonne of hot metal produced. In order to maintain the slag in a fluid stage in the Blast Furnace the consumption of Coke would be higher. They feel that introduction of the various established technological improvements in the existing blast furnaces during the Fourth Plan period was expected to reduce the coke rate.

10.34. Fertilizer Corporation of India Ltd. have laid down norms of consumption of materials. The Committee find that during 1966-67 and 1967-68 actual consumption of various materials for production of Ammonia, Urea, Nitro phosphate and Methanol at Trombay Unit and actual consumption of converted gas, Ammonia and synthesis mixture at Sindri Unit was more than the standard consumption (Appendix XII). It has been stated that their control on consumption was quite effective but often the basis data utilised for

establishing norms was inadequate arising out of errors in measurement in flow instruments and on account of losses due to leakages.

10.35. Heavy Engineering Corporation Ltd. have stated that the consumption of pig iron|scarp during 1968-69 was comparable to the consumption envisaged in the DPR. It was, however, more during the proceeding years.

10.36. **Considering the extent of consumption of materials in Hindustan Steel Ltd. and Fertilizer Corporation of India Ltd. the Committee feel that the existing arrangements for exercising control on consumption of materials are far from satisfactory. They are unhappy to note that consumption of coke in steel plants in India had been more than 900 KG per tonne of Hot Metal as compared to 500 KG in Japan. The Committee hope that various technological improvements effected during the Fourth Plan period will have a decisive effect on the present high coke rate. The Committee recommend that every public undertaking should fix norms for consumption of materials for every unit or even every shift so that whenever the consumption of materials goes beyond that norm, the managements can come to know of it at once and take remedial measures. Needless to say that fixation of norms will have salutary effect not only in guarding against pilferage of materials but also exercising stricter control on quantity consumed.**

(F) Control on Inventory

10.37.The Committee have noticed that during 1967-68 inventories in terms of number of months cost of production increased in the case of the following undertakings as compared to the inventories held by them in 1966-67:—

Sl. No.	Name	Inventories 1966-67	1967-68
1	2	3	4
1	Tungabhadra Steel Product Ltd. .	28	38
2	Hindustan Salts Ltd. . .	28	35
3	Indian Drugs & Pharmaceuticals Ltd. .	20	31
4	Bharat Heavy Electricals	26	29
5	Heavy Electricals (I) Ltd.	16	18
6	Praga Tools Ltd. . .	11	14
7	National Instruments Ltd. . .	10	13
8	Fertilizer and Chemicals Travancore Ltd.	7	9
9	Mazagon Dock Ltd.	7	9

1	2	3	4
10	Hindustan Steel Ltd. . .	7	8
11	Hindustan Antibiotics Ltd.	7	8
12	Indian Rare Earths Ltd. . .	6	7
13	National Mineral Development Corporation Ltd. . .	2	3

10.38. In their reply, Hindustan Steel Ltd. explained that their inventories in terms of number of months cost of production increased from 7.9 at the end of 1966-67 to 8.24 at the end of 1967-68 "mainly due to accumulation of finished and semifinished goods owing to recession in the market. During 1968-69, the total inventories at the end of 1968-69, have come down to 8.07 months as a result of efforts made by H.S.L. in that year to liquidate the accumulated stocks of finished and semi-finished goods. H.S.L. have taken a number of steps to reduce inventory of stores and spares. These steps include cateloguing of stores and spares, conducting of ABC analysis, fixing minimum, maximum and re-order levels for automatic procurement system, etc.

10.39. Heavy Electricals (I) Ltd; have stated that in their case inventory level increased because they had taken up new product lines with long manufacturing cycles, for example, thermal and Hydro Projects with the result that inventory in the form of raw materials remained idle for some time. Secondly, due to undependable nature of indigenous suppliers they resorted to "parallel ordering" in respect of some items. Thirdly, some times orders for higher quantities were placed to interest the indigenous manufacturers.

1040. **The Committee are unhappy to note that in the case of as many as thirteen public undertakings, the level of inventories has escalated substantially in the year 1967-68 as compared to the previous year. In this connection the Committee wish to draw the attention of these public undertakings to the recommendations made by them in Chapter II of their 40th Report (Third Lok Sabha) on Materials Management aimed at scientific control of inventories. The Committee had pointed out that as materials costs usually constitute about 2/3 of the total cost of production in an undertaking, economy in materials cost was a vital factor for the profit earning capacity of an undertaking. The Committee had recommended that public undertakings should strive to bring down the level of inventories to 6 months production by making increasing use of modern methods of inventory control like classification and co-dification, variety reduction, A.B.C. Analysis, etc. It appears that not much heed has as yet been paid by Government or the Undertakings to**

make use of modern tools of inventory control. The Committee recommend that public undertakings must take positive steps in this regard and bring down their inventories to an economic level within a fixed period. Government may evaluate the work done during that period and furnish a report to the Committee on the progress achieved.

XI

QUALITY CONTROL

Quality is a matter of survival for Indian Economy if foreign exchange is to be earned and the process of faster economic development is to be achieved. Quality Control as a management technique is designed to serve three important functions: (i) determine quality standards of raw materials, materials in process and finished product, (ii) maintain these standards by taking corrective action whenever deviations are observed, and (iii) improve these standards with the existing production processes. Quality Control leads to reduced rejects, reduced inspection, better and stabler sales, and customer satisfaction.

A. Quality Control Arrangements

11.2. The Committee have noticed that the nature and extent of quality control differs from industry to industry. In Engineering Industry, as for example, in Heavy Electricals (India) Ltd. all incoming material—basic raw material like Sheet steels, Rods, Shafts, finished articles such as Extrusions, castings, foreign pressings, components such as meter, relays springs, direct and indirect process material etc. is subjected to tests|trials to establish conformity to the specifications. Control on quality of workmanship is exercised by a team of Inspectors posted in each manufacturing Division. No item is taken up for machinery or fabrication unless the Inspector checks the "first off" for dimensional accuracy and stamps it with indentification stamp. In order to ensure effective process control, automatic recorders are fitted on most plants which are regularly calibrated. Quality of products is evaluated by (a) Routine tests (b) Functional tests; (c) Heat Run tests and Endurance tests. Test results are sent to Design Engineers for comparison with the design requirements.

11.3. In Heavy Engineering Corporation Ltd. quality control is exercised by "stage to stage" inspection starting from incoming material to the finished product. They have a modern laboratory to ensure that measuring instruments are correctly maintained. Each plant has a central plant laboratory which deals with chemical and physical tests. Facilities also exists for ultra-sonic and x-ray tests.

11.4. In Hindustan Machine Tools Ltd., the Inspection Department in each Unit is responsible for quality control of products. The procedure adopted envisages (i) inspection of incoming raw

materials (ii) rigid stage by stage inspection during manufacture (iii) Inspection in detail, group and final assembly stages; (iv) running and performance tests at optimum cutting speed in their test bed and (v) inspection by the Inspectorate of DGS&D of every product. HMT's watch factory has a full-fledged Quality Control Department.

11.5. In chemical Industry as, for example, in Sindri Unit of the Fertilizer Corporation of India Ltd., products are analysed daily for their nirtogen content and deviations, if any, brought to the notice of the concerned plant by the Chemical Department. At Nangal Unit, a modern and well equipped central laboratory and plant laboratories have been established for analysis of their end products. They undertake not only half-hourly analysis of nitrogen content but also conduct the analysis of a 24-hours composite sample in the central laboratory. Analysis one in every 8 hourly shift by drawing composite samples in the Bagging Plant before despatching to the consumers is also carried out in addition. In Trombay Unit also similar arrangements for exercising check on quality by Laboratories are there.

11.6. In Petroleum Industry, e.g. the Indian Oil Corporation Ltd. samples from the operating plant are taken at regular intervals and checked for quality in the Refinery's Laboratory. Finished products after blending are checked for their quality and requisite quality certificate issued before despatch. No product is allowed to move out of refinery unless it meets the requisite specifications.

11.7. In Steel Industry, for example, Hindustan Steel Ltd., well equipped and modern Research and Control Laboratories attached to the individual plants perform the main task of quality control and assist the operating departments in maintaining quality. They collect operational data, carry out physical and chemical tests and report to operating personnel. Sampling sections of these Laboratories carry out the samling and analysis of Raw Materials. Spceial blending|bedding arrangements have been|are being provided to ensure more uniform quality. All the semi-finished and finished products are also subjected to inspection and testing.

The basic aim of scarfing is to reduce defectives and rejects. Manual scarfing arrangements exist at Bhilai Steel Plant. In line scarfing arrangement is being introduced at Rourkela. The adequacy of scarfing arrangement at Durgapur is being investigated by HSL.

In Durgapur, inspection wings for inspection of raw materials and finished products are in the process of being strengthened. The recommendations of UK Experts on Wheel & Axle Plant are also being implemented.

HSL hold quarterly review meetings where unfavourable trends in quality are spotted out and reasons for the same analysed. A target for reduction in off grade production by about 2 per cent every quarter has been laid down.

11.8. In coal Mining Industry, for example NCDC, mechanical arrangements have been installed in all projects, for sizing the coal, and eliminating the rejects. Where necessary, samples are drawn and analyed to make sure that quality is maintained. The Railways have appointed Inspectors at the projects for supervising loading.

(B) Statistical Quality Control

11.9. In reply to the question whether public undertakings were following the "Statistical Quality Control" technique for regulating the quality of their products, the undermentioned public undertakings have stated that they are following that technique:—

1. Bharat Electronics Ltd.
2. Bharat Heavy Electricals Ltd.
3. Fertilizers and Chemicals Travancore Ltd.
4. Fertilizer Corporation of India Ltd.
5. Heavy Electricals (India) Ltd.
6. Hindustan Cables Ltd.
7. Hindustan Insecticides Ltd.
8. Hindustan Photo Films Mfg. Co. Ltd.
9. Hindustan Steel Ltd.
10. Indian Rare Earths Ltd.
11. Indian Telephone Industries Ltd.
12. Neyveli Lignite Corporation Ltd.

Replies received from undertakings indicate that Statistical Quality Control technique is useful in those Engineering industries where mass production of repetitive items is carried on and not in industries like (i) Machine Tools Industry where the manufacture is in small batches and 100 per cent inspection is carried out (ii) Petroleum industry where petroleum products are subjected to laboratory tests and (iii) Jobbing industry like Ship building, etc.

(C) In-plant Training in Quality Control

11.10. In their written reply furnished after the evidence, the Fertilizer Corporation of India Ltd. have stated that quality control was in the curriculla for plant supervisory and executive development. Operators were trained in process control. Heavy Electricals (I) Ltd. Indian Oil Corporation Ltd., Indian Telephone Industries organise in plant training in quality control. Heavy

Engineering Corporation Ltd. have stated that they do not have such training in their enterprise at present. National Coal Development Corporation do not have any specific programme for in plant training in quality control.

(D) Quality Control Manual

11.11. In their written replies furnished after the evidence, the Fertilizer Corporation of India Ltd. have stated that quality control standards had been established for all products. Heavy Electricals (I) Ltd. and Indian Telephone Industries have prepared a manual on quality control for the guidance of the inspection staff in their factory. Heavy Engineering Corporation do not have any manual on quality control. "Written instructions" for guidance of quality control are available in Hindustan Steel Ltd. Indian Oil Corporation Ltd. have stated that "full procedural and testing details" are available at the laboratory which control the quality of product. National Coal Development Corporation Ltd. have not prepared any manual on quality control but they have issued detailed instructions in this regard.

(E) Evaluation of Quality Control

11.12. Written replies furnished after the evidence indicate that the quality control work at Trombay Unit of the Fertilizer Corporation of India has been evaluated recently by a team of specialists from ISI. No such evaluation had been made in Heavy Electricals (I) Ltd. and Heavy Engineering Corporation Ltd. Hindustan Steel Ltd. carry out monthly evaluation at the plant level and quarterly performance reviews at the Headquarters. National Coal Development Corporation Ltd. reviewed the existing arrangements for quality control and it was found that there was need for paying more attention to quality control in collieries despatching raw coal to consumers.

11.13. During evidence, the Committee understood that in Japan, USA and UK, managements of industrial enterprises had organised in-plant training for employees, brought out Manuals on quality control and evolved schemes for evaluation of quality control measures. They enquired whether Government had made any such study of quality control arrangements in public sector enterprises in India. In reply, the representative of the Ministry of Industrial Development, Internal Trade and Company Affairs stated that they had not made any general study of that kind. He, however, added that they had told the undertakings under the control of their Mininstry that the quality of their products should be comparable to the best anywhere in the world. Practically in every case, there was a chosen foreign collaborator. The quality of their products could always be compared to the quality of the corresponding product made by the collaborator.

11.14. The representative of the Ministry Steel and Heavy Engineering stated that the nearest approach to a quality control manual would be the standards laid down by the Indian Standards Institute. In Steel Industry, the tests had to conform to ISI Standards. For exports, certain tests were carried out by foreign parties also.

11.15. The Committee are of the view that top managements of public sector enterprises must regard quality control as an overall management function. They feel that the success of quality control depends to a large extent on the direct interest taken by the managements.

11.16. The Committee regret to note that some of the public enterprises e.g. Heavy Engineering Corporation Ltd. and National Coal Development Corporation Ltd. do not organise in plant training in quality control for their staff. They are of the opinion that training in the field of quality control will give the staff in the quality control organisation an understanding of the theory and practice of the quality control techniques and procedures. They recommend that all undertakings should evolve in plant training in quality control.

11.17. The Committee are surprised to note that some of the public sector enterprises e.g. Heavy Engineering Corporation Ltd. had not prepared and Manual on Quality Control for the guidance of their staff. They are not sure whether they have any written instructions even. The Committee recommend that even undertakings which have issued detailed instructions on the subject of quality control from time to time should codify the same in the form of a Manual so that such instructions are available for study and reference at one place. Arrangements should also be made for inbuilt mechanism for periodical revision and review of the Quality Control Manuals.

(F) Consumers' Complaints

11.18. The Committee find that the Fertilizer Corporation of India Ltd. have not kept any record of the number of consumers' complaints received by them. They do not have any systematic procedure for registering the consumers' complaints and recording the action taken on each complaint. In their enterprise complaints are received and looked into by their Marketing Department. Heavy Engineering Corporation Ltd. have also not set up any specific machinery to look into consumers' complaints. They, however, either depute a full time liaison officer where the suppliers are made or send one of their senior officers to visit customrs to discuss complaints. Hindustan Machine Tools Ltd. have a Central Servicing Department which attends to complaints received from customers. In Indian Oil Corporation Ltd. consumers' complaints are attended to by their Marketing Division. In Hindustan Steel Ltd. complaints are dealt witht by respective Sales Managers. In National Coal

Development Corporation Ltd. complaints are investigated by the Technical Wing in their Sales Department. Where necessary, joint investigation with the consumer's representative is also arranged. They maintain a Complaints Register at the site.

11.19. In their reply furnished after the evidence, the Ministry of Steel and Heavy Engineering have stated that the Government fully agree that "the consumers' complaints should be paid attention". That Ministry have assured that importance of giving due weightage to the complaints of consumers would be impressed upon further on the undertakings. The Ministry of Industrial Development, Internal Trade and Company Affairs have stated that setting up a specific machinery "would set the pace for improvement in the Production Departments of the various undertakings." The public sector undertakings under their charge were being advised by them suitably in the matter. Bureau of Public Enterprises have expressed the view. "There is no doubt that manufacturing enterprises should have an adequate organisation and facilities for feed back on consumer reaction to the products and to take necessary corrective steps promptly and adequately for rectifying defects etc. not only of the products sold but of future production also."

11.20. **The Committee recommend that every public undertaking should introduce a systematic procedure for registration of consumers' complaints and recording of the action taken on each complaint. Such a system would not only enable the undertakings to know the exact number of complaints received in a year but also serve as an index of the success of the quality control measures adopted by an undertaking and show the trend of consumers reaction to various products. The Committee recommend that all manufacturing units in the public sector should establish an adequate organisation and facilities for feed back on consumers reaction to their products by conducting field surveys through independent and experienced organisations like the Management Institutes in order to find out reaction of consumers regarding their products and to take necessary corrective steps promptly and adequately for rectifying defects, etc., not only of the products sold but also of future production.**

XII

INDUSTRIAL ENGINEERING

(A) Role of Industrial Engineering

12.1. Industrial Engineering is a service function. As such it has no line responsibility other than that within its own organisation. It neither manufactures not sells but provides services to those who do so. The end result of the Industrial Engineering function is cost reduction. Since Industrial Engineering is an analysing, fact finding, simplifying, measuring and controlling function, there is no phase of business activity that cannot benefit from its use.

12.2. The broad functions of an Industrial Engineering Department are Methods study, time and Motion studies, work measurement, Manpower planning, Job Evaluation, application of programme Evaluation and Review Technique and critical Path Method application of Operations Research Methods, etc.

12.3. Majority of the Public Sector Undertakings including Bharat Heavy Electricals Ltd. Sindri, Nangal & Trombay Units of the Fertilizer Corporation of India, Hindustan Machine Tools Ltd., Hindustan Steel Ltd., Gauhati and Barauni Refineries of the I.O.C., Indian Telephone Industries Ltd., National Coal Development Corporation Ltd., Neyveli Lignite Corporation Ltd., etc. have set up separate Industrial Engineering Departments or cells to perform these functions. Such Departments or cells are also being set up in Earth Movers Division of the Bharat Earth Movers Ltd., National Mineral Development Corporation Ltd., and Tunga Bhadra Steel Products Ltd.

12.4. It is noticed that some of the public enterprises have entrusted industrial engineering functions to other Departments. For example, in Cochin Refineries Ltd. the functions of manpower planning, job evaluation and incentive schemes etc. are performed by the Personnel Department. In Heavy Electricals (India) Ltd., these functions are performed by their Main Productions Planning Division and Process and Rate Division. In Hindustan Shipyard Ltd. also these functions have been entrusted to the Production Control Department.

12.5. Asked whether it was a fact that Industrial Engineering Departments every where were facing difficulty in 'selling' their recommendations and overcoming resistance to change on the part of line Managers. In reply, the Fertilizer Corporation of India have

stated that this was a common phenomena not only in India but also abroad. They had however, overcome such difficulties by (i) discussion of the reports of the I.E. Department at a high level and (ii) inter-change of personnel between Industrial Engineering, Operations and Maintenance Departments. What the Hindustan Steel Ltd. have done to ensure acceptability of the recommendations of Industrial Engineering Department is to place the I.E. Departments in their plants under the charge of officers equivalent in rank to the Heads of mai nProduction Departments and they report directly to the General Suprintendent who is incharge of the entire works Department.

12.6. During the course of their special studies and examination of monthly reports and visits to the Plants, the Bureau of Public Enterprises had felt that Industrial engineering had not been given the importance it deserved. The Committee have been informed that the Bureau had not made any special study of the application of industrial engineering in Public Sector enterprises nor evaluated the performance of I.E. Departments in the public sector enterprises. From the replies received from the Ministry of Industrial Development, Internal Trade and Company Affairs and the Ministry of Steel and Heavy Engineering it appears that Government's view is that industrial engineering section is essential in any modern engineering undertaking it was not necessary to make any evaluation study of such a department on basic importance. The Government, however, expect the public sector enterprises themselves to undertake periodic review of the usefulness or otherwise of these departments/cells in improving their overall efficiency.

12.7. The Committee are of the view that Industrial Engineering functions like the Time and Motion Studies, Work Measurement, Manpower Planning, Job Evaluation, application of PERT etc. are vital to every modern industrial enterprise as these functions help in attainment of efficiency and economy. The Committee hope that all those major public sector enterprises that do not have an Industrial Engineering Department already in their enterprise should consider the advisability of setting up such a Department, if not already done.

12.8. The Committee recommend that all the public undertakings who have set up Industrial Engineering Departments or Cells should periodically evaluate the work of these Departments|Cells to see how far they have been instrumental in bringing about operational efficiency and economy in cost of production.

12.9. The Committee note that Industrial Engineering Departments sometimes face difficulties in selling their ideas and recommendations to the Production Staff. While the Fertilizer Corporation of India Ltd. had been able to overcome such difficluties by in-

ter-departmental transfers, the Hindustan Steel Ltd. had ensured acceptability of recommendations by heading their Industrial Engineering Departments by a person of status equal to the status of the person who heads the Production Department. The Committee feel that Industrial Engineering Departments should be headed by competent, well qualified and experienced persons preferably drawn from the Production Departments whose recommendations are expected to be more practical and are likely to inspire greater confidence.

(B) Safety Engineering

12.10. The Committee find that major public enterprises were taking steps for the development of safety Engineering by bringing out Manuals on safety, providing productive safety equipment to workers, forming Safety Committees, etc.

12.11. The following are some of the public sector enterprises who won National and/or International Award for their Safety efforts:—

(1) Nangal Unit of the Fertilizer Corporation Ltd.

(2) Foundry Forge Plant of the Heavy Engineering Corporation Ltd.

(3) Heavy Electricals (India) Ltd.

Won the 1967 National Safety Award of the Government of India for the lowest frequency of accidents in 1967 in the Electrical manufacturing Industry.

(4) Indian Oil Corporation Ltd.

Won the National Safety Award from the National Safety Council, Chicago for the years 1966 and 1967 and National Safety Awards from Government for longest accident free period for 1967-68.

(5) Durgapur Steel Plant won National Safety Awards during the years 1965, 1966 and 1967, Bhilai Steel Plant in 1967, the Alloy Steel Plant in 1966 and 1968 and the Fertilizer Plant in 1968.

12.12. The Committee note that undertakings in the public sector are becoming alive to their responsibility for the development of safety engineering and ensuring protection to the workmen against accidents from hazardous operation. They recommend that the safety measures should be reviewed from time to time; sustained educational drive to make workers safety conscious should be launched. Shop Safety Committees should be formed and the Management should keep strict watch over incidence of accidents and initiate timely remedial measures.

XIII

RESEARCH AND DEVELOPMENT

(A) Research and Development Organisation

13.1. One of the most important aid to development of economy in a country is research on technological developments. In these days of rapidly advancing technology, manufacturing success depends upon persistent research and development of better processes and products. The Committee understand that Japan, Germany, USSR, U.K. and U.S.A. divert at least 3 per cent of their national income to research as a deliberate policy where as the percentage of expenditure on research and development in Asian countries ranged between 0.1 to 0.5 per cent of their gross national product (GNP).

13.2. Some of the major public sector enterprises have set up Research and Development Departments in their enterprises. For example, Fertilizer and Chemicals Travancore Ltd. have a Research Division which started functioning in January, 1963. This Division has carried out basic technological studies and developed processes for manufacture of pure phospheric acid from wet process and acid and concentration of phospheric acid starting with wet process acid. The Division has developed new processes, products and by products also. Based on the process developed by the Research Department, a plant for the manufacture of cryolite is being erected. Till now most of the country's requirements of cryolite were imported.

13.3. When the Fertilizer Corporation of India Ltd. was formed in 1961 by the amalgamation of Sindri and Nangal Projects, a Planning and Development Division was formed with its Headquarters at Sindri. This Division has been so equipped that it can undertake the departmental planning, design, engineering, procurement and installation of two to three major plants a year. This is said to be the single biggest organisation for such purpose in India, if not the Far East.

13.4. Hindustan Steel Ltd. established a Research and Development Organisation in August, 1966. The Executive Council of this Organisation comprises of Chairman, HSL, the General Managers of the four plants, Chief Engineer, Central Engineering and Design Bureau. Managing Director, Bokaro Steel Plant. Directors of Central Fuel Research Institute and National Mettalurgical Laboratory. The Research and Scientific Adviser is the Secretary. The Objectives and functions of this Organisation include (i) collection of data and information on the latest developments in the field of

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applied science and technology and to serve as clearing house for dissemenation of new developments, (ii) carrying out experimentation and testing to supplement what is being done at Central Fuel Research Institute, National Metallurgical Laboratory etc. which can be done in a more realistic atmosphere than is possible in the laboratories, (iii) coordination of research work and in course of time undertaking of applied research work in Iron and Steel, basic aspects of import substitution and increased productivity with particular reference to cost reduction and (iv) development of ideas and their transmission to the units concerned on a uniform basis. Some of the problems which have already been taken in hand relate to improvements in the quality of raw materials, refractories and finished products, utilisation of waste products and import substitution.

13.5. The Central Engineering and Design Bureau of H.S.L. (C.E.D.B.) has compiled the report on technological improvements for increasing the productivity of the existing blast Furnaces. Each Steel Plant is equipped with modern Research and Control Laboratories. The essential role of these laboratories is to collect data, carry out physical and chemical tests and to give guidance.

13.6. Heavy Engineering Corporation do not have a separate research and development Department at present. They are of the view that the stage for setting up such a Department would be reached when their designers become capable of producing original designs. At the present moment HEC is manufacturing equipment of borrowed technology.

13.7. A common organisation called the Research and Development Organisation for the Electrical Industry (RDOEI) has been set up by the Government of India at Bhopal. While this organisation deal with long term research and development problems connected with electrical manufacturing industry, the day to day development work in various types of equipment to be manufactured is done at the Heavy Electricals (India) Ltd.

13.8. No research and Development activity is carried out by any machine tool undertaking at present. Hindustan Machine Tools Ltd., however, propose to take a lead in the matter by setting up a regular research and development centre at Bangalore serving the requirements of all the units of HMT in different fields of engineering.

13.9. Indian Oil Corporation Ltd. do not have any Research and Development Organisation in their enterprise. They are considering to set up such an organisation. Presently they entrust their problems on Research and Development to the Indian Institute of Petroleum.

13.10. Mining research and development work is being done mainly by two Central Institutes, namely, the Central Fuel Research Institute and Central Mining Research Station at Dhanbad. National Coal Development Corporation Ltd. do not have a Research and Development organisation of their own. They, however, feel that there are many applied research problems that affect large multi-unit enterprises like NCDC that cannot be looked after by the Central Institute, besides preparation of feasibility and project reports for new projects, pilot plant experiments in the use of new technology etc. They have admitted that it would be desirable to set up a Research and Development Organisation in NCDC.

13.11. The Committee find that developed countries (e.g. U.S. U.K., Japan, Germany) spend about 3 per cent of their national income on research and development which indicate the importance that is attached to research and development. Research and Development is an activity which is vital to the growth of modern industries. Research and Development organisation enables enterprises to explore newer and better products and processes. This is a continuing activity and can be carried on only if there is an organisation for it. The Committee have noted with regret that even major undertakings like Hindustan Machine Tools Ltd., Indian oil Corporation Ltd. and the National Coal Development Corporation Ltd. etc. had not set up any research and development organisation in their enterprises so far. The Committee recommend that these undertakings should consider the desirability of establishing such cells but while doing so, it should be ensured that as far as possible, there was only one research and development organisation for one group of industries in the public sector to obviate duplication of research efforts and increase in expenditure.

Research and Development Organisation should work in close coordination with the Council of Scientific and Industrial Research, other related laboratories and Research Organisations in the country and attend to basic aspects of import substitution and increased productivity with particular reference to cost reduction. Research creates a new basis for technology. It should be oriented to develop self-reliance in technology and foster a spirit of competition with the leading industrial countries of the world in the development of sound technological base for rapid industrial development.

(B) Technological Developments in Foreign Countries

13.12. In the field of Heavy Engineering industries, U.S.S.R. is known to have developed a system in their foundries where liquid sand is used for pouring purposes. Heavy Engineering Corporation Ltd. are making efforts to obtain this technique from U.S.S.R.

13.13. In the Heavy Electricals field, some significant technological developments are understood to have taken place abroad. For example, in the field of power transmission, Russians have come through with successful systems of high voltage d.c. transmissions. In U.S.A. use of sulphur hexafluoride for arch quenching in high voltage switchgear is becoming popular. Steam turbine technology has made striking progress. The present trend is to design units of very large ratings. USA was building up units of 8,35,000 H.P. The size of the turbine undertaken by the Heavy Electricals (I) Ltd. for supply to Dehar (Punjab) project was 2,30,000 hp. Pumped storage installations have recently come up in the USA, UK, Japan, etc. Nagarjuna Sagar Scheme (Andhra) and Kandla (Gujarat) lend themselves to this type of installations. Other spectacular developments have been liner motors for traction drives, MHD (Magnet-Hydro-Dynamic) power generations use of thyristor controls for smooth acceleration of the motors in a.c. Electrical Multiple Units, etc.

13.14. Japan ranks third among the steel manufacturing countries of the world, following the United States and the U.S.S.R. The Committee understand that Japan has been able to achieve this position by rapid improvement of production techniques and facilities. One of the methods used in Japan for boosting the productivity of the blast furnace was to increase the size of the blast furnace and raise productivity by such technical improvements as High Top Pressure, Higher Blast Temperature, Oxygen Enrichment, Fuel, oil injections, etc. In 8 out of 10 of world's biggest Blast Furnaces in operation in early 1968 were located in Japan. These towering furnances with an inner volume of over 2,000 cubic meters symbolise the skyward hopes of the Japanese Steel Industry. Japanese steel maunfacturers combine size with economic efficiency. Their average coke ratio, which denotes the consumption of coke per ton of pig iron, was brought down to as low a level as 500 KG. in 1967. Corresponding rations in other steel making countries were 600 to 700 KG. Consumption of coke in the Steel Plants of Hindustan Steel Ltd. per tonne of Hot Metal ranged between 839 to 962 KG.

13.15. In the steel making, L.D. converters are several times more productive than open Hearth Furnances. Japan is making wide spread use of L.D. Converters, converter steel occupies over two-thirds of their total production. Hindustan Steel Ltd. was the first in India to accept L.D. Steel making as the principal process at Rourkela as early as 1953-54, that is soon after it was developed in Austria.

13.16. Durgapur Steel Plant tried "Oil injection" process but were not happy with the result as the cost of oil was so high in the country that the available replacement ratio of oil to coke did not justify economic implementation of that process. Durgapur has

got an eloborate system of bedding and blending of ore which is one of the latest developments in foreign countries. All the new furnaces and some of the old ones of Hindustan Steel are provided with high Top pressure equipment. This is practised to large extent in Japan and Russia. Sinter Plants have been provided at all the three Steel Plants of H.S.L.

13.17. The Committee note that public undertakings e.g. Heavy Engineering Corporation, Heavy Electricals (India) Ltd. and Hindustan Steel Ltd. etc. are keeping themselves abreast of the latest technological developments in leading countries like USA, Russia, Japan etc. and are also taking steps to adopt improved techniques and processes in the achievement of accelerated production in steel and other important industries.

13.18. The Committee also recommend that Public Undertakings should take full advantage of foreign collaboration to learn intricacies of design and trends of design so that research could be intensified in promising and relevant fields having bearing on production. There is also need to intensify research where rejections are on the high side, e.g. wheels in Durgapur so that remedial measures are developed in time after intensive study.

XIV

MANAGEMENT DEVELOPMENT AND TRAINING

A. Training Institutes

During evidence, the Committee were informed that the Fertilizer Corporation of India Ltd. had set up training Institutes at six of their factories. The Institute at Sindri was started in 1948 and was the oldest. These Institutes had regular Supervisor Development and Executive Development Courses. Heavy Engineering Corporation Ltd. had an Executive Training Course for their junior executives but no course on Production Management. Hindustan Machine Tools Ltd. had referesher courses for their Managers. Hindustan Steel Ltd. had set up a Training Institute at each of their plants. These Institutes had arrangements for imparting training in production technology. Management Training Institutes at Ranchi helped the senior and middle management personnel to meet and examine problems of management. Production was one of the subjects dealt with in that institute. Indian oil Corporation Ltd. had arrangements of their own for training in production management. Indian Telephone Industries Ltd. had a Training Centre where persons were trained in Production management. In coal Industry, every mining engineer who was employed in the Coal Industry in a position of responsibility had to secure a IInd Class Mining Engineer's Certificate and thereafter a 1st Class Certificate.

14.2. Asked whether adequate facilities exist in India for management development and training in production management, the Director General of the Bureau of Public Enterprises (Ministry of Finance) stated that the National Institute of Training in Industrial Engineering (NITIE) had course on production engineering, production management and production planning and control. Indian Institute of Management, Ahmedabad too had a course on that subject. This was a fairly high level course for senior executives. Administrative Staff College of India, Hyderabad, had a two weeks' course in production management for middle level production managers. All India Management Association, Indian Institute of Management had a course on general management which included the subject of production management. During evidence, the representatives of all the eight important public undertakings confirmed that they were taking full advantage of the training facilities available at these Institutes. The representative of the Fertilizer Corporation of India expressed the view that adequate management training facilities exist in India. The representative of Hindustan Steel

Ltd. stated that training arrangements in their Training Institutes were adequate and that was why a country like Iran had sent 100 persons to receive training at their Institutes. Some more were likely to join.

14.3. Asked whether the courses of these Institutes met the peculiar requirements of the public sector enterprises, the representative of the Fertilizer Corporation of India stated, "Improvements are, however, required to review the curricula to suit the needs of our specific industry. We have been lately working in this direction to see if specialised courses could be developed to suit our needs, but conducted by the experts of the Management Institutes."

14.4. The Committee enquired whether there was any coordination in the functioning of these Institutions. In reply, the Director General,Bureau of Public Enterprises stated, "We are trying to do a certain amount of coordination. We are actually helping them to organise *ad-hoc* courses in different centres so that courses are brought much nearer to the public enterprises who can take greater advantage of them." He added that these Institutes were very co-operative.

14.5. The Committee note that most of the Undertakings have raised their own Training Centres and are also taking full advantage of the training facilities available at the management institutes. Barring fertiliser & steel, other Undertakings do not have adequate and improved training arrangement in Production Management to suit different levels of their employees. The Committee are cinvinced that training for Management Development and Production Management is vital to the personnel of any productive Undertaking. They recommend that

(i) All training institutes run by the Public Undertakings should evolve their own modern well-equipped training programmes suiting these specialised requirements; and

(ii) All Undertakings engaged in production should take advantage of the courses of the Management Institutes particularly for the senior level of their personnel provid- the courses conducted by them suit the needs of their respective industries.

The Committee are of the view that there is need for institutional training to the employes to equip them for higher posts.

B. Training in Multi-trades

In their post-evidence written replies, Fertilizer Corporation of India, Heavy Electricals (I) Ltd., Hindustan Steel Ltd. and the National Coal Development Corporation Ltd. have agreed with the view that job-combination by giving training in more than one trades

could help in development of multi-trade workmen and check over-staffing. Some of the Undertakings had even made efforts in this direction. For example, in the plants of Hindustan Steel Ltd., "Stockers" had been induced to operate small equipment like furnaces, mobile chargers, etc. They had even fixed new grades to compensate workers who were willing to share additional responsibility. National Coal Development Corporation Ltd. have adopted job-combination in their Sudamdih mechanised deep shaft mine which was being developed with Polish Collaboration and have made special arrangements for training in multi-trades.

14.7. Replies of these undertakings indicate that there were some limits beyond which they could not go in the matter of job-combination. First, trade unions in general were opposed to the idea of job combination. Secondly, job combination could not be attempted in trades where full time workers were required. Thirdly, job-combination had little scope in trades involving certain amount of specialisation and sophistication.

14.8. The Committee are of the view that training in multitrades and job-combination would be helpful in the development of multi-trade workmen in public sector enterprises and checking of over-staffing. They are happy to not that some of the major undertakings (e.g., H.I.I.L., H.S.L., N.C.D.C.) sharing the same view have started job combination in their respective units. The Committee recommend that every undertaking should explore the possible trades in which job-combination could be attempted. Initial hesitation of the trade unions to accept these measures could be overcome by explaining to them the advantages of the system which would accuse to workers.

C. Seminars/Conferences

14.9. In their post evidence replies, the Ministry of Steel and Heavy Engineering have stated "The Government agree that it will be a good idea to have seminar on Production Management. Even now executives at different levels are being deputed to attend seminars conducted by independent agencies like the Institute of Management at Calcutta." The Ministry of Industrial Development, Internal Trade Company Affairs have stated "Government agree with the suggestion and propose to advise the public enterprises suitably." The Ministry of Petroleum and Chemicals, Mines and Metals (Departments of Petrolem & Chemicals) also have agreed with this view and have added that "in the fertilizer industry, seminars on production and maintenance are held from time to time by the Fertilizer Association of India, etc." The Bureau of Public Enterprises have informed the Committee that Seminars on maintenance, material management etc. were being arranged and these would be followed by seminars on production management.

14.10. The Committee are of the view that Seminars/Conferences on Production Management could provide a good forum to Production Managers and Production Engineers to meet and discuss their common problems and to exchange their experiences with a view to evolve improved techniques of operational efficiency. Too many Seminars|Conferences may, however, lead to fruitless discussion of theoretical aspects of production problems rather than a face to face discussion to hammer out a practical approach. The Committee, therefore, recommend that public sector undertakings should introduce the system of "Workshop Discussion" at the level of the undertaking as well as the group of industries so that concrete results emerge out of such discussions. If felt necessary, undertakings may even arrange visits to more profitable enterprises so as to stimulate "action by example".

NEW DELHI;
April 22, 1970.
Vaisakha 2, 1892 (*Saka*).

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

APPENDIX I

List of Public Undertakings covered in the study of Production Management

1. Bharat Earth Movers Ltd.
2. Bharat Electronics Ltd.
3. Bharat Heavy Electricals Ltd.
4. Central Inland Water Transport Corpn. Ltd.
5. Cochin Refineries (I) Ltd.
6. Fertilisers & Chemicals, Travancore Ltd.
7. Fertiliser Corporation of India Ltd.
8. Garden Reach Workshop Ltd.
9. Heavy Electricals (I) Ltd.
10. Heavy Engineering Corpn. Ltd.
11. Hindustan Antibiotics Ltd.
12. Hindustan Cables Ltd.
13. Hindustan Housing Factory Ltd.
14. Hindustan Insecticides Ltd.
15. Hindustan Machine Tools Ltd.
16. Hindustan Photo Films Ltd.
17. Hindustan Salts Ltd.
18. Hindustan Shipyard Ltd.
19. Hindustan Steel Ltd.
20. Hindustan Teleprinters Ltd.
21. Hindustan Zinc Ltd.
22. Indian Drugs & Pharm. Ltd.
23. Indian Oil Corporation Ltd.
24. Indian Rare Earths Ltd.
25. Indian Telephone Industries Ltd.
26. Manganese Ore (I) Ltd.
27. Mazagon Dock Ltd.
28. Mining & Allied Machinery Corporation Ltd.
29. Modern Bakeries (I) Ltd.
30. National Buildings Const. Ltd.
31. National Coal Development Corpn. Ltd.

32. National Instruments Ltd.
33. National Mineral Development Corpn. Ltd.
34. National Newsprint & Papers Mills Ltd.
35. Neyveli Lignite Corpn. Ltd.
36. Praga Tools Ltd.
37. Rehab. Indus. Corpn. Ltd.
38. Tungabhadra Steel Products Ltd.

STATEMENT SHOWING UTILISATION OF PRODUCTION CAPACITIES DURING 1968-69

Name of the Undertaking (Subject)—	Installed capacity	Capacity Utilised (1968-69)	Percentage of utilised capacity to installed capacity	Remarks
1	2	3	4	5
1. *Hindustan Steel Ltd.*: (ingots/tonnes)				
(i) Bhilai (m. tonnes)	2·5	1·73	68	
(ii) Rourkel („)	1·8	1·16	67	
(iii) Durgapur („)	1·6	0·82	50	
2. *Alloy Steel.*:				
(ingot tonnes)	1,00,000	40,000	40	
3. *Heavy Engineering Corporation Ltd., Ranchi*:				
(i) Heavy Machine Building Plant:				
(a) Mechanical (tones)	80,000	8,576	11	
(b) Structurals (tonnes)	25,000	5,542	22	
(ii) Foundry Forge Project: (tonnes)	1,22,000	16,640	13	
(iii) Heavy Machine Tools Plant: (tonnes)	10,000	220	2·2	
4. *Mining* and *Allied Machinery Corporation Ltd., Durgapur*: (tonnes)	45,000	4,098	9	

5. *Heavy Electricals (I) Ltd., Bhopal*:				
(a) Switchgear (Nos.)	2,400	1,405	50	
(b) Transformers (MVA)	3,000	1,534	50	
(c) Capacitors (KVAR)	1,08,000	1,01,113	94	
(d) Tractor Motors (Nos.)	2,000	653	33	
(e) Water Turbines and Generators (MW)	500			
(f) Steam Turbines and Generators (MW)	60			
6. *Bharat Heavy Electricals Ltd.*				
(i) Heavy Power Equipment Plant, Hyderabad (MW)*	900	180	20	*Full Capacity likely to be developed in 1971-72.
Switchgear Unit:				
(a) Air Blast Circuit Breakers (Nos.)	240	65	27	
(b) Minimum Oil Circuit Breakers (Nos.)	930	59	6	
(ii) Heavy Electricals Equipment Plant, Hardwar:				
(a) Thermal sets (Nos.)	1,500	No production of steam turbines. Only electric motors produced in 1968-69.	..	50 per cent capacity expected to be developed in 1972-73.
(b) Hydro Sets (Nos).	1,200	,,		
(c) Motors (Nos.)	1,200	178		
(iii) High Pressure Boiler Plant, Tiruchi :				
(tonnes)	29,849	14,940	50	Full capacity expected to be developed in 1971-72.
7. *Hindustan Machine Tools Ltd.* :				
(i) HMT-I&II (Nos.)	(2000)	(969)	(49)	
Value (Rs. crores)	10	5·09	50·9%	

1	2	3	4	5
(ii) HMT III (Nos)	(1000)	(452)	(45)	
(Value Rs. crores)	5	2·58	51·6%	
(iii) HMT IV (Nos.)	(1000)	(322)	(32·2)	
Value (Rs. crores)	5	1·79	35·8%	
(iv) HMT V (Nos.)	(1000)	(82)	(8·2)	
Value (Rs. crores)	5	1·53	30·6%	
(v) HMT Watch Factory (Nos.)	3,60,000	3,00,000	83	
8. *Fertilizer Corporation of India Ltd.* :				
(i) Trombay:				
(a) Methanol (tonnes)	30,000	15,100	50	
(b) Complex Fertilizer (tonnes) (20:20)	1,80,000	1,08,400	60	
(c) Urea (tonnes)	99,000	63,500	69	
(ii) Nangal :				
(a) ACN (tonnes)	3,18,160	3,09,200	98	
(b) Heavy Water (Kgs.)	14,110	14,280	101	
(iii) Sindri :				
(a) Ammonium Sulphate (tonnes)	3,55,000	2,65,800	75	
(b) Urea (tonnes)	23,500	15,540	66	
(c) Double Salt (tonnes)	1,21,900	49,200	40	
9. *Fertilizer and Chemicals, Travancore Ltd.* :				
(a) Ammonium Sulphate (tonnes)	1,90,500	1,19,719	63	

(b) Superphosphate (tonnes)	47,625	28,338	60	
(c) Ammonium Phosphate (tonnes)	1,27,000	64,846	51	
10. *Indian Drugs and Pharmaceuticals Ltd.*:				
(i) Surgical Instruments Plants:				
(a) Surgical Instruments	24,00,000			
or	or			
Family Planning Instruments (Nos.)	3,96,000	1,82,572		
ii) Synthetic Drugs Plant:				
(a) Tablets ('000 Nos)	5,70,252	2,72,261	48	
(b) Bulk Drugs (tonnes)	1,073	466	43	
(iii) Antibiotics Plant :				
(a) Pencillin (Mlrds.)	64,630	4,224	6	Full capacity expected to be developed in 1970-71.
(b) Streptomycin (kgs.)	52,497	5,095	9	
11. *National Coal Development Corporation Ltd.*:				
Coal (m. tonnes)	16·3	12·6	77	
12. *National Mineral Development Corporation Ltd.*:				
(i) Kiriburu Iron Ore Project. (m. tonnes)	2	2	100	
(ii) Bailadila Iron Ore Project. (m. tonnes)	2	2·15	101	

(1)	(2)	(3)	(4)	(5)
13. *Neyveli Lignite Corpn. Ltd.* :				
(a) Lignite—(Ultimate capacity (m. tonnes) . . .	6·00	3 997	67	*Mines* : The Actual Capacity of Mine in 1968-69 was 4-5 million tonnes 6 million capacity will be achieved only when additional mining equipment now ordered, is put in position.
(b) Power—(Ultimate capacity (m. tonnes) (MW)	600 MW or 3239 MKW /Hr.	1242 MKW /Hrs.	38	*Power*: The capacity of the power in 1968-69 was only 400 M.W Erection of the 8th and 9th units (of 100 M.W. each) was complete only in 1969-70.
(c) Urea—Ultimate Capacity (tonnes)	1,52,000	90,181	60	
(d) Leco—Ultimate Capacity (tonnes)	3,36,000	1,30,730	39	
14. *Indian Oil Corporation Ltd.*				
(Crude Throughput charged)				
(i) Gauhati (tonnes)	8,00,000	8,20,666	100	
(ii) Barauni (tonnes)	30,00,000	17,67,129	59	
(iii) Gujarat (tonnes)	30,00,000	29,58,032	98	

*Capacity utilisation of machine tools units of HMT both at licensed capacity level and the calculated "practical available capactiy" level unit-wise wise was as under :—

Unit	Actual production during 1968-69		Licensed capacity in terms of value	percentage to the licensed capacity during 1968-69	Practical available capacity in 1968-69 (Value Rs. crores)	Utilisation as percentage to practical available capacity durin 1968-69
	Nos.	Value Rs. crores				
HMT I&III	969	5·09	10 crores	50·9	6·8	74·8
III	452	2·58	50 crores	51·6	2·9	88·8
IV	322	1·79	5 crores	36·0	2·9	61·7
V	82	1·35	5 crores.	30·0	2·4	63·7

Some of the figures in this statement as received from the Bureau of Public Enterprises have been revised in the light of comments received from various Public Undertakings at the time of factual verification of this Report.

APPENDIX III

Statement showing estimates national loss in value of production during 1968-69 on account of underutilisation of capacities in various public undertakings under the administrative control of the Ministry of Petroleum and Chemicals and Mines and Metals

Serial No.	Name of the Public Undertakings	Notional Loss (Rs. Lakhs)
		Rs.
1	Hindustan Zinc Ltd.	235·00
2	National Mineral Development Corp.	12·00
3	Fertilizer Corporation of India Ltd.	..
	(A) Sindri Unit	418·99
	(B) Trombay Unit	718·68
4	Barauni Refinery of the I.O.C.	126·00
5	Indian Drugs & Pharmaceuticals Ltd.	..
	(A) Antibiotics Plant	72·41
	(B) Synthetic Drugs Plant	90·52
	(C) Surgical Instruments Plant	63·54
6	Hindustan Antibiotics Ltd.	31·00
7	Fertilizers & Chemicals Travancore Ltd.	618·48
	TOTAL	Rs. 2386.62

*At the time of factual verification of the Report, F.C.I. have intimated that briefly the Sindri's figure works out to Rs. 1,000/- per N2 tonnes as value of production loss.

APPENDIX IV

Statement showing the targetted and actual production during the last three years (1965-66, 1966-67 and 1967-68) *in various public undertakings*

Name of Public Undertaking	Unit	1965-66 Target	1965-66 Actual	% Excess (+) shortfall —	1966-67 Target	1966-67 Actual	% Excess (+) Shortfall(-)	1967-68 Target	1967-68 Actual	% Excess (+) Shortfall (-)	Brief Reasons of shortfall
1	2	3	4	5	6	7	8	9	10	11	12
(1) *Bharat Earth Movers Ltd. A.E.M. Divn.*	Nos.			..		..	..	38	42	(+)19.52	No targets were fixed for 1965-66 and 1966-67. since the Project was not released for execution.
(i) 'C' Touwrnapull	..										
(ii) 'C' Tournapull Rear-dump	,,							16	16	Nil.	
(iii) D 80 Crawler Tractors	,,	..			..			82	73	(—)10-8	Shortfall in the case of D80-Crawler Tractors was due to delayed receipt of CKD components from Japan.
(iv) D120 Crawler Tractors	,,			..				9	11	(+) 22·22	
								145	142	(-) 2	

1	2	3	4	5	6	7	8	9	10	11	12
(B) R. C. Division											
(i) Coaches .	Nos.	270 (3 types	276 (4 types	(+) 2·22	270 (3 types	270 (3 types	Nil	270 (3 types	255 (3 types	(—) 5·6	Strike by workers during March 1968.
(2) *Bharat Electronics Ltd.*.	Rs. in lakhs										Shortfall in production of Equipment in 1966-67 was due to Lock out for a prolonged period, products problems connected with the increased tempo of indigenousation of products entailing major re-engining effort.
(i) Wireless/Electronic equipment, etc. . . .		660	657·06	—0·45	1017·03	824·10	-18·9	1059·54	1079·43	+1·8	
(ii) Electronic components comprising of valves, transistors, Diodes, Dystyls, capacitators .	,,	207	269·68	+30·0	300·00	369·93	+23·33	492·52	504·44	+2·1	
	Rs. in Lakhs	867	926·74	+6·8	1317·03	1194·03	—9·34	1552·06	1583·83	(+)2·1	
(3) *Bharat Heavy Electricals Ltd.*											
(A) High Pressure Boiler Plant (Tiruchi)											*Tiruchi* Shortfall in the case of valves in 1966-67 was difficulty in getting from indigenous suppliers good quality of castings.
(i) Boiles ,	Tonnes	..		3130	3230	+3·0	10500	11083	+4·75		
(ii) Valves . . .	,,		..	366	190	—47·0	300	316	+5·3		
				3496	3420	+2·17	10800	11399	+5·5		
(iii) Jobbing .	Rs. in Lakhs			335	37	+5·7	9	31	+244·0		

(B) Heavy Power Equipment Plant (Hyderabad)									
(iv) Turbo set . .	MW	..	..	1(12MW)1(12MW)	Nil.	2(55/60 (MW)	2(55/60 (MW)	No Short-fall	*Hyderabad* Shortfall in despatches mainly attributable to some of the suppliers like HEC, HSL & Certain other firms in not adhering to delivery of casting & forgings committed dates.
(C) Heavy Electrical Equipment Plant (Hardwar)									
(v) Electrical Machines .	Nos.	..	..	..	..	227	46	—80·0	*Hardwar* Delay in receipt of components from Collaborators.
(D) Switchgear Unit (Hyderabad)									
(vi) Air Blast circuit Breakers	Nos.		..			83	93	+12·0	
4. *Cochin Refineries Ltd.*									
(i) MS 79 ON	MT					153,845	204,597		Full production started from 1967-68 only.
(ii) MS 95 ON	,,					123,076	16,469		
(iii) Naphtha	,,					30,769	121,302		
(iv) Superior Kerosene Oil	MT					553,842	609,497		
(v) High Speed Diesel	,,					504,612	488,437		
(vi) Light Diesel Oil	,,					49,082	43,699		

1	2	3	4	5	6	7	8	9	10	11	12
(vii) Asphalt(100 and 40Pen)	,,							83,524	78,731		
(viii) Furnace Oil	,,							736,977	133,470		
(ix) Intermediates	,,							..	2,884		
(x) Plant Fuel & Loss	,,							122,635	132,484		
								2,358,362	2,631,570	(+)11·58	
(5) *Fertilizer & Chemicals Travancore Ltd.*											Shortages are wrt 1965-66 original targets,
(i) Amm. Sulphate	M.T	132,000	32,404	-76	150,000	74,943	-50	150,000	77,699	-49	(a) Seasonal Power cut from Nov. 65 leading to total close down in Feb. 66.
(ii) Amm. Phosphate	,,	75,000	12,328	-83	75,000	49,600	-34	90,000	53,881	-40	
(iii) Amm. Chloride	,,	12,000	4,042	-66	15,000	3,210	-80	12,000	5,602	-53	(b) Go slow, strike etc. for 3 months.
(iv) Superphosphate	,,	47,000	44,401	-6	44,000	50,675	+15·17	44,000	42,196	-4	(c) Power interruptions upsetting plants, increasing down time.
(v) NPK Mixtures	,,	75,000	55,048	-27	75,000	79,941	+6·58	85,000	111,580	+35	
		341,000	148,223	-56·53	359,000	258,369	-28·08	381,000	294,958	-22·5	1966-67 (a) Seasonal Power cuts continued up to June, 66. (b) Power interruption (129 days in the year)

											(e) Shortage of raw material. 1967-68 (a) Raw Material shortage. (b) Unsteady power supply .
(6) *Fertilizer Corp. of India*	tonnes										Main reasons for shortfall were (i) non availability of proper quality of raw material.
(A) Sindri											
(i) Amm. Sulphate	,,	320,000	326,757	+2·1	325·000	314,002	-3·4	320,000	241,300	-24,6	
(ii) Double Salt	,,	55,000	55,255	+0·5	60,000	60,081	+0·03	65,000	61,384	-5·6	(ii) difficuolties in obtaining sufficient quantity of raw material
(iii) Urea	,,	18,000	19,025	+5.7	19,000	18,529	-2.5	19,000	16,164	-14.9	
		393,000	401,037	+2·04	404,000	392,549	-2·8	404,000	318,848	-21·07	(iii) shortfall in production of coke oven gas.
(B) Nangal											
(i) Calcium Amm. Nitrate	Tonnes	336,000	337,952	+·58	350,000	350,499	+·14	366,000* +75,000 (25%N2)	336,508 +77,665 (25%N2)	+4	In 1965-66 and 1966, orgin l targets had to be sealed down due to power cutimpose by the Punjab State Electricity Board Revised targets were achieved.
(ii) Heavy Water	,,	8,907	8,912·1	+·05 +0·58	9,200	9,426·3	+2·45 +2·59	10,000	10,326·02	+3 +3	
					(* This is both 20·5% and 25% totalled)						
(7) *Garden Reach Workshop Ltd.*											
(i) Road Rollers	Nos.				86	53	—38·3	103	..	—100·0	Quantities Indicated refer to planned and actual dispatches Main reason for shortfall in Production of Road Rollers, Air compressors cranes,
(ii) Air compressrs	,,				100	4	—96·0	100	20	—80·0	
(iii) Pumps	,,				500	224	—55·2	1000	570	—43·0	
(iv) Cranes	,,				17	18	+5·8	17	20	+18·00	
(v) Haulages	,,				26	21	—19·0	39	20	—48·0	
					729	320	—56·1	1259	630	—49·9	

1	2	3	4	5	6	7	8	9	10	11	12
(vi) Ship building .	Tons	..	..	..	1858	1579	—15·0	1858	2236	—20·3	Haulages etc. was recession in the engineering industry.
(vii) Ship repairing .	,,	..	..	..	579	453	—21·0	579	637	—10·0	
(viii) General Engineering .	,,	..	..	..	472	944	—100·0	1920	318	—83	
					2909	2976	—2·3	43·57	3191	26·7	
8. *Heavy Electrical* (I) *Ltd.*											
(i) Switchgear . . .	Nos.	2281	1989	—12·8	2180	1986	—8·8	2318	1554	—32·9	Main reasons for Shortfall in production in 1967-68 were (i) Lack of development of skill (2) Lack of orders and (3) Lack of Materials, etc.
(ii) Consol gears .	,,	300	273	—9·01	313	298	—4·7	399	262	—34·3	
(iii) Transformers (Power) .	MVA	1790·94	1241·3	—30·6	1800	1333·85	—25·9	1800	1300	—27·0	
(iv) Transformers . . .	Nos.	128	216	—68·7	235	276	+17·4	393	369	—6·1	
(v) Capacitators . . .	KVA	63000	80000	—27	100000	85001	—15	100000	94007	—6·0	
(vi) Traction Motors .	Nos.	247	93	—62·3	369	332	—10	655	502	—23·3	
(vii) Industrial Motors .	,,	107	85	—20·5	162	90	—43·7	200	124	—38·0	
(viii) Steam Turbine .	MW/No	30/1	..		30/1 Part-shipment			30/1 Part shipment			
(ix) Water Turbine .	,,	63/3 Part shipment		81/3	33/1			81/3	—		
(x) Heavy Rotating Plant (Water Turbine Generator)	MW	48/2	,,		..	..	30/2	,,			
Large Elect. Motors .	HP/Nos.	..	..		7200/5	2000/1		19600/12		17600/11	
Steam Turbine . .	MW/N	..	.		30/1	..		60/2		30/1	

9. *Heavy Engineering Corp. Ltd.*											*F.F. Project*
(*i*) Foundry Forge Project .	Tonnes	2686·0	2466·0	—8·19	9935	4983	—49·84	15805	9000·13	—13·04	(*a*) Mou lding areas & Equipment could not be made available in time.
(*ii*) Heavy Machine Building Plant . . .	,,	9451·5	10980·2	+16·12	19519·0	14307·4	—26·69	12605·2	14611	..	
		12137·5	13446·2	+10·7	29454	19290·4	—34·5	28410·2	23611	1·3	
(*iii*) Heavy Machine Tools Ltd.	Nos.	..	..	..	12	7	—41·69	20	15	—25·0	(*b*) Law labour efficiency. (*c*) Trg. & Oreienta-tion. (*d*) Major Tool down strike from 6 to 12 June, 67. (*e*) Communal dis-turbances for 7 days from 25th to 31-8-67 etc. *H.M.T. Plant*: (*a*) Lack of skilled Labour. (*b*) Short supplies and anomalies in the delivery of im-ported equipment.
10. *Hindustan Antibiotics Ltd.*											
(*i*) Pencillin Bulk in .	MMU	65·11	61·04	—6·0	72·29	69·78	—4·8	59·11	53·17	10·00	*HMP Plant* :
(*ii*) Streptomycine Sulphate .	Kg.	66,768	66,870	+·15	68,425	64,721	—6·0	66,027	71,699	+8·7	Delays in receipt of documentation from customers, raw materials, im-ported Roll etc. Reasons for short-fall were:
(*iii*) Sub-Division (vialling) .	Lakhs	502	502		523	513	—1·8	586	558	—5·0	

1	2	3	4	5	6	7	8	9	10	11	12
											(*a*) Machinery breakdown. (*b*) temporary shortage of raw materials and (*c*) shortage in Power Supply.
11. *Hindustan Cables Ltd.*											
(*i*) Dry core .	. KM.	3400	3572	—5	3000	3365	+12·16	3750	3587	—4·3	Two nos. of Lead Presses were under substantial breakdown.
(*ii*) Coaxial cables .	„										
(*a*) 2-core large tube .	„	875	835	—4·1	678	563	+17	750	840	+12	
(*b*) 2-core small tube .	„	200	224	+12	210	301	+43·3	250	121	—51·6	
(*c*) 4-core large tube	„				25	24	—4	80	98	+22·5	
(*d*) 4-core small tube .	„	..	..	..					1		
(*iii*) Plastic cables & Wires .	„	3403	4181	+22·08	..						
		7878	8816	+11·9	3913	4253	+8·6	4830	4646	—3·8	
CKM .		..	18397		25000	26187	+4·7	25000	27888	+11·5	
12. *Hindustan Housing Factory Ltd.* .	Rs. in Lakhs ..										Lack of Orders.
Prestressed Cement Concrete	„	85·00	86·61	+1·8	90·00	82·85	—7·9	92·00	112·74	—22·5	

Reinforced Cmment Concrete & L.P.C. . . .	,,	26·65	25·34	—4·8	24·00	19·99	—16·7	30·00	7·48	—75
Vayutan . . .	,,	10·00	9·96	—·4	10·00	4·97	—50·3	10·00	3·27	—67·3
Wood-works & Seasoning Kiln	,,	12·30	12·11	—1·5	12·50	8·46	—32·3	12·00	16·55	+ 37·9
Site .	,,	18·00	17·98	—·11	40·50	26·88	+31·1	36·00	39·97	+11
TOTAL .		151·95	152·00	—0·3	177·00	143·15	—19·1	180·00	180·01	180·01	Nil

13, *Hindustan Insecticides Ltd.*

A. *Delhi Unit* . .	Tonnes								Production of chipped DDT was 183. 150,122·5 and 147·60 tonnes in 1965-66, 1966-67 and 1967-68 respectively. No targets were fixed for this item.
(i) Tech. DDT' .	,,	1344	1513·18	1344	1559·74		1344	1495·52	
(ii) 50% Form DDT .	,,	2688	2644	2688	2744·5		2688	2423·5	
B, *Alwaye Unit* :									
(i) Tech. DDT .	,,	1344	1170	1242	1536·8		1448	1606·1	Shortfall of 12·95% at Alwaye Factory in 1965-66 was to heavy restriction in power supply from Hydel Station in summer
(ii) 50% form DDT (Not sold as such)	,,	2088	1024·91	1566	1037·0		1616	1843·5	
(iii) Ground Tech. DDT	,,	300	616	459	926·18		680	715·43	
		7764	6968·09	7299	7834·22		7816	8083·96	
			—10·2		+7·3			+3·4	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
14. *Hindustan Machine Tools Ltd. Bangalore.*											
	(Nos.)	3129	2048—34	3235 +Rs. 180 lakhs		2665—18		2178	1809—12		Continuing recession in Machine tool industry.
(Value) Rs. in lakhs) ·	1604	1134·5	—29	1669	1224—27			1212		845—32	
15. *Hindustan Photo Films Mfg. Co. Ltd.*											
(*i*) Cine Film positive .	M. Sq.			1·23		0·16	—86·9	0·91	0·79	—12·20	Production was started in Dec. 1966.
											Cine Film : Decline in demand.
(*ii*) Medical X-Ray .	,, ..			0·01			—100	0·17	0·11	—33·14	*Medical X-Ray* : Production was by conversion of imported coated rolls.
(*iii*) Bromide Paper .	,,							0·20	0·0007	—99·61	*Bromide Paper* : Trials were conduted to improve quality.
				1·24		0·16	—87	1·28	0·90	—29	
16. *Hindustan Salts Ltd.*											
(i) Kharaghoda Salts M. T. Works		137000	144508		75000	84000		50000 to 70000	69706		Shortfall at Mandi was due to natural causes and unexpected mining hazards.
(ii) Mandi Salt Works M.T.	..	5700	4207	..	4100	3605	..	3230	3157	..	
		142700	148715	+4·1	79100	87605	+9·7	73230	72863	—·5	
17. *Hindustan Shipyard Ltd.*	Rs. in lakhs										
(i) Ship Construction (Original Budgetted) . .		486·59	524·90	+7·87	552·82	466·40	—15·63	792·03	661·94	—16·42	In case of shipyard the unit of Proceduction is a ship and it takes about 24 months to build. As such it is
(ii) Ship Repairs . .		1·37	2·86	+108·7	1·40	7·71	+150·7	10·00	4·77	—52·3	
		487·96	527·76	+48·15	554·22	474·11	—14·4	802·03	666·71	—16·8	

not possible to budget the Qty. of Production in terms of Unit.

8. *Hindustan Steel Ltd.*

I. BHILAI

	Thousand									*Bhilai S.P.*
(i) Hot Metal (P. Iron)	Tonnes	1690	1632	—3·6	2106	2052	—2·6	2230	8080	—6·7	1965-66 : Slump in
(ii) Steel Ingots	,,	1387	1371	—1·2	1954	1852	—5·2	1800	1785	—·08	Pig Iron market,
(iii) Pig Iron for Sale	,,	516	509	—1·4	486	549	+12·9	630	656	+4·1	Gas imbalance, De-
(iv) Saleable Steel	,,	1004	1029	+2·4	1433	1328	—7·3	1301	1252	—3·8	lays in commission-
		4597	4541	+1·2	5979	5781	—3·3	5961	5773	—3·1	ing, interruption in course of expansion activities
II. ROURKELA											1966-67 : Slump in Steel market, Repair to Blast furnaces IV & V and go slow tactics by loco crew.
(i) Hot Metal (P. Iron)	,,	1000	1054	+5·4	966	934	—3·3	1073	936	—12·8	
(ii) Steel Ingots	,,	1000	1065	+6·5	953	943	—1·0	1000	924	—7·6	
(iii) Pig Iron for sale	,,	96	68	—29·8	72	57	—20·8	116	64	—44·8	
(iv) Saleable Steel	,,	727	782	+7·5	681	688	0·29	712	640	—10·1	
		2823	2969	+5·1	2672	2620	—1·9	2901	2564	—11·6	
III. DURGAPUR											*Durgapur S.P.*
(i) Hot Metal	,,	1230	1280	+4	953	897	—5·9	1077	954	—1·0	1965-66: Go slow
(ii) Steel Ingots	,,	1020	1001	+1·9	802	754	—6·0	755	738	—2·3	movement hartal on
(iii) Pig Iron for sale	,,	272	331	+21·6	210	201	—4·3	384	278	—16·8	10.3.65 Mech. trouble
(iv) Saleable Steel	,,	806	684	—15·1	620	550	—11·3	600	527	—12·2	in coke ovens frequent
		3328	3296	—96	2585	2402	—7·07	2816	2502	—11·15	failure DVC power supplies Non-availabilities of axle boxes from outside sources.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
19. *Hindustan Teleprinters Ltd.*	Unit Tele-printers	2700	2502	—7·3	3000	2700	—10·0	3500	3504	Nil	1965-66: Continuous Power cut of 20 %. 1966-67 : Strike for 5 week from 3-10-66 to 8-11-66.
20. *Hindustan Zinc Ltd.*											
(i) Sawar Mines .	M.T.		13966			14790			14928		Targets of Production not indicated in the reply received. Reply indicates there was no short-fall in Production. Information re : Zinc Smelter not received.
(ii) Tundo Lead Smelter .	M.T.		2515			2515			2366		
			16261			17305			17294		
21. *Indian Oil Corporation Ltd.*											1965-66 & 1966-67 *Barauni* :
(i) Gauhati Refinery . .	M.T.	726870	720758	—·08	681547	652084	—4·3	695426	739739	+6·3	Operational troubles expericened in taking Unit in 1965-66 and Non-commissioning of lube oil complex, problems connected with Bitumen Unit etc. *Gujarat* Teething troubles in 1965-66. Poor uplitment of LSHS.
(ii) Barauni Refinery . .	"	636321	627745	—1·4	1353810	976053	—27·9	1442862	1461916	+1·3	
(iii) Gujarat Refinery . .	"	..	369022	..	1366530	1286617	—5·8	1650900	1730113	..	
			717525	..	3401887	2914754	—14·3	3789188	3931768	..	
22. *Indian Rare Earths Ltd.*											
(i) R.E. Chloride . .	Tonnes	3530	3281	—7·1	3199	3204	+·1	3750	4050	+8·9	Power cut imposed by

(ii) Trisodium phosphate .	"	4350	3917	—10·0	3856	3780	—2·0	4445	4886	9·9	the Kerala State Electricity Board in 1965-66.
		7880	7190	—8·6	7055	6984	—1	8195	8936	+9	
23. *India Telephone Industries Ltd.*	Rs. in lakhs			No Short-fall							Reasons of shortfall were (i) Difficulties in availability of critical materials (ii) chagning Product Mix (iii) Heavy loads in common points of manufacture (iv) Changes in delivery periods by customers (v) Changes in specification involving reengineering of exchange and/or transmission system.
(i) MAX I, II & III .	"	575·00	574·39		584·00	521·27	—10·79	674·00	705·21	+4·63	
(ii) Telephones . . .	"	180·00	138·51	—22·78	197·00	204·87	+4·06	287·00	190·22	—33·80	
(iii) Commercial Condensers spares . . .	"	151·00	129·71	—13·91	167·00	123·32	—26·35	183·00	210·40	+14·75	
(iv) Transmission . .	"	301·00	317·87	+5·67	398·00	329·81	—17·09	393·00	352·27	—12·69	
(v) Measuring & Testing Instruments . . .	"	50·00	35·63	—28·00	55·00	51·06	—7·27	60·00	45·00	—25·00	
(vi) Crossbar . . .	"	40·00	24·41	—51·02	259·00	346·12	+33·57	572·00	494·00	—13·64	
		1306·00	1220·52	—6·55	1660·00	1576·45	—5·63	2169·00	1996·90	—7·93	
24. *Mazgon Dock Ltd.*											
(i) Ship repairs . . .	"				315·00	311·17	1·2	348·32	358·94	+9·0	(i) Fall in demand for ship repair (ii) Non-receipt of imported Machinery & Equipment for shipbuilding.
(ii) Ship building . .	"				158·41	157·17	0·4	290·42	281·03	—3·2	
(iii) General Engineering .	"				32·33	32·33	Nil	48·25	52·87	+8·3	
					505·74	501·27	—·88	686·99	692·84	+·85	
2 . *Mining & Allied Machinery*											*Reasons of short-fall*
(1) Belt Conveyors .	Tonnes	1880	1344·7	28·5	4192	1311·0	69·0	8442	2601·6	69·0	(i) Lack of demand of

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(2) Coal cutters & loaders	"	19	..	100·0	156	..	100·0	551	101·0	81·4	adequate standard of
(3) Haulages & Winder	"	63	..	100·0	252	..	100·0	826	37·1	95·5	mining machinery
(4) Mine Pumps	"	488	181·5	62·5	520	105·4	79·5	747	164·2	78·0	for which the plant
(5) Ventilation Fan	"	27	2·2	92·0	84	12·5	85·0	394	13·6	97·5	was designed.
(6) Mine Locomotives	"	..	..	..	24	..	100·0	174	..	100·0	(iii) Longer produc-
(7) Roof Supports & Non-Std. Equipments	"	100	0·2	99·8	230	..	100·0	380	255·2	32·8	tion time cycle due to diversification in
(8) Spare Parts	"	..	..	..	652	..	100·0	1326	..	100·0	products.
(9) Coal Beneficiation	"	645	101·6	84·2	..	316·1	..	..	317·0	..	(iii) Imbalanced load-
(10) Miscellaneous Equipments	"	1778	2358·7	..	3890	2791·4	28·2	4770	1586·4	66·8	ing of shops
		5000	3988·9	—202	10000	4536·4	—54·6	17600	5076·1	—71·2	(iv) Resistance to improve productivity.
6. National Coal Development Corporation Ltd.	Million Tonnes	11.22	9.65	—13.99	9.80	0.48	—3.23	11.26	10.35	—8.10	Production of coal was restricted to level of demand.
27. National Mineral Development Corporation Limited (Kiriburu Project)	M.T.	2.00 (sized Ore targetted capacity)	0.84	—57.60	2.00	1.77	—11.25	2.00	1.90	—4.9	Actual production as far as Rom is concerned has been 100% from 1967-68. Actual production of sized ore has been about 95%. (Notes Bailadila Project has gone into trial production from April 1968).

28. Neyveli Lignite Corporation Ltd. (i) Mines	M.T.	3.00	2·56	—14.7	2.50	2.4	—1.6	3.40	3.44	—1.1	*Mines* : Heavy rains non-availability of imported spares, lack of Foregign exchage Breakdown of Plant & Machinery.
(ii) Thermal Power Station	Mil. KW Hrs.	1694	1768	+4.3	1460	1434	—1.8	1972	2070	+5.0	*Thermal* : Lack of Demand from Madras State Electricity Board.
(iii) Fertilizer Plant . .	Tonnes		Trial Production of 450 tonnes		85000	60,157	—29.3	80,241	71,414	—11.0	*Fertilizer Plant*: Non availability of spares, chemicals equipments etc. Breakdown of Plant and Machinery Power failures dip in voltage, steam failures, cooling work failures etc.
(iv) Briquetting and Carbonisation Plant.	Tonns	Plant commissioned in Aug. 65. No. Target was fixed.	18,645		43200	49246	414	96368	96711	+0.3	
29. Parga Tools Ltd. A *Machine Tools* (i) Drill Press	Qty.	1203	1202	Nil.	760	602	—21	910	384	—58	Targets of Engineering items, Defence Items and Forge Products were fixed in terms of value.

1	2	3	4	5	6	7	8	9	10	11	12
(ii) Bench Lathes . .	Qty.	—	—	—	—	8		3	7	+133	Reasons for shortfall were :— 1965-66
(iii) Cutter and Tools Grinder	Qty.	89	79	—11	100	53	—47	100	90	—10	(ii) Slump in Machine Tool Market.
(iv) Surface Grinder	Qty.	68	60	—6	55	15	—73	100	80	—20	(ii) Delayed receipt of imported components for cutter and Tool Grinder.
B. *Machine Tools Accessories*											
(v) Lathe Chuck . . .	Qty.	4720	4683	—1.3	4750	3638	—27	5382	3725	—29	
(vi) Drill Chuck . . .	Qty.	19129	17285	—9	25000	9222	—63	21059	13354	—35	
(vii) Machine vices . .	Qty.	916	916	—	—	2	—	—	—	—	
Shortfall in terms of value (including Engineering items, Defence Items of Forge Product")				+2.6			(+)29.7			(—)10.3	
											(iii) Frequent power failure and power cuts.
											(iv) Delay in installation of imported equipment at F.F. Division.
											1966-67 :'
											(i) Go slow policy of labour during 1st half year.
											(ii) Frequent power cuts.

										(iii) Breakdown of a major Hammer in F & F Division. (iv) Delay in receipt of castings and components for CTG shop. (v) Fall in Demand for drilling machines.
										1967-68 : (i) Labour unrest (ii) Non-availability of certain critical machine tool castings and bought out items. (iii) Late receipt of Raw Materials for lathe chucks and serene couplings. (iv) Cacellation of voltas order for Drilling Machines.
32. Rehab. Industries Corporation Ltd.,	Rs. in lakhs	No target was fixed	55.70		No target was fixed	68.17	103.00	78.48	—24	Lack of orders.
31. Tungabhadra Steel Products Ltd.	Rs. in	68.10			..	49.68	—	47.57		Item wise production targets are not fixed. Manufacture is done as per the design of customers. TSP's total capacity is from 1500 to 2000 tonnes per anum.

1	2	3	4	5	6	7	8	9	10	11	12
32. National Newsprint and paper Mills Ltd.	Tonnes	30000	30347	(+)1.15	30000	29506	(—) 1.64	30000	31308	(+) 1	
33. National Instruments Ltd.	Rs. in lakhs				89.60	86.05	(—)4	56.24	51.84	(—)7.8	As quantity is not available in some of the items,% shown is in terms of value.

Foot Notes

1. General Inland Water Transport Corporation Ltd. — Actual production in terms of value for the period from June, 1967 to March, 1968 was Rs. 52.75 lacs, No definite targets of production were laid down.

2. Fe Bombay Unit of F.C.I. — Targets for 1965-66 could not be fixed as for most part the plants were under trail runs, Targets fixed for 1966-67 and 1967-68 were for guidance only. As the plant operations did not stabilise, it was difficult to work to targets.

3. I.D.P.L. — No reply received.

4. Manganese Ore (I) Ltd. — Reply gives figures of production but does not indicate whether these are in quantity or value.

5. Modern Bakeries (India) Ltd. — As against target of 29 million standard loaves (400 gm. each) by the Co's 5 units during 1968-69, the estimated production was 25 million standard loaves.

6. National Buildings Construction Corporation Ltd. (Mechanised Brick Plant) — No targets were fixed.

APPENDIX V

Statement showing analysis of Production Performance of various Public Undertakings during the years 1965—66, 1966—67 and 1967—68

Range of Percentage shortfall in the achieverent of targets	1965—66	1966—67	1967-68
1	2	3	4
(I) 75% to 100%	—NIL—	(1) Hindustan Photo Films Manufacturing Co. Ltd.	(1) Heavy Electricals Equipment Plant (BHEL)
(II) 50% to 75%	(1) Fertilizers & Chemicals Travancore Ltd. (2) National Mineral Development Corp. Ltd.	(1) Mining and Allied Machinery Corp. Ltd.	(1) Mining and Allied Machinery Corp. Ltd.
(III) 25 % to 50 %	(1) Heavy Electricals (India) Ltd.	(1) High Pressure Boiler Plant, Tiruchi (BHEL) (2) Fertilizers & Chemicals Travancore Ltd. (3) Heavy Engineering Crop. Ltd. (4) Barauni Refinery (IOC) (5) Neyveli Lignite Corp. Ltd. (Fertilizer Plant) (6) Praga Tools Ltd.	(1) Garden Reach Workshop Ltd. (2) Hindustan Photo Films Manufacturing Co. Ltd. (3) Heavy Electricals (I) Ltd.
(IV) 1 % to 25%	(1) Hindustan Antibiotics Ltd. (2) Hindustan Insecticides Ltd.	(1) Bharat Electronics Ltd. (Wireless/Electronic equipment) (2) Sindri Unit (FCI)	(1) Bharat Earth Movers Ltd. (2) Fertilizers & Chemicals Travancore Ltd.

1	2	3	4
	(3) Hindustan Machine Tools Ltd.	(3) Hindustan Housing Factory Ltd.	(3) Sindri & Nangal Units (FCI)
	(4) Hindustan Steel Ltd. (Durgapur Plant)	(4) Heavy Electricals (I) Ltd.	(4) Heavy Engineering Corporation Ltd.
	(5) Hindustan Teleprinters Ltd.	(5) Hindustan Antibiotics Ltd.	(5) Hindustan Antibiotics Ltd.
	(6) Indian Oil Corporation Ltd. (Gauhati & Barauni Refineries)	(6) Hindustan Machine Tools Ltd.	(6) Hindustan Cables Ltd.
	(7) Indian Rare Earths Ltd.	(7) Hindustan Shipyard Ltd.	(7) Hindustan Machine Tools Ltd.
	(8) Indian Telephone Industries Ltd.	(8) Hindustan Steel Ltd. (Bhilai, Rourkela and Durgapur Plants)	(8) Hindustan Salts Ltd.
	(9) Mining & Allied Machinery Corporation Ltd.	(9) Hindustan Teleprinters Ltd.	(9) Hindustan Shipyard Ltd.
	(10) National Coal Development Corporation Ltd.	(10) Indian Oil Corporation (Gauhati & Gujarat Refineries)	(10) Hindustan Steel Ltd. (Bhilai, Durgapur and Rourkela Plants)
	(11) Neyveli Lignite Corp.Ltd.	(11) Indian Rare Earths Ltd.	(11) Indian Telephone Industries Ltd.
		(12) Indian Telephone Industries Ltd.	(12) National Coal Development Corporation Ltd.
		(13) Mazagon Dock Ltd.	(13) National Mineral Development Corporation Ltd.
		(14) National Coal Development Corporation Ltd.	(14) Neyveli Lignite Corp. Ltd. (Fertilizer Plant)

(15) National Mineral Development Corporation Ltd.	(15) Rehabilitation Industries Corporation Ltd.
(16) Neyveli Lignite Corporation Ltd.	(16) National Instruments Ltd.
(17) National Newsprint & Paper Mills Ltd.	
(18) National Instruments Ltd.	
(19) Praga Tools Ltd.	

APPENDIX VI

Targetted and Actual Production during 1968-69 in respect of some major public undertakings

(Compiled from Notes received from Undertakings after the evidence)

S. No.	Name of Undertaking	Unit	Target of Production	Actual Production	% Short fall
1	2	3	4	5	6
(1)	*Heavy Engineering Corporation Ltd.*				
	(*i*) Foundry Forge Project .	Tonnes	21,650	16,642,82	(—)23·26
	(*ii*) Heavy Machine Building Project	,,	30,000	23,852·5	(—)20·49
	(*iii*) Heavy Machine Tools Project	Nos.	33	8	(—)75·76
	Reasons : (*i*) F.F. Project : Pattern for cooling plates had to be withdrawn for modification consequent to the modification in the Coil Pipe drawings Tool down strike Go slow practices etc.				
	(*ii*) H.M.B. Project & H.M.T. Project : Inadequate supply of castings and forgings.				
(2)	*Fertilizer Corporation of India Ltd.*				
	(A) *Sindri.*				
	(*i*) Amm. Sulphate	M.T.	2,80,000	2,65,830	(—)0·5
	(*ii*) Double Salt	,,	55,500	49,167	(—)11·0
	(*iii*) Urea	,,	17,100	15,543	(—) 9·0
	(B) *Nangal*				
	(*i*) C.A.N. (25%)	MT	3,08,000	3,09,241	
	(*ii*) Heavy Water . .	KG	13,500	14,281	
	(C) *Trombay*				
	(*i*) Urea	MT	60,000	68,508	
	(*ii*) Suphala	,,	1,09,000	1,08,388	
	(*iii*) Methanol	,,	18,000	15,097	(—)16·0
	Reasons : Poor quality of raw materials, increase in plant maintenance, Non-availability of Sulphuric Acid from the PPC Plant at Sindri equivalent to 25, 000 tonnes of Sulphate production.				

1	2	3	4	5	6
(3)	*Hindustan Steel Ltd.*				
	(A) *Bhillai*	Thousand Tonnes			
	(*i*) Pig Iron (for sale) . .	,,	647	591	(—)8·7
	(*ii*) Saleable steel (Blooms & Sales, Billets, Rails, Structurals, M.M. Products, Wine Rods)	,,	1421	1344	
	(B) *Rourkela*				
	(*i*) Hot Metal (Pig Iron) . .	,,	1300	1243	(—)4·4
	(*ii*) Steel Ingots . .	,,	1000	1162	
	(*iii*) Pig Iron (for sale) . .	,,	150	147	(—)2·0
	(*iv*) Saleable Steel (Sales, Planes, coils, sheets, pipes, etc.)	,,	765	773	
	(C) Durgapur	Thousand Tonnes			
	(*i*) Coke (wet) . . .	,,	1251	1281	
	(*ii*) Hot Metal (Pig Iron) . .	,,	1130	1148	
	(*iii*) Steel Ingots . .	,,	800	823	
	(*iv*) Pig Iron (for sale) . .	,,	361	375	
	(*v*) Saleable Steel . . (Sleepers, Fish Plantes; wheels, Axles, Blooming, Billets, section, Merchants, Rnelp Mills production)	,,	555	500	(—)10·8
(4)	*Heavy Electricals (I) Ltd.*	Value Rs. Lakhs.			
	(*i*) Switch gear . . .	,,	268	267	
	(*ii*) Control gear . . .	,,	194	154	(—)20·0
	(*iii*) Rectifier . .	,,	100	—	(—)100
	(*iv*) Transformer . . .	,,	642	607	(—)5·0
	(*v*) Capacitor	,,	78	72	(—)8·0
	(*vi*) Traction Machines . .	,,	463	449	(—)3·0
	(*vii*) Industrial Motors . .	,,	80	81	
	(*viii*) Steam Turbines . .	,,	60	37	(—)38·0

1	2	3	4	5	6
	(ix) Water Turbines . . .	Value Rs. Lakhs	105	77	(—)27·0
	(x) Heavy Rotating . . .	,,	202	200	(—)1·0
	(xi) Misc.	,,	8	38	
	TOTAL		2,200	1,982	(—)9·9

Reasons :— (a) Controlegears : Failure of M.I castings from an indegenous firm

(b) Rectifier : This is a new product. Production commenced in 1969-70.

(c) Capacitor : Lid assemblies given to ancillary industry did not come upto expectation, hence production had to be slowed down Components from U.K. were received late.

(d) Steam Turbine : New product being established.

(e) Water Turbines : Late receipt of actuators from U.K. and some rework required on Obra II turbine due to some discrepancy found in assembly.

5 *Indian Oil Corporation Ltd.*

(i) Gauhati Refinery . . .	Through put in Million Tonnes		0·75	0·83
(ii) Barauni Refinery . .	,,		1·7	1,767
(iii) Gujrat	,,		2·75	2.958

6 *National Coal Development Corporation Ltd.*

(i) Raw Coal . . .	Million Tonne.	13·08	12·61	(—)3·6
(ii) Washed Coal . .	,,	1·50	1·50	
(iii) Hard Coke		0·036	0.03	

Reason : Raw Coal : Insufficiency of Transport.

7 *Indian Telephone Industries Ltd.*

Telephone of all types (including Headgear sets) . . .	Nos.	2,67,000	2,57,145	(—)3·3

Reasons : (a) Changes in product mix improved by the customers priority demand made during the course of the year.

(b) imblances in materials due to shortage of foreign exchange.

(c) indigenous suppliers not being able to keep up their supplies in quality & quantity.

(d) import restrictions affecting the import of essential raw materials and components.

(e) Labour agitation from time to time for increase in wages affecting production.

APPENDIX VII

Statement showing extent of labour utilisation in various public undertakings

Sl. No.	Name of P. U.	1965-66 %	1966-67 %	1967-68 %	
1	2	3	4	5	
1	Bharat Electroncs Ltd.	94·74	98·00	98·07	
2	Bharat Heavy Electricals Ltd.				
	(i) Boiler Plant, Tiruchi	..	85·74	91·3	
	(ii) Switch Gear Plant, Hyderabad . .		85·50	91·3	
3	Central Inland Water Transport Corpn. Ltd.			60·00	(June 67—Mar. 68)
4	Fertilizer Corpn. of India (Sindri) . . .	88·52	88·22	88·50	(Based on total number of men actually present and those who were on leave or absent.
5	Heavy Electricals (I) Ltd. (NOTE : Statistics maintained in money value as different from hours)	91·00	95·00	93·00	(Wages booked to job against attendance wages)
6	Heavy Engineering Corpn. Ltd. . . .	80·7	83·9	86·7	
7	Hindustan Machine Tools Ltd. . . .	82·2	83·3	73·4	(% to the total value available gross capacity)
8	Hindustan Teleprinters Ltd. . . .	..	89·00	95·00	
9	Hindustan Zinc Ltd.				
	(i) Zawar Mines	..	89·74	85·97	
	(ii) Tundoo Smelter	..	70·00	69·00	
10	Indian Oil Corpn. Ltd.				
	(i) Gauhati Refinery .	81	82	82	(Calender Year)
	(ii) Barauni Refinery .	91·4	89	87	
	(iii) Gujarat Refinery .	..	84·07	80·40	

1	2	3	4	5
11	Indian Telephone Industries . . .	87·75	88·34	90·92
12	Mazagon Dock Ltd. .	..	..	99·77
13	National Newsprint and Paper Mills Ltd. .	..	..	90
14	Neyveli Lignite Corpn. Ltd.			
	(*i*) Mines . . .	85·98	84·72	87·90
	(*ii*) Fertilizer Plant .	88·85	88·26	89·84
	(*iii*) B & C Plant . .	88·47	87·64	83·56
	(*iv*) Powet Plant .	88·84	87·12	88·20
15	Praga Tools Ltd..	75·00	72·00	96·00

APPENDIX VIII

List of Public Undertakings which have set up separate maintenance Department

1. Bharat Earth Movers Ltd.
2. Bharat Heavy Electricals Ltd.
   (Boiler Plant & Electrical equipment Plant)
3. Central Inland Water Transport Corpn. Ltd.
4. Cochin Refineries (I) Ltd.
5. Fertilizers & Chemicals, Travancore Ltd.
6. Fertilizer Corporation of India Ltd.
   (Sindri, Nangal, Trombay).
7. Garden Reach Workshop Ltd.
8. Heavy Electricals (I) Ltd.
9. Heavy Engineering Corporation Ltd.
10. Hindustan Cables Ltd.
11. Hindustan Insecticides Ltd.
12. Hindustan Machine Tools Ltd.
13. Hindustan Photo Films Mfg. Co. Ltd.
14. Hindustan Shipyard Ltd.
15. Hindustan Steel Ltd.
    (R.S.P. and D.S.P.)
16. Hindustan Teleprinters Ltd.
17. Hindustan Zinc Ltd.
18. Indian Oil Corporation Ltd.
19. Indian Rare Earths Ltd.
20. Mazagon Dock Ltd.
21. Mining and Allied Machinery Corporation Ltd.
22. Modern Bakeries (I) Ltd.
23. National Buildings Const. Corpn. Ltd.

APPENDIX IX

Statement showing staff strength of maintenance departments of various public undertakings

1	Bharat Earth Movers Ltd. (Rail Coach Divn.)		190
2	Bharat Electronics Ltd.		158
3	Bharat Heavy Electricals Ltd.		
	(i) Boiler Plant	—510	793
	(ii) Elect. Equip. Plant	—283	
4	Central Inland Water Transport Corporation Ltd. (Rajabagan Dockyard)		25
5	Cochin Refineries (I) Ltd.		124
6	Fertilizers & Chemicals, Travancore Ltd.		606
7	Fertilizer Corpn. of India Ltd.		
	(i) Sindri.		2,200
	(ii) Nangal		1,003
	(iii) Trombay		690
8	Garden Reach Workshop Ltd.		112
9	Heavy Electricals (I) Ltd.		651
10	Heavy Engineering Corpn. Ltd.		
	(i) H.M.B. Plant	—821	1,661
	(ii) F.F. Plant	—840	
11	Hindustan Cables Ltd.		236
12	Hindustan Housing Factory Ltd.		100
13	Hindustan Insecticides Ltd.		235
14	Hindustan Machine Tools Ltd.		208
15	Hindustan Photo Films Ltd.		248
16	Hindustan Shipyard Ltd.		356
17	Hindustan Steel Ltd.		
	(i) Bhilai	—3,753	9,786
	(ii) Durgapur	—2,828	
	(iii) Rourkela	—3,205	
18	Hindustan Teleprinters Ltd.		72
19	Hindustan Zinc Ltd.		400
20	Indian Oil Corporation Ltd. (Refinery Division)		1,106
21	Indian Rare Earths Ltd..		106

22	Indian Telephone Industries Ltd.	316
23	Mining & Allied Machinery Corporation Ltd. . . .	961
24	Modern Bakeries (I) Ltd. (5 Bakeries)	50
25	National Mineral Development Corpn. Ltd. (Kiriburu & Bailadilla)	700
26	Neyveli Lignite Corpn. Ltd. (4 units)	2,762
27	National Instruments Ltd.	83
28	National Newsprint & Paper Mills Ltd.	230

APPENDIX X

List of Public Undertakings which have introduced standard costing system

1. Fertilizers and Chemicals Travancore Ltd.
2. Fertilizer Corporation of India Ltd.
3. Garden Reach Workshops Ltd.
4. Hindustan Insecticides Ltd.
5. Hindustan Machine Tools Ltd.
6. Hindustan Teleprinters Ltd.
7. Hindustan Zinc Ltd.
8. Indian Oil Corporation Ltd.
9. Indian Telephone Industries Ltd.
10. Modern Bakeries (I) Ltd.
11. National Newsprint & Paper Mills Ltd.
12. Praga Tools Ltd.

Note : Hindsutan Steel Ltd. have also developed standard costing system and propose to introduce it soon.

APPENDIX XI

Statement showing the percentage rise in the cost of production over the cost of production estimates given in the Detailed Project W.R.Q. 43.

Sl. No.	Name of the public Undertaking	1965-66 %	1966-67 %	1967-68 %
1	2	3	4	5
1	*Hindustan Steel Ltd.*			
	(A) *Rourkela*			
	(*i*) Coke .	97·6	107·1	125·2
	(*ii*) Hot Metal . .	61·3	75·5	108·3
	(*iii*) Ingot Steel (O.H.)	41·7	51·6	75·0
	(*iv*) Ingot Steel (L.D.)	78·4	98·1	133·4
	(B) *Bhilai*			
	(*i*) Coke .	256·2	283.9	340·6
	(*ii*) Hot Metal .	118·7	120·0	156·9
	(*iii*) Ingot Steel .	106·3	109·2	130·3
	(C) *Durgapur*			
	(*i*) Coke .	269·2	336·9	374·8
	(*ii*) Hot Metal .	181·0	219·4	230·0
	(*iii*) Ingot Steel . .	142·5	171·2	201·8
2	*Hindustan Teleprinters Ltd.*			
	Teleprinters .		41·0	117·0
3	*Praga Tools Ltd.*			
	(*i*) 540 Surface Grinder .		..	12·16 (Late Estimate)
	(*ii*) Barrel Carbine .			15·22
	(*iii*) Breach Blocks . . (Cost of other items is less)			18·00
4	*Fertilizer Corporation of India*			
	(A) *Nangal Unit.*			
	Calcium Amm. Nitrate	23·11	28·09	22·83

1	2	3	4	5
	(B) *Trombay Unit*			
	(i) Urea	..	..	..
			On the basis of actual cost according to latest estimate for 1968-69 as compared to unit cost in Revised Project Estimate.	
5	*Neyveli Lignite Corporation*			
	(i) Lignite . .	97·5	154·0	117·5
			As compared to Revised Project Estimates (1963).	
	(ii) Power	14·5	51·0	40·5
	(iii) Urea	Production not commenced.		
	(iv) Leco	Production not commenced fully.	626·0	313·0
6	*National Mineral Development Corporation Limited*			
	Kiriburu Mine .	123·0	60·0	60·0
			Bailadila Mine went into trial production from April 1968.	
7	*Fertilizer and Chemicals Travancore Ltd,*			
	(i) Amm. Sulphate . . .	125·0	58·0	89·0
	(ii) Amm. Phosphate . .	69·0	40·0	79·0
	(iii) Superphosphate	16·0	37·0	63·0
	(iv) Amm. Chloride	50·0	65·0	65·0
8	*National Coal Development Corporation Limited..*			
	(1) *Unit.*			
	1. Jarangdih	19·0	34·0	57·0
	2. Kathara	23·0	44·0	60·0
	3 S. Balanda	57·0	46·0	104·0
	4 Bhurkunda	38·0	55·0	87·0
	5. Saunda	44·0	82·0	136·0
	6. Bachra	62·9	81·9	141·0

1	2	3	4	5
7.	Gidi 'A'	30·0	47·0	102·00
8.	Gidi 'C'	34·0	64·0	47·0
9.	Sayal 'D'	44·0	45·0	96·0
10.	Bisrampur	40·0	60·0	41·0
11.	Korea	31·0	33·0	45·0
12.	Churcha	44·0	39·0	(—)2·0
13.	Kaurasia	16·0	39·0	43·0
14.	Korba.	8·0	31·0	115·0
15.	Duman Hill		59·0	34·0
16.	Jamuna		117·0	98·0
17.	Bank			117·0
18.	Manikpur			52·0
9	Modern Bakeries (I) Ltd.	..	..	35·0

Names of Public Undertakings in whose case no DPRs were prepared or DPRs, if prepared, did not contain cost estimates

1. Rehabilitation Housing Corporation Ltd.
2. Tungbhadra Steel Products Ltd.
3. Cochin Refineries Ltd.
4. Heavy Electricals (I) Ltd.
5. Hindustan Machine Tools Ltd. (DPR does not give details of estimated cost. Costs are compared with data obtained from collaborators).
6. Hindustan Salts Ltd. (Taken over-no DPR).
7. Garden Reach Workshop Ltd. (Taken over as a running concern No DPR).
8. Central Inland Water Transport Corporation Ltd. (Rajabagan Dockyard).
9. Mazagon Dock Ltd.
10. Hindustan Insecticides Ltd. (Alwaye).
11. Hindustan Shipyard Ltd. (taken over as a running concern No. DPR).

12. Indian Drugs & Pharmaceuticals Ltd. (DPR did not contain cost estimates of the products to be manufactured in all the units).

13. Indian Rare Earths Ltd.

14. Manganese Ore (I) Ltd. (taken over as a running concern).

APPENDIX XII

(A) *HINDUSTAN STEEL LTD.*

Name of material		Norms as recommended by the Norms Committee.	Actual Consumption	
			1967-68	1968-69
Coke Ovens.	Plant.	Norm.		
(*i*) Kg. per tonne of gross coke (dry) Coal (Dry). . . .	Bhilai	1316	1309	1309
Blast Furnaces.				
(*ii*) (Kg. per tonne of Hot Metal) Fetho Ore & Sinter . .	Bhilai	965	996	1011
	Durgapur	850	1010	930
	Rourkela	950	915	939
(*iii*) Lime tone . .	Bhilai	270	285	250
	Durgapur	350	332	331
	Rourkela	350	395	371
(*iv*) Dolomite .	Rourkela	100	108	101
(*v*) M. Ore . .	Bhilai	50	61	59
	Durgapur	40	33	31
	Rourkela	120	110	94
(*vi*) Coke (Dry) . . .	Bhilai	800	839	846
	Durgapur	860	913	905
	Rourkela	900	963	962

Actual consumption of Coke (dry) in Blast Furnaces of HSL per tonne of Hot Metal.

	Kg.	Kg.
	1967-68	1968-69
Bhilai .	839	846
Durgapur . .	913	905
Rourkela	963	962

(B) FERTILIZER CORPORATION OF INDIA LTD,

I. *TROMBAY*

Material	Unit	Norm/ standard (per tonnes of product)	Actual consumption	
I. *Trombay Ammonia*				
(a) Naphtha	M.T.	0·764	0·782	0·8346
Urea				
(a) Ammonia	,,	0·650	0·6894	0·7176
Nitrophosphate				
(a) Rock Phosphate	,,	0·398	0·4394	0·462
(b) Magnasita	,,	0·015	0·0283	0·027
(c) Soap Stone	,,	0·010	0·0074	0·008
(d) Ammonia	,,	0·103	0·1256	0·097
(e) Nitric acitl	,,	0·383	0·361	0·389
(f) Sulphuric acid	,,	0·017	0·0369	0·041
Methanol				
(a) Naphtha	,,	0·982	3·012	1·565
(b) Ref. Gas	,,	..	0·675	64·24

(Figures relating to sulpha—a new produce started from 1967-68 not indicated).

Reasons : (i) Excessive losses due to repeated breakdown in the plants, and (ii) the plants are not running at the rated capacity as the production has not established.

II *SINDRI*

II. Sindri	Unit	Norm	1965-66	1966-67	1967-68
(i) Converted Gas per tonne of Ammonia (CCC)	NM 3	4,050	4,587	4,587	4,974
(ii) Ammonia per tonne of sulphate		0·3015	0·291	0·292	0·315
(iii) Synthesis mixture per tonne of exp. Ammonia		2800	2867	2786	2948

Reasons:

(i) Higher consumption has been due to lower compressor of efficiency and venting of gas and lower production.

(ii) Higher consumption of ammonia is due to usage of lower purity which results in higher loss of ammonia.

(iii) High consumption is due to lower efficiency of the compressors in Ammonia Plant and venting of gas at the Ammonia Plant when there are short reduction in load in attending to Methanical Maintenance jobs.

III *NANGAL*

Power Consumption in the years 1965-66 and 1966-67 was more than the standard by 1.3 per cent and 0.65 per cent. Variation is marginal and well within industrial measurement limits. Lime stone consumption in 1965-66 and 1966-67 was higher by 0.00039 per cent and 0.0004 per cent respectively which is negligible.

(C) HEAVY ENGINEERING CORPORATION LTD.

	Consumption per tonne & good castings as per DPR (Tonnes)	Actual consumption per tonne of good castings	
		1966-67	1967-68
G, I. Foundry			
(i) Pig Iron (All types) . .	0·62	1·00	0·96
(ii) Scrap (Steel Roll & ingot mould) . .	0·42	0·25	0·51
(iii) Ferro Alloy	0·03	0·02	0·03
Non-ferrous Foundry			
(iv) Changing Materials . . .	1·50	1·54	1·00
Steel Foundry			
(v) Steel scrap	1·24	1·60	1·27
(vi) Ferro Alloys	0·03	0·02	0·03

NOTE : As Grey Iron Foundry was in its initial stages of production, return scrap of suitable composition was not available and further Foundry returns were not accumulated so as to conform to the composition required.

The norms given in DPR for steel Foundry is inclusive of open-hearth steel which contains 30% of Pig Iron approximately. At present, the open hearth furnaces are not commissioned, hence the whole charge is only steel scrap. More over the yield is less, the reason being the castings manufactured were of small weigh size.

APPENDIX XIII

Summary of conclusions/recommendations contained in the Report.

S. No.	Reference to para No. of the Report	Summary of Conclusions/Recommendations
1	2	3
1.	2.21	The representatives of some of the leading public undertakings who gave evidence before the Committee admitted that the system of co-ordination in the Heavy Electricals (India) Ltd. did not enable the enterprise to 'formulate a profit centre or centre of responsibility'. In Hindustan Steel Ltd., the system of coordination was 'far from nearing perfection' and 'slightly cumbersome' in the Indian Telephone Industries Ltd., etc. This indicates that coordination is not as perfect as it ought to be in major public undertakings. The Committee therefore recommend that all public sector enterprises should carry out of review of their respective organisational set up and plug the loopholes that appear in the existing machinery for coordination.
2.	2.22	During evidence, the representative of the Bureau admitted that during their study of the working of public sector enterprises it had not been possible to pinpoint all the defects because of lack of technical expertise. Care should be taken to see that new public enterprises which are set up have the right type of production management organisation right from the very beginning.
3.	3.12	The Committee agree that it is neither feasible nor desirable to prescribe one type of standard planning organisation for application to all types of industrial activities. In industries having a continuous process for example, a fertiliser plant or an Oil Refinery, raw material enters one end of the production line and flows

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		through a steady stream to emerge as finished product at the other end. Naturally, the problem of planning and control in such industries is simpler because the path of the material, the process sequence and times of operations are all pre-determined and are more or less inflexible. Such industries may need a different type of planning Cell. But in tailor made or repetitive products or consumer industries need for separate planning cell exists because the operations and process of production are complex. The Committee feel that in a badly conceived Project, good management is unthinkable. They recommend that the Planning Organisation should be capable of evolving a proper concept of planning production taking into account a realistic demand survey of the products and study of the feasibility Report.
4.	3.13	Planning is a specialised function in modern industries and calls for decision making at the higest level. If there is a separate cell for this purpose, production staff can concentrate fully on production proper which may not be possible if the production staff had to handle production in addition to planning. The Committee recommend that each undertaking may examine the need for setting up a separate planning cell after taking into account the type of industry and other relevant factors.
5.	3.14	A pre-requisite for planning of production is the availability of precise information about the products in demand. The Committee recommend that public undertakings should review their existing arrangements for market research and assessment so that production can be planned according to demand and expansion of production or diversification can be undertaken in time. Strictly speaking the production management is concerned with management of production in established projects. An ill-conceived project with production capacities installed on the basis of unrealistic projections of demand, is

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		bound to render the task of planning of production difficult. The Heavy Engineering Corporation and the Mining and Allied Machinery Corporation Ltd. are the two examples of such faulty planning *ab-initio*. The Committee recommend that there should be industry-wise (e.g. fertilizer, steel etc.) Top Planning Cell in each Ministry consisting of Executives of both the public and the private sector industry for the planning and control of production and to ensure that whatever targets were set up in the Five Year Plans were achieved and to evaluate the functioning of the production machinery to achieve these targets.
6.	3.27	The Committee are surprised by the statement of the NCDC that planning and control in their enterprise did not follow any specific technique. The technique of Production Management is changing all over the world every day with the introduction of latest techniques. If the public undertakings are indifferent to the adoption of modern techniques of planning and control, poor production performance and defective planning may become inevitable. During the examination of different public sector undertakings, the Committee found that highly sophisticated plants and machinery imported from highly industrialised countries of the world were being operated on obsolete and outmoded techniques of planning and control of production. While it is primarily for the respective industries to decide as to whether they would follow techniques like routing, scheduling, dispatching and follow up or any other techniques, the Committee suggest that Government should undertake a survey of existing arrangements for the planning and control of production in all the undertakings to examine how far non-achievement of targets of production or incurring of losses in each case was due to nonapplication of

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		modern techniques of planning and control. Based on such a survey, proper guidelines may be issued to the undertakings highlighting the modern techniques to be followed by each group of industry.
7.	3.36	Leading industrialised countries (like Japan and USA) have accepted the aid of computers to control their cost of production, enforce quality control and reduce inventories to appropriate level. The Committee feel that India will have to recognise the role of Computers as an inevitable tool for industrial efficiency and progress to compete in international market. Conscious of the acute problem of unemployment, the Committee would recommend computerisation in capital intensive industries (e.g. H.S.L., H.E.L., etc.) and not the labour intensive industries. Computerisation should primarily be directed to enforce (i) inventory and management control and (ii) to cut-down the cost of production. As a matter of fact, the decision to instal a computer in an enterprise should be taken at the time of setting up the enterprise to avoid any controversy later. The Committee reiterate that care should be taken to avoid retrenchment of labour and the staff, if rendered surplus, should be absorbed in alternative jobs in the same or allied undertakings.
8.	3.37	The Bureau of Public Enterprises was set up in April, 1965 in the Ministry of Finance in pursuance of the recommendation contained in the 52nd Report of the Estimates Committee. The Committee find that functions of the Bureau have been considerably enlarged following the recommendations made by the Administrative Reforms Commission in their Report on Public Sector Undertakings (October, 1967). In their note furnished after the evidence, the Bureau have stated that they have 5 constituent Divisions in the Bureau, namely, (1) Production, (2) Construction, (3) Finance (4) General Management and (5) Information and Research.

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		The Committee feel that with the enlargement of the functions of the Bureau, there is need for de-centralisation lest the Bureau should grow into a monolithic and top heavy administration. The Bureau may consider whether it will not be better for it to function in small working groups, each group being responsible for one type of industry.
9.	4.7	The Committee are concerned to learn that major public undertakings are facing difficulties in establishing a sound system of communication with labour. They recommend that the public undertakings should review periodically their existing communication system with a view to improve the communication with labour. Public Sector enterprises being model employers are expected to set an example and owe a special responsibility to evolve communication with labour in such a way that there is greater participation or feeling of involvement by labour in the fulfilment of objectives of production management.
10.	4.10	The importance of the role that effective communication plays in the successful and speedy implementation of the objectives of production management cannot be over-emphasised. The Committee are of the view that the communication system in the Organisation should be such as to ensure speedy transmission of vital information by pressing into service the most modern and economical means of communication. They find that there is dearth of persons trained in the art and technology of communication in most of the Undertakings and recommend that such a personnel should be raised in every Undertaking by arranging suitable training. Training programmes may be drawn up in consultation with the Management Institutes at Ahmedabad and Calcutta.
11.	4.17	The Committee are in favour of reducing the multiplicity of Reports|Returns submitted to Top Management|Government without in any

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		way interfering with the efficiency to take effective managerial decisions by the undertakings. In this connection, the Committee have noted that Hindustan Steel Ltd. have been able to evolve one Consolidated Report which goes from their Head Office to Government and covers all their plants. The Committee recommend that other public Undertakings should also undertake a review of their existing Reports in consultation with their administrative Ministries and try to reduce the number of their Reports/Returns. The Committee recommend that public undertakings should also consider the advisability of setting up a special cell, if such a cell is not already there in their respective enterprises for the purpose of study, evaluation and follow up of such Reports because utility of such reports would ultimately depend on the capacity and the ability of these cells and the extent to which such Reports are made use of for managerial decisions.
12.	4.21	The Committee hope that the system of management by exception introduced in Fertilizer Corporation of Iidia, Hindustan Machine Tools Ltd. and Hindustan Steel Ltd. would prove useful. They also recommend that other major undertakings should consider the advisability of introducing the system of providing separate tailor made reports for different managerial levels so that attention is drawn only to those exception which are relevant to their responsibilities.
13.	5.16	During evidence the representatives of most of the leading public undertakings argued that the principle of management accountability was difficult to be enforced because (i) production is a team work based on group effort, (ii) there is dispersal of responsibilities in the existing pattern of public sector, (iii) causes of failure are varied and (iv) qualitative measurement of accountability is not possible. These arguments

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		are not convincing. If these are accepted, it will tantamount to grant of complete immunity from accountability. Considering the present low level of productivity and the heavy financial losses being incurred by major public undertakings year after year, the Committee are convinced that public enterprises were not pulling their full weight to ensure that the principle of management accountability was implemented in letter and spirit without fear and favour. The Committee, therefore, strongly recommend that Government must formulate a clear policy and see that responsibilities of each level of management were clearly defined in unambiguous terms and laid down in black and white so that whenever any act of omission or commission came to light it was possible to fix responsibility and bring the persons concerned for the lapse to book. They also emphasise that the policy so framed must make the top management every Public Sector enterprises fully responsible for over all performance particularly the production performance. As soon as the same may be placed before the Parliament. Effectiveness of the policy must be kept under close watch by Government and Parliament kept informed of the results achieved.
14.	5.19	The heavy financial losses incurred by major public undertakings e.g. Hindustan Steel Ltd., Heavy Engineering Coorporation Ltd., Mining and Allied Machinery Corporation Ltd., Heavy Electricals (India) Ltd., Indian Drugs and Pharmaceuticals Ltd., over the years, held weight to the impression that the criteria of profitability was getting gradually eroded and whittled down. If this drift from profitability is allowed to continue, there was every likelihood that the gains of planned economic development in India may be offset by the heavy losses incurred by public sector enterprises. The Committee view this development with great concern. They, therefore, strongly recommend that Government must impress upon all the public sector enterprises the

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		need to avoid losses and ensure profitability i.e. a decent return on investments. As a matter of fact, the norm for profitability should be laid down at the time of setting up the project itself so that Parliament and the country known in advance as to the precise period during which an enterprise is excepted to reach the break even point. Should an enterprise fail to reach that stage within the stipulated period and continue to incur losses even after the gestation period is over, the Committee feel that the Government should examine whether such an uneconomic enterprise is to be allowed to continue.
15.	5.23	The Committee note that Government have recognised the importance of management objectives concept. They are, however, unable to appreciate why "it will have to be a trial and error method". They therefore recommend that Government should evolve a clear cut plan to indicate as to how and in what manner the Government propose to proceed in the matter so that nothing is left vague and undefined. Unless a clear picture is placed before the enterprises by Government, the Committee are unable to see how the enterprises can be excepted to work out the management objectives concept in its right perspective.
16.	5.25	The Committee are of the view that unless a Managerial Cadre consisting of persons of proven ability integrity, managerial talent, initiative and above all faith in the role of the public sector in national economy is established to man senior positions of responsibility in the public sector enterprises, problems arising in the realm of production management canot be satisfactorily tackled
17.	6.12	During the course of their visit to one of the leading steel manufacturing company in the private sector, the Committee were informed that their steel Plant was working at 90 to 95 percent of its capacity even though some of their machines were installed several years ago. The Committee are alarmed to find that the Steel Plants of

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		Hindustan Steel Ltd. are working at only 50 to 68 per cent of their rated capacity. If a new enterprise faces teething troubles during the gestation period and is unable to reach full capacity in the initial years, it is understandable. The Committee feel that for an established and experienced Steel Industry like the Hindustan Steel Ltd., it would be inexecusable if they fail to ensure operation of plant at the rated capacity and attain break even point in spite of the existence of a great demand for steel in India and abroad and the rise in the steel prices.
18.	6.13	It is true that Steel Plants of Hindustan Steel Ltd. are facing problems of inadequate or poor maintenance, right type of refractories, non-availability of spares, etc. but then these are the very factors which the management of every industrial enterprise was expected to take care of while planning its production on sound and prudent business principles. Now that the management of HSL has identified the precise factors due to which rated capacities could not be achieved by them in the past, the Committee recommend that the management of HSL should focus attention on those factors and run the plants at their optimum capacity by remedying them. A developing country like India can ill afford the luxury of allowing those expensive steel plants to run at uneconomic levels of utilisation.
19.	6.14	The Committee are of the view that the Heavy Engineering Corporation Ltd. and the Mining and Allied Machinery Corporation Ltd., are finding themselves in this unhappy predictment primarily due to the inaccurate and "over-ambitious" demand projections made before installation of their production capacities. The Secretary of the Ministry of Steel and Heavy Engineering admitted during evidence that "expectations of demand, on the basis of which these capacities were created, did not materialise." If the projections of demand go wrong by a narrow margin, one could ignore it but when the projections do not materialise to the extent of 90

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		per cent it only indicated that either the existing machinery for demand assessment was not equal to the task expected of it or the techniques employed or the economic data relied upon for this purpose were totally wrong. The Committee recommend that Government should (i) examine the existing machinery for demand projections, the techniques employed for assessment of demand etc., and (ii) initiate positive steps to gear up the machinery for making demand projections so that production capacities were installed or expanded only to the extent warranted by sound and scientific assessment of demand. The Committee reiterate that the Government should ensure in future that no undertaking should be launched unles a scientific and accurate assessment of demand has been made by the Government and a proper scrutiny of feasibility studies and project Report has been made.
24.	6.23	The Committee find that the problem being faced by the Heavy Electricals (India) Ltd. and the Hindustan Machine Tools Ltd. is the same, that is lack of orders for their products. This confirms the impression that demand survey was not made accurately before setting up these undertakings. The recession in Engineering industries had been with us for a number of years. Had these Undertakings made aggressive sales efforts right from the beginning of the recession, they would have surely been able to counteract recession to a greater extent. Anyhow the Committee hope that all the Undertakings including these two, would reinforce their efforts not only to tap domestic but also foreign markets. The Committee also wish to emphasise that public undertakings should periodically review their product mix to bring it in line with the changing pattern of market demand.
21.	6.33	The Committee are surprised at the statement of the representative of the Fertilizer Corporation of India made during evidence that the rated capacity at Trombay Unit was only in theory and that the attainable capacity was

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		lower than the rated capacity. The Committee recommend that managements must regard the attainment of rated capacity as their supreme task and make strenuous efforts towards that end by rectifying design or engineering deficiencies in plants, if any, and creating optimum conditions under which the plants could work at their full rated capacity. To regard the rated capacity as only a theoretical proposition and not a practical possibility by the undertakings is a tendency which can only result in de-rating the rated capacity to the lower level of attainable capacity. The Committee feel that such a tendency of the undertaking has to be discouraged because if it is allowed to continue there will be let up in the efforts of the managements to reach the optimum capacity. Should the undertakings find it impossible to operate the plant at the full rated capacity, they should reduce their rated capacity to the attainable capacity only with concurrence of the administrative Ministry concerned and the Ministry of Finance invariably. The Committee view the statement of the representative of the Fertilizer Corporation with alarm and feel that an act of derating the capacity of the plant at Trombay to the lower level of "attainable capacity" was rather unjustified. They recommend that public undertakings should acquire plants of only the proven rated capacity after rigid performance tests because once a defective plant was acquired it became a liability for all time to come even if the contractor paid the penalty under the contract. Payments to contractor should depend on his demonstrating the rated capacity of the plant and machinery.
22.	6.35	The Committee are perturbed to know that Barauni Refinery of the Indian Oil Corporation Ltd. had been working far below its design capacity. The reasons for this are stated to be inadequate supply of crude from the Assam Oil fields and the limited capacity of the Oil India's pipeline. From the note furnished after the evidence, the Committee find that during April to

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		November, 1969, as against the planned transportation of 1,67,000 tonnes, actual transportation was only 98,000 tonnes, This was mainly due to the fact that the offtake of the two refineries did not materialise according to schedule. The Committee recommend that Government should give their serious attention to this problem and explore an abiding solution on a long term basis. But as this may take sometime the Committee would suggest that in the meantime, efforts should be made to improve the programming of transportation so that even with the present capacity of the said pipeline it may be possible to transport more oil in a planned manner and according to such schedule of offtake as may be agreed upon by mutual consultations between the Oil India and Indian Oil Corporation.
23.	6.37	The Committee view with great concern the fact that negotiations between the Indian Oil Corporation Ltd. and the Hindustan Machine Tools Ltd. for the purchase of Gas Cylinders have had a protracted course and displayed lack of sense of urgency. Shortage of Gas Cylinders has affected the common user in the country although there is no shortage of gas. Capacity to undertake manufacture of gas cylinders already exists in the H.M.T. Owing to the protracted delay in negotiations between the two undertakings, the spare capacity to manufacture Gas Cylinders has remained unutilised. If the differences between the two public sector enterprises could not be settled at their own level, the Committee are unable to see why the two administrative Ministries namely, the Ministry of Petroleum and Chemicals and Mines and Metals and the Ministry of Industrial Development, Internal Trade and Company Affairs could not help these two enterprises to come to an early settlement. The Committee recommend that such inter-undertaking negotiations leading to inordinate delays should be promptly sorted out at inter-Ministerial level.

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24.	6.43	The Committee have noted the assurance given by the Secretary, Departments of Petroleum and Chemicals that in future no production at the Surgical Instruments Plant of IDPL would be made unless there was a demand. The Committee are of the view that other public sector undertakings should also adopt this wholesome principle as basic to their planning of production so that whatever production was undertaken it was invariably against firm indications of clear demand and found a ready market. In the meantime possibility of diversification and alternative use of manufacturing capacity should be explored and made ready. If the demand fluctuates for short period, the normal production in a year should not be upset and the annual target of production should not be lowered.
25.	6.46	The Committee are of the view that assessment of loss in value of production on account of under-utilisation of capacities in various public undertakings even if notional, would have given an idea of the extent of loss which could have been averted if the Undertakings had been able to operate their plants, at full capacity under optimum conditions and assured demand. If the notional loss in the case of undertakings under the control of one Ministry, namely, the Ministry of Petroleum and Chemicals, Mines and Metals could be Rs. 24 crores and that too in one year (1968-69) such loss would surely be much larger if the notional loss in respect of undertakings under the control of other Ministries had also been assessed. The assessment made by one Ministry is enough to reveal the gravity of the problem of gross under-utilisation of capacities in various public undertakings and point to the need of evolving some radical measures. Present sporadic attempts being made by each Ministry to deal with this problem without any degree of coordination cannot be expected to make any significant contribution to solve this vexing problem. The Committee, therefore, strongly feel and suggest that a high

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		level Expert Committee be appointed by Government to make a thorough and systematic assessment of under-utilisation of capacities to detect the causes of under-utilisation in each case and suggest remedial measures, both long term and short term, to minimise the incidence of under-utilisation in various Public Undertakings.
26.	7.16	The foregoing account of non-achievement of targets of production makes a distressing reading. There have been instances. [for example, (i) Hindustan Photo Films Mfg. Co. in 1966-67, (ii) Heavy Electricals Equipment Plant of Bharat Heavy Electricals Ltd. in 1967-68 and (iii) Heavy Machine Tools Project of Heavy Engineering Corporation in (1968-69)] where percentage shortfall in achievement of targets had been more than 75 per cent. Shortfall ranged between 50 to 75 per cent in the case of Fertilizers and Chemicals Travancore Ltd. in 1965-66, and Mining and Allied Machinery Corporation Ltd. in 1966-67 and 1967-68. The Committee feel that either there is something basically wrong in the mechanism of fixation of annual production targets or the arrangements for follow-up of production are deplorably inadequate. Should the Undertakings fix realistic targets after making a thorough assessment of all factors of production and proper follow-up of production plan is done, there should have been no reason why the shortfalls should be as high as 75 per cent. The Committee do agree that breakdowns of plant and machinery could not be predicted with any degree of certainty. Labour troubles too may erupt rather suddenly, sometimes putting the production out of gear. But these factors, however, uncertain should not make such a material difference in the long run. The Committee suggest that public undertakings should streamline their machinery for target setting so that targets of production were more realistic than what they had been in the past.
27.	7.24	The Committee find that at present public undertakings are completely free to fix up

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		annual targets of production at whatever level they consider necessary and to revise them. Government was merely kept informed. The Committee feel that this practice needs review. Under the existing practice there was every possibility of an undertaking fixing lower targets than the rated capacity and thus covering up its poor performance. The Committee recommend that Annual Targets of production should be fixed after taking into account all the relevant factors into consideration particularly the demand as assessed by the Planning Commission, market surveys conducted by the enterprise itself, the rated capacity of the plant and machinery etc. Enterprises having Technical Directors on their Board of Directors should, wherever possible take advantage of his objective technical appraisal of production capacity. The Committee are of the view that Undertakings should be free to fix annual targets of production so long as they are equal to or near the rated capacity. But if an undertaking wants to fix a target lower than the rated capacity in spite of their being a clear demand for the products, it should get prior approval of Government. This will give an opportunity to Government to satisfy itself whether deviation from rated capacity in a particular case is justified or not.
28.	7.28	The Committee agree that development of ancillary industries combined with the efforts to pool requirements of various groups of industries in Public Sector holds the key to the solution of the problem of procurement of spares and equipment. They hope that no efforts would be spared by Government to promote ancillary industries.
29.	732	The Committee hope that the new procedure (in para 31 of Report) evolved by the DGTD in March, 1968 in the matter of giving clearance from indigenous angle would go a long way in mitigating the hardships faced by public sector undertakings in getting such clearance. They suggest that efficacy of the new procedure

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		should be kept under constant watch by Government to ensure that production of no public undertakings was held up or affected on account of any undue delay in DGTD's clearance and allotment of foreign exchange.
30.	7.41	The Committee are surprised at the way the proposal for manufacture of tractors in the public sector was handled by Government at various stages resulting in an inordinate delay. The delay primarily appears to be due to indecision of the Government coupled with lack of a feeling of urgency. The Committee agree that proposals to undertake new lines of manufacture as part of diversification programme need careful examination of all the relevant factors, but they feel that such avoidable delays should be avoided in future.
31.	7.42	The Committee feel that public undertakings had not formulated their diversification programmes in time to check the impact of recession. Had they done so, there would not have been gross under-utilisation of capacity in major public undertakings.
32.	8.9	The Committee regret to note that the level of labour utilisation has gone down in the case of Heavy Electricals (India) Ltd., Hindustan Machine Tools Ltd., Hindustan Zinc Ltd., Briquetting and Carbonisation Plant of Neyveli Lignite Corporation Ltd., Barauni and Gujarat refineries of the Indian Oil Corporation Ltd. When the labour utilisation in an enterprise touches as low a level as 70 per cent its productivity and profitability are bound to be affected. The Committee, therefore, hope that these enterprises would investigate into the reasons for this fall in labour utilisation with a view to evolve effective measures to improve labour utilisation.
33.	8.10	Some of the public undertakings as, for example, National Buildings Construction Corporation Ltd., National Instruments Ltd. are not maintaining record showing the extent of labour

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		utilisation. Garden Reach Workshop have started keeping such record from April, 1968 only. Hindustan Steel Ltd. have undertaken studies to determine manning for different work groups. Fertilizer Corporation of India have also undertaken industrial engineering studies to evolve systems for control on labour utilisation. The Committee are convinced that effective labour utilisation is vital to production and profitability. They fail to understand how could the managements of these undertakings succeed in keeping an eye on the trend of labour utilisation in the absence of labour utilisation record. The Committee recommend that all undertakings should maintain labour utilisation record in suitable form so that they may be able to locate areas of underutilisation of labour in time and take remedial measures. Labour utilisation indices should also be accompanied by indices of labour productivity in the interest of maximising production and keeping a timely check on the persistent tendency to overstaff.
34.	8.18	This gives the impression that hitherto Government have not taken an active interest in this important task. The Committee suggest that the Government should arrange special study of man productivity industry-wise without any loss of time.
35.	8.20	Existence of a wide gap in the productivity levels of key industries (e.g. Steel and Coal Mining) between Indian and foreign countries is a source of great concern to the Committee. Such gaps if permitted to continue would be injurious to the Development of export markets of Indian Steel and other products which would be soon available for exports. The Committee recommend that public undertakings should adopt improved and modern management techniques capable of raising the level of productivity.
36.	8.21	The Committee are apprehensive that in their anxiety to raise productivity, the quality aspect may be lost sight of by the Undertakings

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		with the result that greater rejections and off-grade production would become inevitable defeating the very purpose of productivity. Equal importance should, therefore, be accorded to the qualitative aspect of productivity Parametres to productivity should be so fixed as to take into account production in comparable units (within the country and outside). Productivity norms and incentive schemes should be applied from the beginning.
37.	8.24	The Committee are of the opinion that existence of surplus staff adversely affects productivity and profitability of an enterprise. They recommend that the staff strength in the initial stages should be determined most carefully after carrying out scientific manning studies and a thorough assessment of workload. Such studies should be entrusted to independent bodies like the Managements Institutes or Institutions like the National Productivity Council for making an objective assessment.
38.	8.25	Redeployment of surplus staff deserves the primary attention of the undertakings. The Committee feel that they could be absorbed against future expansion or against future retirements. Voluntary retirement schemes may be introduced on attractive terms if necessary and transfer of staff to other sister enterprises could also be considered.
39	8.35	Labour-Management relations is a very sensitive area of management activity. The situations to be faced in this field are complex and call for human understanding, foresight and tact on the part of managements. The Committee feel that management of public sector enterprises should continue to strive to secure the active cooperation of labour towards improvement of production since a contented labour alone can be expected to give their best.
40.	8.36	Demands received from labour unions should be considered by the Managements with sympathy without much loss of time and decisions

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		taken on the merits of each demand. Effective steps should be taken by the Managements to establish rapport with the workers and creating in them "a sense of belonging". Proper forums should be established where officers at various levels of management can meet and intermingle more often with various groups of labour. This is only one of the ways to remove the "Psychological barrier" between the managements and labour. Top Management should provide a responsible and responsive leadership, drive and initiative in this direction. The Committee recommend that public undertakings should make effective use of management techniques like Programme Evaluation Review Technique in order to guard against possible delays in the procurement, installation and commissioning of plant and machinery. They would suggest that an adequate number of their officers and engineers be specially trained in the application of this technique.
42.	9.9	As partially decentralised system of maintenance has been introduced only recently and that too by only a few undertakings, its effectiveness can be judged after watching the performance of this system over a period of time. While this system of maintenance can be effective since minor maintenance jobs could be undertaken on the spot without much loss of time, it was likely to increase the existing strength of Maintenance staff. Whatever be the new system of maintenance, the Committee recommend that unreasonable increase of staff strength on this ground should be positively resisted by the undertakings. The Committee emphasise that planned preventive maintenance in public undertakings should be placed on a more scientific footing in the light of experience gained and after making sure that the system did not lead to duplication, over-lapping or over-staffing.

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43.	9.11	The Committee recommend that public undertakings should insist on and invariably obtain Maintenance Manuals from the suppliers of plant and machinery as a matter of standard commercial practice so that the time and labour involved in preparation of these Manuals by the undertakings was saved.
44.	9.15	The Committee are unhappy to note that giant the Public Undertakings like Fertilizer Corporation of India Ltd. and Hindustan Steel Limited which by now have already acquire a number of years standing in their respective fields should still be dependent on foreign experts to advise the local technicians on major over-hauls and repairs of their plant and machinery. They regret to note that adequate attention has not been paid *ab initio* for the development of their own respective cadre of maintenance experts to handle major over-hauls, capital repairs etc. The Committee, therefore, recommend that the Government might consider the desirability to draw up a scheme for development of a cadre of maintenance experts in all the major undertakings so that India's dependence on foreign experts is reduced to the barest minimum & self reliance is developed in the field of maintenance of Plant & Machinery.
45.	9.25	From the foregoing details, it is apparent that actual down time of various units of the Indian Oil Corporation Ltd., and Hindustan Steel Ltd. had been far more than the limits envisaged in the Detailed Project Report or the norms laid down in this behalf. It is rather surprising that during 1967-68 Urea, complex Fertilier and Methonal Plants at Trombay remained down for a total period of 173 days, 282 days and 268 days respectively due to Breakdowns, Fuel limitation, Annual shut down, other reasons, etc. Similarly, steel melting shops of various steel plants of H.S.L. were down from 15 to 40 per cent of the time as against the average down time of 9.6 per cent of such shops. As high down time of plant and machinery results in loss in production and

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		ultimately affects the cost of production also, the Committee recommend that the undertaings concerned should examine the system of maintenance in force in their plants, identify the weaknesses and determine the corrective steps required to remedy this state of affairs without any loss of time. The Committee view it with great concern that despite the fact that steel, Fertilizer and Petroleum industries in public sector have had a number of years experience of the working of plants, the downtime had been excessive to such an extent. They recommend that in future the Annual Reports of all the public sector enterprises contain a para indicating (i) the extent of downtime each year, (ii) the loss in production sufferred on account of downtime and (iii) steps which the enterprise intend to take to arrest the rising trend in down time so that Government and the Parliament remained in touch with standards of preventive maintenance in the plants in the public sector. The Committee are unable to accept the plea that in an integrated plant like Steel, it is not possible to quantify the loss in production on account of down time of plant and machinery and hope that HSL would be able to develop a system which would enable them to quantify the loss in production on account of shut downs in their plants.
46.	9.29	The Committee recommend that all major public undertakings should carry out studies of plant layout of comparable enterprises in India and abroad. Such a comparative study can be a useful exercise for the managements to acquaint themselves with now ideas on plant layouts for improving their own layouts to ensure free and quick flow of materials and facilitate better production in their plants.
47.	10.7	The Committee are surprised to note that some of the public sector undertakings, for example, the Hindustan Photo Films Mfg. Co., Hindustan Salts Ltd., Mining and Allied Machinery

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		Corporation Ltd., Modern Bakeries (India) Ltd., National Instruments Ltd., Praga Tools Ltd. have not developed any cost control scheme so far. The Committee are of the view that in the absence of a satisfactory cost control scheme it is unthinkable for the management of any enterprise to keep an eye on the trends of cost of production and to take timely remedial measures. They recommend that all the undertakings should take early steps to instal effective cost control schemes suited to their respective industries within a specified period and furnish a report to Government.
48.	10.8	The Committee are unhappy to note that in the past, the studies made by the Bureau of Public Enterprises did not cover the important question as to whether the managements of public sector enterprises had made use of cost date for management decisions and if so to what extent.
49.	10.10	The Committee recommend that Government should make arrangements in consultation with the institute of cost and Works Accountants of India, Calcutta for harnessing and proper orientation of cost Accounts in India to equip them to man senior level positions.
50.	10.24	The Committee feel that comparison of the actual cost of production with the cost estimates stipulated in the Detailed Project Report is a useful exercise and cannot be ruled out altogether simply because some of the assumptions made in the DPR had undergone a change or some factors were lost sight of at the time of drawing up the DPR.
51.	10.25	The Committee are unhappy to note that cost of production had increased in some cases (e.g. coke and ingot steel in the case of Hindustan Steel Ltd., Leco in the case of Neyveli Lignite Corporation Ltd. etc.) to more than 200 to 374 per cent of the cost estimates given in the DPRS

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		HSL has explained the reasons for this abnormal rise in cost of production on the ground that "raw materials prices were indicated to the consultants on a very rough basis" and the cost estimates of bought out items were based on a very rough and provision rates with the result that such extra ordinary escalation in cost of production became unavoidable. They recommend that all Public Sector undertakings should make concerted efforts to bring down the cost of production to fair level by setting right the deficiencies, if any, in organisation and management and developing cost consciousness at various levels of management. Regarding further projects, the Committee strongly urged that the DPR should be drawn up most carefully on a realistic and practical basis for assessment of cost estimates. The Committee feel that reduction in the cost of production would enable the public sector enterprises to offer their products at fairly competitive prices in the international markets.
52.	10.31	The Committee are of the view that public sector enterprises should evolve some permissible limit for rejections so that whenever rejections go beyond that limit causes could be analysed and remedial measures taken. The apprehension voiced by the Heavy Engineering Corporation that laying down of a higher limit may allow the shop floor staff to reach that limit and laying down a lower one may present practical difficulties appears to be an unreal one. If the limit that is laid down is neither high nor low but a realistic one, the difficulty which the HEC have in mind will in probability not arise. Similarly, the difficulty referred to by the Hindustan Steel Ltd. that special steels and export orders require a higher percentage is a one which can be overcome by laying down a separate norm for such items. The Committee, therefore, recommend that all public sector undertakings should lay down norms for rejections for each item or category of items so that the management becomes aware of the increase of rejections

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		well in time and devise remedial measures before it is too late.
53.	10.36	Considering the extent of consumption of materials in Hindustan Steel Ltd. and Fertilizer Corporation of India Ltd. the Committee feel that the existing arrangements for exercising control on consumption of materials are far from satisfactory. They are unhappy to note that consumption of coke in steel plants in India had been more than 900 KG per tonne of Hot Metal as compared to 500 KG in Japan. The Committee hope that various technological improvements effected during the Fourth Plan Period will have a decisive effect on the present high coke rate. The Committee recommend that every Public Undertaking should fix norms for consumption of materials for every unit or even every shift so that whenever the consumption of materials goes beyond that norm, the managements can come to know of it at once and take remedial measures. Needless to say that fixation of norms will have salutary effect not only in guarding against pilferage of materials but also exercising stricter control on quantity consumption.
54	10.40	The Committee are unhappy to note that in the case of as many as thirteen public undertakings, the level of inventories has escalated substantially in the year 1967-68 as compared to the previous year. In this connection the Committee wish to draw the attention of these public undertakings to the recommendations made by them in Chapter II of their 40th Report (Third Lok Sabha) on Materials Management aimed at scientific control of inventories. The Committee had pointed out that as materials costs usually constitute about 2/3rd of the total cost of production in an undertaking, economy in materials cost was a vital factor for the profit earning capacity of an undertaking. The Committee had recommended that public undertakings should strive to bring down the level of inventories to 6 months production by making increasing use of modern methods of inventory

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		control like classification and codification, variety reduction, A.B.C. Analysis, etc. It appears that not much heed has as yet been paid by Government or the Undertakings to make use of modern tools of inventory control. The Committee recommend that public undertakings must take positive steps in this regard and bring down their inventories to an economic level within a fixed period. Government may evaluate the work done during that period and furnish a report to the Committee on the progress achieved.
55.	11.15	The Committee are of the view that top managements of public sector enterprises must regard quality control as an overall management function. They feel that the success of quality control depends to a large extent on the direct interest taken by the managements.
56.	11.16	The Committee regret to note that some of the Public enterprises e.g. Heavy engineering Corporation Ltd. and National Coal Development Corporation Ltd. do not organise in plant training in quality control for their staff. They are of the opinion that training in the field of quality control will give the staff in the quality control organisation an understanding of the theory and practice of the quality control techniques and procedures. They recommend that all the undertakings should evolve in plant training in quality control.
57.	11.17	The Committee are surprised to note that some of the public sector enterprises e.g. Heavy Engineering Corporation Ltd. had not prepared any Manual on Quality Control for the guidance of their staff. They are not sure whether they have any written instructions even. The Committee recommend that even undertakings which have issued detailed instructions on the subject of quality control from time to time should codify the same in the form of a Manual so that such instructions are available for study and reference at one place. Arrangements should also be made for inbuilt mechanism for periodical revision and review of the quality Control Manuals.

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58.	11.20	The Committee recommend that every public undertakings should introduce a systematic procedure for registration of consumers complaints and recording of the action taken on each complaint. Such a system would not only enable the undertakings to know the exact number of complaints received in a year but also serve as an index of the success of the quality control measures adopted by an undertaking show the trend of the consumers reaction to various products. The Committee recommend that all manufacturing units in the public sector should establish an adequate organisation and facilities for feed back on consumer reaction to their products by conducting field surveys through independent and experienced organisations like the Management Institutes in order to find out reaction of consumers regarding their products and to take necessary corrective steps promptly and adequately for rectifying defects, etc. not only of the products sold but also of future production.
59.	12.7	The Committee are of the view that Industrial Engineering functions like the Time and Motion Studies, Work Measurement, Manpower Planning, Job Evaluation, application of PERT etc are vital to every modern industrial enterprise as these functions help in attainment of efficiency and economy. The Committee hope that all those major public sector enterprises that do not have an Industrial Engineering Department already in their enterprise should consider the advisability of setting up such a Department, if not already done.
60.	12.8	The Committee recommend that all the public undertakings who have set up Industrial Engineering Departments or Cells should periodically evaluate the work of these Departments/ Cells to see how far they have been instrumental in bringing about operational efficiency and economy in cost of production.
61.	12.9	The Committee note that Industrial Engineering Departments sometimes face difficulties in selling their ideas and recommendations to the

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		production staff. While the Fertilizer Corporation of India Ltd. had been able to overcome such difficulties by inter-departmental transfers, the Hindustan Steel Ltd. had ensured acceptability of recommendations by heading their Industrial Engineering Departments by a person of status equal to the status of the person who heads the Production Department. The Committee feel that Industrial Engineering Departments should be headed by competent, well qualified and experienced persons preferably drawn from the Production Departments whose recommendations are expected to be more practical and are likely to inspire greater confidence
62	12.12	The Committee note that undertakings in the public sector are becoming alive to their responsibility for the development of safety engineering and ensuring protection to the workmen against accidents from hazardous operation. They recommend that the safety measures should be reviewed from time to time; sustained educational drive to make workers safety conscious should be launched. Shop Safety Committees should be formed and the Management should keep strict watch over incidence of accidents and initiate timely remedial measures.
63.	13.11	The Committee find that developed countries (e.g. U.S., U.K., Japan, Germany) spend about 3 per cent of their national income in research and development which indicate the importance that is attached to research and development. Research and Development is an activity which is vital to the growth of modern industries. Research and Development Organisation enables enterprises to explore newer and better products and processes. This is a continuing activity and can be carried on only if there is an organisation for it. The Committee have noted with regret that even major undertakings like Hindustan Machine Tools Ltd. Indian Oil Corporation Ltd. and the National Coal Development Corporation Ltd. etc. had not set up any research and development organisation in their enterprises so far.

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		The Committee recommend that these undertakings should consider the desirability of establishing such cells but while doing so, it should be ensured that as far as possible, there was only one research and development organisation for one group of industries in the public sector to obviate duplication of research efforts and increase in expenditure. Research and development Organisation should work in close coordination with the Council of Scientific and Industrial Research, other related laboratories and Research Organisations in the country and attend to basic aspects of import substitution and increased productivity with particular reference to cost reduction. Research creates a new basis for technology. It should be oriented to develop self-reliance in a technology and foster a spirit of competition with the leading industrial countries of the world in the development of sound technological base for rapid industrial development.
64	13.17	The Committee note that major public undertakings e.g. the Heavy Engineering Corporation Ltd., Heavy Electricals (India) Ltd. Hindustan Steel Ltd., etc. are keeping themselves abreast of the latest technological developments in leading industrial countries like the U.S.A., Russia, Japan etc. and are also taking steps to adopt improved techniques and processes in the achievement of accelerated production in steel and other important industries.
65.	13.18	The Committee also recommend that public undertakings should take full advantage of foreign collaboration to learn intricacies of design and trends of design so that research could be intensified in promising and relevant fields having bearing on production. There is also need to intensify research where rejections are on the high side, e.g. wheels in Durgapur Steel Plant so that remedial measures are developed after intensive study.

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66.	14.5	The Committee note that most of the Undertakings have raised their own Training Centres and are also taking full advantage of the training facilities available at the management institutes. Barring Fertiliser & Steel, other Undertakings do not have adequate and improved training arrangement in Production Management to suit different levels of their employees. The Committee are convinced that training for Management Development and Production Management is vital to the personnel of any productive Undertaking. They recommend that: (i) All training institutes run by the Public Undertakings should evolve their own modern well-equipped training programmes suiting these specialised requirements; and (ii) all undertakings engaged in production should take advantage of the courses of the Managements Institutes particularly for the senior level of their personnel provided the courses conducted by them suit the needs of their respective industries. The Committee are of the view that there is need for institutional training to the employees to equip them for higher posts.
67	14.8	The Committee are of the view that training in multitrades and job-combination would be helpful in the development of multi-trade workmen in public sector enterprises and checking of overstaffing. They are happy to note that some of the major undertaking (e.g. H.E.I.L., H.S.L., N.C.D.C.) sharing the same view have started job combination in their respective units. The Committee recommend that every undertaking should explore the possible trades in which job-combination could be attempted. Initial hesitation of the trade unions to accept these measures

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		could be overcome by explaining to them the advantages of the system.
68.	14.10	The Committee are of the view that Seminars/Conferences on Production Management could provide a good forum to Production Managers and Production Engineers to meet and discuss their common problems and to exchange their experiences with a view to evolve improved techniques of operational efficiency. Too many Seminars/Conferences may, however, lead to fruitless discussion of theoretical aspects of production problems rather than face to face discussion to hammer out a practical approach. The Committee therefore, recommend that public sector undertakings should introduce the system of "Workshop Discussion" at the level of the undertaking as well as the group of industries so that concrete results emerge out of such discussions. If felt necessary, undertakings may even arrange visits to more profitable enterprises so as to stimulate "action by example."

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