

**COMMITTEE ON PUBLIC  
UNDERTAKINGS  
(1971-72)**

(FIFTH LOK SABHA)

**NINTH REPORT**

[Action taken by Government on the Recommendations  
contained in the Sixty-Seventh Report of the  
Committee on Public Undertakings  
(Fourth Lok Sabha)]

**PRODUCTION MANAGEMENT IN PUBLIC  
UNDERTAKINGS**



**LOK SABHA SECRETARIAT  
NEW DELHI**

September, 1971/Bhadra, 1893 (S)

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# C O R R I G E N D A

## NINTH REPORT OF THE COMMITTEE ON PUBLIC UNDERTAKINGS ON PRODUCTION MANAGEMENT IN PUBLIC UNDERTAKINGS (FIFTH LOK SABHA)

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43	58	10	consumer	consumers
43	58	21	Electrical	Electricals
43	58	27	sit	site
44	58	6	dated 12.2.71	dated 18.3.71
44	60	9	Appendix XXXVI	Appendix XXXVII
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48	66	13	course	courses
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50	68	9	ever	even
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COMMITTEE ON PUBLIC UNDERTAKINGS  
(1971-72)

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3. Shri Dinen Bhattacharya
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STUDY GROUP VII ON ACTION TAKEN REPORTS AND  
GENERAL MATTERS

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1. Shri M. B. Rana—*Chairman*
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3. Shri S. N. Misra
4. Shri Dahyabhai V. Patel
5. Shri Syed Ahmad
6. Dr. Kailas
- \*7. Dr. V. K. R. Varadaraja Rao

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\*Resigned from the Committee on Public Undertakings with effect from 29th July, 1971.

## INTRODUCTION

I, the Chairman, Committee on Public Undertakings, having been authorised by the Committee to submit the Report on their behalf, present this Ninth Report on the Action Taken by Government on the recommendations contained in the Sixty-seventh Report of the Committee on Public Undertakings (4th Lok Sabha), on Production Management in Public Undertakings.

2. The Sixty-seventh Report of the Committee on Public Undertakings was presented to the Lok Sabha on the 24th April, 1970. Government furnished their replies indicating the action taken on the recommendations contained in the Report on different dates during the period from the 15th October, 1970 to 23rd April, 1971.

The replies of Government to the recommendations contained in the aforesaid Report were considered and approved by the Committee on the 16th September, 1971 and the Chairman was authorised to finalise the Report on the basis of the decisions of the Committee.

3. The Report has been divided into the following five chapters:—

- (i) Report.
- (ii) Recommendations that have been accepted by Government.
- (iii) Recommendations which the Committee do not desire to pursue in view of the Government reply.
- (iv) Recommendations in respect of which replies of Government have not been accepted by the Committee.
- (v) Recommendations in respect of which final replies of Government are still awaited.

(x)

4. An analysis of the action taken by Government on the recommendations contained in the Sixty-seventh Report of the Committee is given in Appendix XLV. It would be observed, therefrom that out of 68 recommendations made in the report 91 per cent have been accepted by Government. The Committee do not desire to pursue 6 per cent of the recommendations in view of Government's reply. Replies of Government in respect of 3 per cent of the recommendations have not been accepted by the Committee.

NEW DELHI;  
September 16, 1971.  

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Bhadra 25, 1893 (S).

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

## CHAPTER 1

### REPORT

A. Bureau of Public Enterprises—Para 3.37 of Sixty-Seventh Report  
(Fourth Lok Sabha)

#### Recommendation (Serial No. 8)

The Committee had recommended that there was need for decentralisation in the functioning of the Bureau of Public Enterprises which 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 and whose functions had been enlarged following the recommendations made by the Administrative Reforms Commission in their Report on Public Sector Undertakings. The reason why decentralisation was recommended was that the Bureau should not grow into a monolithic and top heavy administration. The Committee had also desired that the Bureau should consider whether it would not be better for it to function in small working Groups, each Group being responsible for one type of industry. In their reply, the Government have accepted the Committee's view that there should not be too much centralisation of powers and functions in the Bureau as that would not be conducive to efficiency and hence will not be in the best interests of the public sector.

2. As regards functioning in small working groups, the Government have stated that such an arrangement in any agency like the Bureau which had to deal with 90 public undertakings ranging from the manufacture of heavy electrical equipments, heavy machine tools, organic chemicals, drugs and surgical instruments etc. as well as servicing organisations in aviation, shipping, trading, etc. would call for employment of a considerable number of specialists in the Bureau itself. It has also been stated that approach of the Bureau for dealing with the problems of enterprises had been mainly 'inter-disciplinary' in nature in an essentially decentralised set up where the divisions of the Bureau are headed by full time Advisers/Directors under the overall charge of a full fledged Additional Secretary in the Department of Expenditure. In other words, even for going into the problems of a particular enterprise, the two or three concerned Divisions of the Bureau were normally involved to ensure that all the aspects of the working-managerial, financial, production, etc. received due attention. The Committee have also been informed that Bureau contemplates to draw up a panel of Consultants after

careful assessment and scrutiny with a view to make their services available, to the Bureau/Ministries/public undertakings for tackling specific problems.

3. The reasons advanced for not introducing decentralisation and functioning in small working groups are not convincing. While it is for the Government to consider how it should function to discharge the role assigned to it, the Committee do feel that Bureau should avoid duplication in its work. If public undertakings and the Bureau were to perform the same functions, it would lead to waste of funds and human energy. Government should see that the Bureau bestows greater attention to its function as a guide on technical matters and helps the undertakings to solve their problems with which they are confronted. The experience of the Committee had been that public undertakings have not been able to improve their performance in the field of production. Had the Bureau functioned on the right lines for the last seven years, since its inception in 1965, the performance of the public sector undertakings would have been surely much better. The Committee therefore hope that Government would do some re-thinking to evolve a more effective set up and functioning of the Bureau of Public Enterprises.

4. The Committee also find that Bureau has not been able to generate conditions for the growth of suitable managerial cadre to run the public undertakings.

5. The Committee also recommend that a Chapter should be added in the "Annual Report on the Working of Industrial and Commercial Undertakings of the Central Government" to bring out the concrete contribution made by the Bureau of Public Enterprises towards achieving greater utilisation of the existing capacity, effecting reduction in unit cost of manufacture and other measures taken to effect economy, improve efficiency and obviate losses. This would enable Parliament and public to know the concrete steps taken by Government to improve the efficiency and performance of public sector which occupies a pivotal position in national economy.

*B. Under-utilisation of capacities—Para 6.46*

**Recommendation (Serial No. 25)**

6. The Committee had recommended that a high level Expert Committee should be appointed by Government to make a thorough and systematic assessment of underutilisation 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 underutilisation in various public undertakings. In their reply, Government have stated that they had 'noted' this recommendation. Government have admitted that extent of underutilisation of capa-

cities was 40 per cent in the case of Steel Plants, 30 per cent in the case of Heavy Equipment manufacturing plants and 20 per cent in the case of mining and fertilizer industries. Government have indicated the steps taken to tackle the problem of under-utilisation of capacities. These include improvement in the organisation and management of maintenance, improvement in supplies and quality of raw materials including refractories, improved productivity by operator motivation, etc. in the case of Steel Plants. Managerial improvements such as strengthening of industrial engineering, design and development activities, laying down of standards of performance for workers, machinery and plant, planning and control of production, cost control system, etc. It has also been stated in Government's reply that the Bureau watches the performance of the enterprises by obtaining regular returns from the units. Periodic performance reviews were also carried out at the highest level in the Finance Ministry and administrative Ministries concerned with the enterprises. In conclusion, the Government have stated in their reply 'In the circumstances, Government feel that no useful purpose will be served by appointing a high level expert Committee at the present moment to make an assessment of underutilisation of capacity and suggest remedial measures. If necessary, this can be done after the results of all the steps taken fructify.'

7. **The Committee do not deny the fact that Government have been taking steps to tackle the problem of underutilisation of capacities in public sector undertakings. The point for consideration is how far these steps have proved effective. The Government have themselves admitted the existence of underutilisation of capacities. (This problem had been with the public sector for a number of years and still no satisfactory solution appears to be in sight.) The country has invested large sums of money in setting up public undertakings with huge capacities for production. If these capacities remain underutilised for years, the very functioning of the enterprises would tend to be uneconomical and would add to the cost of production. In view of these consideration, the Committee strongly feel and reiterate their recommendation that a high level Expert Committee should be appointed by Government to go into this problem of underutilisation of capacities. The Committee are not in favour of allowing this problem to linger any further.**



## CHAPTER II

### RECOMMENDATIONS THAT HAVE BEEN ACCEPTED BY GOVERNMENT

#### Recommendation (Serial No. 1)

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 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 organisation set up and plug the loop-holes that appear in the existing machinery for coordination.

(Paragraph 2.21)

#### Reply of Government

Government have noted this recommendation. It is agreed that there should be co-ordination of all activities both within the enterprises as well as at one centre like the Bureau of Public Enterprises acting as a centre forum and clearing house for all public sector enterprises and serving as a co-ordinating agency in respect of activities requiring uniformity of action.

As regards internal co-ordination at the enterprise level it is understood that some undertaking have already a regular machinery to carry out different stages of production, production process and despatches of the finished products through a net work of inter-communication system. The technical wing of the undertakings is also being strengthened wherever necessary. The annual production plan is also discussed with sales officers and production officers. Periodic reviews of the actual performance of the plants in production, sales and management are always carried out. Problems of procurement of raw-materials, availability of spares, quality of production are also discussed. Thus the existing arrangements for co-ordination which seem adequate would have to be improved as and when necessary with a view to formulate a profit centre or a centre of responsibility

and plug the loop holes whenever they appear in the existing machinery. The Bureau of Public Enterprises has issued directives to all Public Sector enterprises that in view of the importance of production planning and control adequate steps should be taken to strengthen the production control organisation; and production control being a continuous activity, necessary improvements must be made on a continuous basis. The action to be taken as envisaged by the Bureau of Public Enterprises was to be three-fold, in three different stages. First, in the planning phase the enterprises should forecast production of productmix and the processes involved and also plan the setting up of a designs organisation as well as material and tool control, loading and scheduling. In the second phase, namely, action phase, the orders would have to be released to the various departments. In the final phase, the follow up of the orders both in regard to process and data collection and interpreting as well as making changes by way of replanning and improvement in the standards of performance and quality, product development and product diversification and prototype manufacture should be carried out. In all the three states it was envisaged the close liaison would be maintained with the departments dealing with inspection and quality control, maintenance, repairs and replacement of equipment, training of operators, etc. Therefore, it would appear that existing instructions are adequate on the subject. However, in view of the need for making changes and improvements on a continuous basis, Government have issued instructions to the enterprises to review the existing arrangements of co-ordination of various activities with a view to formulate a profit centre or a centre of responsibility and plug the loop holes in the existing machinery as pointed out by the Committee. A copy of the instructions to the Ministries is enclosed. (Appendix I).

[Ministry of Finance, Bureau of Public Enterprises Office Memorandum No. 1(7)/DAP(R)/69, dated 3-2-1971]

### **Recommendation (Serial No. 2)**

During evidence, the representatives 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.

(Paragraph 2.22)

### Reply of Government

The comments have been noted by the administrative Ministries and the Public Sector Enterprises, for future action.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 24-12-1970.]

### Recommendation (Serial No. 3)

The Committee agree that is neither feasible nor desirable to prescribed 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 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 also predetermined 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 Committee feel that in a badly conceived Project, good management is process of production are complex. The 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. (Paragraph 3.12)

### Reply of Government

Government have noted this recommendation. It is agreed that there should be different types of planning organisations according to different industries. But the planning organisations so set up should be capable of evolving a proper concept of production planning taking into account a realistic demand survey of the products and study of Feasibility Report and, again, at the stage of scrutiny of Detailed Project Report. Major links in the production process would have been established at the time of consideration of the Detailed Project Report with a simultaneous appraisal of the cost estimates. Bureau of Public Enterprises has also requested the Ministries to advise the Public Sector enterprises under their control to examine, their existing production control organisations and systems in the light of factors such as changes in market, standard of performance and quality, product diversification, product development and prototype manufacture. Thus, every effort is made in the planning stage as well as in the implementation stage and the follow

up stage to establish a close liaison with the marketing and production on the one hand, and production and management, on the other. It is also understood that in the enterprises where there is an organisation for production planning it keeps in touch with the sales department by obtaining periodical reports from them on priority commitments and on this basis production programme by the enterprises is prepared. However, in view of the recommendation of the Committee on Public Undertakings and the importance of the subject the Ministries are again requested to issue suitable instructions to the enterprises under their control to evolve a proper concept of production planning taking into account a realistic demand survey of the product.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 2-2-1971.]

#### **Recommendation (Serial No. 4)**

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. (Paragraph 3.13)

#### **Reply of Government**

Government have noted this Recommendation. It is also stated for the information of the Committee on Public Undertakings that a number of undertakings have adequate organisation for production planning, e.g. Hindustan Steel Ltd., Indian Oil Corporation Ltd., Heavy Engineering Corporation Ltd., etc. The nature of the organisation differs from enterprise to enterprise depending upon the type of product to be manufactured and the problems involved in planning and control. In view of the Committee's recommendation and the importance of the subject, the Ministries are now being advised that they should advise the enterprises under their control to review the existing planning organisation at the unit level constantly with a view to make improvements and evolve a proper concept of production planning taking into account changes in the demand forecast and the need to change the product-mix without, however, impairing the long-term objectives of the enterprises. In case of undertakings where no machinery exists for production planning the Ministries are being requested to advise them to set up a suitable planning cell after taking into account the type of industry

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and other relevant factors. A copy of the instructions issued by the Bureau of Public Enterprises to the Ministries in this regard is enclosed. (Appendix II).

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 2-2-1971.]

### **Recommendation (Serial No. 6)**

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 technique 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 for 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 guid lines may be issued to the undertakings, highlighting the modern techniques to be followed by each group of industries.

(Paragraph 3.27)

### **Reply of Government**

The Bureau of Public Enterprises has already initiated the action for review of production planning and control organisations in each public sector enterprise. This may need to be followed up by a detailed study of the organisation of those public sector enterprises where the targets of production have not been achieved due to organisational deficiencies.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 24-12-1970.]

### **Recommendation (Serial No 7)**

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 enterprises should be taken at the time of setting up the enterprises 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. (Paragraph 3.36)

### **Reply of Government**

Government have agreed with this recommendation. Instructions have been issued to the undertakings through the administrative Ministries (copy enclosed). (Appendix III). [Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 2-2-1971.]

### **Recommendation (Serial No. 9)**

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 of feeling of involvement by labour in the fulfilment of objectives of production management. (Paragraph 4.7)

### **Reply of Government**

Government have noted this recommendation. It is agreed that communication system with labour is not only very important but

also it is desirable to review the effectiveness of the existing communication system from time to time and make improvements so that—

- (i) a proper atmosphere may be created between management and the employees;
- (ii) a sense of team-work can be built up within the undertakings; and
- (iii) a feeling of involvement by labour in the fulfilment of objectives of production management is generated.

The enterprises may however, be left with the choice to choose the methods for adoption of this policy according to their need and the in-built nature of adjustments required between labour and management. A copy of the instructions issued to the Ministries on this subject is enclosed. (Appendix IV)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 2-2-1971.]

#### **Recommendation (Serial No. 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 a 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. (Paragraph 4.10)

#### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed (Appendix V)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 16-1-1971.]

#### **Recommendation (Serial No. 11)**

The Committee are in favour of reducing the multiplicity of Reports>Returns submitted to Top Management/Government with-

out 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 floor 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. (Paragraph 4.17)

#### **Reply of Government**

Government accept this recommendation. Accordingly, administrative Ministries are being requested to review the extent of the utility of the reports and returns received from the Public Sector Undertakings with a view to cut out non-essential items of information. Further, with a view to assist the undertakings to rationalise and streamline their information and reporting systems Government have initiated action to obtain the services of experts in the country to study the prevalent practices of the enterprises and to evolve a few models based on which individual undertakings could build up their own systems to suit their particular needs. It must, however, be admitted that the use of information reporting system as a tool for effective management control is a new and developing discipline and that there are very few experts well qualified in this discipline in the country and those that are available are already busy with a number of assignments. However, it is hoped to entrust this work to an expert very soon are prepare model systems for guidance of Public Sector enterprises.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 7-1-1971.]

#### **Recommendation (Serial No. 12)**

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 exception which are relevant to their responsibilities. (Paragraph 4.21)

### **Reply of Government**

All public sector enterprises have noted this recommendation for suitable action.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 24-12-1970.]

### **Recommendation (Serial No. 13)**

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 dispersed 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 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 of every public sector enterprises fully responsible for overall 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 some close watch by Government and Parliament kept informed of the results achieved. (Paragraph 5.16)

### **Reply of Government**

Government have accepted that the best way to ensure that an undertaking runs with the maximum efficiency is to confer on it

maximum possible autonomy and hold it accountable for performance. Government policy underlying the various decisions taken during the last two or three years to bring about improvements in the managerial and operational efficiency of Public Enterprises may be broadly defined as follows:—

- (i) It is recognised that in order to enable these undertakings to work with greater autonomy, there should be sufficient delegation of powers to the Public Enterprises.
- (ii) Simultaneously, every effort should be made to assist the enterprises to secure suitable Managerial talent.
- (iii) In addition, measures have to be taken and guidelines laid down for improving management techniques in all its various aspects in these enterprises.
- (iv) There should be an effective machinery for periodical review and appraisal of their performance so that defects may be put right as speedily as possible.

These policy directions, which still continue to hold good, were incorporated in the document "Public Sector Enterprises—A Memorandum" circulated with the budget documents in February, 1969.

As regards the "objectives" of the individual enterprises, it is obvious that such objectives should be formulated by the enterprises themselves, although the same will have to be broadly approved by Government. Consequently, the administrative Ministries have been addressed to take necessary action in this direction.

With regard to the responsibilities of different levels of management within the enterprises, this is also a matter which should be done by the concerned undertakings, particularly since they will have to ensure that the objectives and obligations of the enterprises themselves are laid down in clear terms as well as broken down as objectives of people at different lower levels, and the performance of the undertakings as well as individuals reviewed against these objectives and obligations. The performance of the top management will have to be assessed taking into account the extent to which the enterprise is able to achieve the objectives and obligations already laid down. This is basically the principle on which 'Management by Objective' works. The Bureau of Public Enterprises has taken steps to introduce this modern technique of Management by Objective (MBO) in Public Enterprises. MBO should help the managers of the undertakings not only in concentrating on the key results to

be achieved by them individually but also in the achievement of the company's objectives. When this management tool is adopted by all the undertakings, it will provide a sound basis for assessing the performance of individual managers against the predetermined targets for them.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 22-3-1971]

### **Recommendation (Serial No. 14)**

The heavy financial losses incurred by major public undertakings e.g. Hindustan Steel Ltd., Heavy Engineering Corporation Ltd., Mining and Allied Machinery Corporation Ltd., Heavy Electrical (India) Ltd., Indian Drugs and Pharmaceuticals Ltd., over the years held weight to the impression that 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 of 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 enterprises is expected to reach the break even point. Should an enterprises 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 enterprises is to be allowed to continue.

(Paragraph 5.19)

### **Reply of Government**

Government have from time to time impressed on public enterprises that they should be economically viable units and all out efforts should be made to increase their efficiency and establish the profitability at the earliest. At the time of the examination of Feasibility Study Reports and Detailed Project Reports, the viability of the proposed investment is carefully gone into before a decision is taken. In case of enterprises incurring continuous losses, even after the gestation period, their performance is examined in detail

in order to identify the problems faced by them and initiate effective remedial measures which in an extreme case, may even include the advisability if in the national interest of closing down the plant.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 5-1-1971.]

### **Recommendation (Serial No. 15)**

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 out 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.

(Paragraph 5.23)

### **Reply of Government**

Government is keen that "Management by Objectives" as a system should be introduced gradually in all Public Enterprises. The conditions, however, differ from enterprise to enterprise; no uniform instructions will be useful in this context. In any case, the enterprises have already been addressed by the Bureau about the need for introducing MBO, and the Chief Executives were also enabled to attend the series of lecture meeting on MBO convened by the Bureau at selected centres to assist them in initiating action in introducing MBO in their respective undertakings. As regards the objective of the individual enterprises, it is obvious that such an objective should be formulated by the enterprises themselves, although the same will have to be approved by Government. Consequently, the administrative Ministries have been addressed to take necessary action in this direction.

[Ministry of Finance, Bureau on Public Enterprises u.o. No. 9(156)/70-BPE(GM-I)/70 dated 9-11-1970.]

### **Recommendation (Serial No. 16)**

The Committee are of the view that unless a Managerial Cadre consisting of persons of probability 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 responsi-

bility in the public section enterprises, problems arising in the realm of production management cannot be satisfactorily tackled.

(Paragraph 5.25)

### **Reply of Government**

“Government have decided in principle that the Public Enterprises should have their own managerial cadres, manned by the most competent personnel available. Government are seriously considering schemes under which there would also be some degree of mobility between public enterprises at the top and ‘near-top’ levels.”

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)

DAP(R)/69 dated 31-12-70.]

### **Recommendation (Serial No. 17)**

During the course of their visit to one of the leading steel manufacturing company in the private sector, the Committee were informed that there steel Plant was working at 90 to 95 per cent of its capacity even though some of their mechnes were installed several years ago. The Committee are alarmed to find that the Steel Plants of Hindustan Steel Ltd. are working at only 50 to 68 per cent of their rated capacity. If a new enterprises 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 inexcusable 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.

(Paragraph 6.12)

### **Recommendation (Serial No. 18)**

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 recommended 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.

(Paragraph 6.13)

### Reply of Government

“Government have noted the views of the Committee on Public Undertakings. They would, however, like to point out that actual production in the three steel plants of Hindustan Steel Ltd. had been progressively built up at a satisfactory rate and at the end of the usual gestation period it has stabilised at a level that fully utilised the original installed capacity of 1 million tonnes of steel ingots in each plant. The major expansion schemes were thereafter taken up and simultaneously with current production the commissioning of new equipment was taken up, commencing from 1964. The attainment of optimum production levels to utilise fully the expanded capacities in the three plants must also take some time after the complete installation of all the main and directly connected items of equipment necessary for the additional production. This unavoidable time lag, being affected by the constraints of (i) integrating existing production facilities in operation with the commissioning and proving of highly sophisticated new plant and synchronising its introduction into the production stream and (ii) the environmental factors such as economic recession, labour unrest and disputes, precarious indigenous supplies of refractories etc., affecting the operation of the total system in each plant, may not be considered as excessive in any marked way. It is further to be appreciated that the installation of all the additional equipment, full development of operating and controlling techniques for sophisticated plant and the renovation and remodelling of some of the major items of older plant are all expected to be completed shortly. Consequently, the present attainable capacity is about 5 million tonnes as against the ultimate expanded capacity of 6 million tonnes of ingot steel per annum which is yet to be fully installed.

Hindustan Steel Ltd., having identified the factors inhibiting the rapid development of production, are implementing the major changes required in the technical management of their operations, including co-ordination of supply of correct raw-materials, refractories, spares, etc., and improvement of the state of maintenance. It is expected that with the completion of installation of all additional equipments and the improvements in the other operating areas, the actual production will stabilise at about full capacity level in the near future.”

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7) / DAP(R)/69 dated 2-3-1971.]

### Recommendation (Serial No. 19)

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 predicament primarily due to the inaccurate and "overambitious" demand projections made before installation of their production capacities. The Secretary of the Ministry of Steel & 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 marketing demand projections so that production capacities were installed or expended 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.

(Paragraph 6.14)

### Reply of Government

Government have noted this recommendation and have accepted the necessity for a regular machinery for demand assessment and analysis of economic data and for making regular and systematic review of the machinery improve its reliability and efficiency. At present the first step in setting up a project is to obtain from competent technical agencies the Feasibility Report conforming to the manual circulated by the Ministry of Finance and containing all essential data and technoeconomic analyses as stipulated in the manual. The Feasibility Report is further considered by the Ministries, the Planning Commission, the Bureau of Public Enterprises and the Finance Ministry and finally, where necessary, by the Cabinet. Investments decision is taken after due consideration of the Feasibility Report and project approval given after a thorough scrutiny at all levels of the Detailed Project Report.

As regards demand assessments for the earlier project reports in most industries, especially for manufacture of capital goods, the demand assessment more or less synchronised with the demands materialising during the 2nd and 3rd Five Year Plan; however, if the Plan targets did not mature the demand assessments in the project reports were also rendered obsolete.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69 dated 5-2-1971.]

#### **Recommendation (Serial No. 20)**

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 conforms 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.

(Paragraph 6.23)

#### **Reply of Government of India**

Noted by all Public Sector Enterprises for suitable action.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69 dated 24-12-1971.]

#### **Recommendation (Serial No. 21)**

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 their supreme task and made 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 reduced 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 recommended 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.

(Paragraph 6.33)

### **Reply of Government**

Government agree with this recommendation and have issued suitable directive in this connection to the Public Sector enteroris-es for future guidance and compliance (Appendix VI)

With regard to the Trombay Unit of the Fertilizer Corporation of India it may be noted that the foreign contractors who supplied the main plants for the factory were either not able to demonstrate guaranteed performance of the plants or could should the guaranteed performance only on a modified basis. In the circumstances, while on the one hand action was taken to claim compensation from foreign contractors for their failure to fulfil the guarantees; on the other, action was also initiated to identify areas of deficiencies, analyse the process and work out specific remedial measures. Studies were systematically made and reviewed by a series of experts and high level committee. The remedial steps recommended by the committee are under implementation and it is hoped by the enterprises that by about 1972-73 the Trombay unit will be able to attain, as nearly as possible, the rated capacity.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69 dated 2-3-1971.]

### **Recomendation (Ser'al No. 23)**

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 the 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 unhappy 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.

(Paragraph 6.37)

#### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed. (Appendix VII)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 16-1-1971.]

#### **Recommendation (Serial No. 24)**

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 undertaking 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.

(Paragraph 6.43)

## Reply of Government

Government agree with this recommendation and have issued necessary directives (Appendix VIII) in this regard to ensure that no production is taken up except to meet established demands **including export demands based on dependable forecasts of future requirement**, that neither annual target nor actual production in a plant is modified because of minor fluctuations in demand in the short run and that vigorous steps are concurrently taken to stimulate the market to diversify production and make alternative use of under-utilised capacity wherever full utilisation of capacity for the original production line is not found reasonably possible.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 5-2-1971.]

### Recommendation (Serial No. 26)

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 short fall 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 reasons why the shortfalls should be as high as 75 percent. 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 target of production were more realistic that what they had been in the past.

(Paragraph 7.16)

### Reply of Government

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed. (Appendix IX).

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 16-1-1971.]

#### Recommendation (Serial No. 27)

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 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 would 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.

(Paragraph 7.24)

### Reply of Government

Government agree with this recommendation and have issued the necessary directives, a copy of which is enclosed for the Committee's information. (Appendix X).

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69 dated 18th May, 1971.]

#### Recommendation (Serial No. 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.**

(Paragraph 7.28)

### **Reply of Government**

“Government have noted this recommendation. Government have been considering for some time past ways and means for accelerating the pace of growth and development of ancillary industries, particularly under the umbrella of Public Sector undertakings. The subject-matter was discussed in the meeting of the Small Scale Industries Board and also at a Seminar in Bangalore, presided over by the former Cabinet Secretary, in April, 1970. Government's aim has been that large-scale undertakings in the Public Sector should set an example in the development of ancillary units which can serve as a stimulus both to the Public and the private sectors. The broad lines upon which action has been suggested to the Ministries for implementation by the undertakings are given below.

(1) The determination of product line and components the manufacture of which is to be offloaded to ancillary industries should be established at the time of setting up a new product or undertaking's major expansion and included in the Detailed Project Report.

(2) The Public Sector undertakings should identify and earmark particular lines or items or production/manufacture and offload the production of these to the ancillary industries.

(3) They should offer a guarantee of offtake of 50 per cent of production of the ancillary units subject to suitable price fixation formula and quality control and timely delivery.

(4) They should also look after the raw-materials requirement of the ancillaries including imported materials required and arrange to provide for necessary foreign exchange and actual users' import licence.

(5) The parent undertakings may also provide technical consultancy and know-how to the small units for putting up the plant and organise new and modified lines of production to fit into the changing demands of the large-scale Public Sector units.

(6) They should also look after equipment maintenance and requirement of spares by providing a good machine shop which will

cater to the repair needs both of their own equipment as well as that of the ancillaries at reasonable cost.

(7) The Board of Directors of the Public Sector undertakings were also requested to review position from time to time regarding the development of ancillary units connected with their products and make improvements.

(8) They should also appoint a full-time senior officer, who should be entrusted with the responsibility of developing ancillary industries and submit 6-monthly reports to the DGTD; Development Commissioner, Small Scale Industries, with a copy to the Bureau of Public Enterprises.

(9) The Ministries were also requested to instruct the Public Sector undertakings to draw up a time schedule for implementing the some of these proposals like the items proposed to be manufactured, the facilities that should be made available to the assistance in raw-materials, tooling facilities, etc.

The Bureau of Public Enterprises is also proposing to issue guidelines to the undertakings on the above lines and ask them to send periodical reports to the Bureau and D.G.T.D. The Ministries are also requested to instruct the undertakings accordingly."

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7) |DAP (R)|69 dated 28-1-1971].

#### **Recommendation (Serial No. 29)**

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 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.

(Paragraph 7.32).

#### **Reply of Government**

Government have noted the views of the Committee. With the introduction of the new procedure as outlined in para 7.31 and other actions taken by the DGTD, indigenous clearance of the import requirements of Public Sector enterprises is expected to be considerably expedited. However, a constant watch is kept on these

procedures, as suggested by the Committee with a view to ensure that references from Public Sector enterprises for clearance from indigenous angle are expedited. Government have accordingly constituted a high level study group with the Director-General, BPE as its Chairman with five other members associated from Ministries/Public Sector undertakings, who are presently studying in depth the reasons for delays at different stages and their recommendations as and when received would be considered for implementation to streamline the procedures further.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) DAP(R)|69, dated the July, 1971].

### Recommendation (Serial No. 31)

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.

(Paragraph 7.42)

### Reply of Government

Government have noted this recommendation. A copy of the order issued by Government is also enclosed. (Appendix XI).

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7)|DAP(R)|69 dated 16-1-1971].

### Recommendation (Serial No. 32)

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., Baruani and Gujarat refineries of the Indian Oil Corporation Ltd. When the labour utilisation in an enterprise touches as low 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.

(Paragraph 8.9)

### Reply of Government

"Government have noted the recommendation and have directed the concerned enterprises to complete the specific investigations of low labour-utilization and take suitable action to raise it."

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7)|DAP(R)|69 dated 11-3-1971.]

### Recommendation (Serial No. 33)

Some of the public undertakings as, for example, National Building 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. 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 in suitable form 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.

(Paragraph 8.10)

### Reply of Government

Government agree with this recommendation. Suitable instructions have been communicated (Appendix XII) to the Public Sector Enterprises for introducing adequate systems for:

- (i) recording actual labour utilisation on all activities,
- (ii) compiling indices of labour-utilisation and labour-productivity, and
- (iii) promptly locating areas of under-utilisation and under-productivity of labour in terms of these indices .

and taking prompt remedial measures to improve utilisation and productivity of labour and keeping a timely check on the persistent tendency to over-staff.

[Ministry of Finance, Bureau of Public Enterprises, O.M., No.1(7)|DAP(R)|69, dated the July, 1971.]



### **Recommendation (Serial No. 34)**

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

(Paragraph 8.18)

### **Reply of Government**

The recommendation of the Committee is noted (Appendix XIII). Government being conscious of the need for sustained efforts by managements of enterprises to raise productivity have been advising and helping Public Sector Enterprises to identify specific areas where improvements are necessary and to take expeditious remedial action in the management, organisational technological and technical fields as applicable to each unit and are periodically reviewing the results achieved by them.

Government feel that considering the multiplicity of inter-related major steps that are being implemented, the time that these must take to produce significant rise in productivity and the continually changing level of utilisation of resources, the proposed studies of man-productivity industry-wise may neither provide the valid measurements nor expose significantly new deficiencies at this stage which could be useful to the constituent enterprises in their endeavour to raise productivity. Nevertheless, the establishment of industry-wise man-productivity standards amongst other standards is considered essential and centrally organised studies for this same would be taken up at the appropriate time.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)|DAP(R)|69, dated 18th March, 1971.]

### **Recommendation (Serial No. 35)**

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 recommended that public undertakings should adopt improved and modern management techniques capable of raising the level of productivity.

(Paragraph 8.20)

### **Reply of Government**

Government have noted this recommendation. A copy of the recommendation has been forwarded to the Ministries with the request that they may advise the undertakings to introduce improved and modern management techniques with a view to raise the level of productivity.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)DAP(R)/69, dated 2nd March, 1971].

#### **Recommendation (Serial No. 36)**

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 great 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. Parameters to productivity should be fixed as to take into account production in comparable units (within the country and outside). Productivity norms and incentives schemes should be applied from the beginning.

(Paragraph 8.21)

### **Reply of Government**

“Government have noted this recommendation. By and large the managements of the enterprises are fully conscious of the need for quality production and have established adequate organisation and facilities for achieving it including specifications and standards, independence of inspection, operation controls, analyses of results and reviews, education, training, etc. However, in view of the importance of this aspect and the need for sustained top level attention to it, the recommendations of the Committee have been suitably communicated to all the enterprises, a copy of which is enclosed for the information of the Committee.” (Appendix XIV)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)/69, dated 2nd March, 1971].

#### **Recommendation (Serial No. 37)**

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.

(Paragraph 8.24)

### **Reply of Government**

Government have noted this recommendation. It is clarified that for new projects and expansion schemes careful assessment of manpower requirements are made in advance and actual employment so programmed has to obviate surpluses. The enterprises are also developing their own expertise particularly in the industrial engineering department for making such studies along scientific lines with the help of external consultancies such as Institute of Manpower Research, Administrative Staff College, National Institute of Training in Industrial Engineering, National Productivity Council, etc. as and when necessary. In a few large enterprises like Hindustan Steel, Heavy Engineering Corporation, Mining and Allied Machinery Corporation, etc. there was appreciable initial surplus manpower due to several causes such as absorption of construction staff, inadequacy of skills necessitating large strengths, planned excess to meet development, expansion, training and high-turn-over needs. However, with increasing production without additional manpower, by retraining and redeployment, adjustments with requirements of manpower for expansion schemes and new projects of similar nature, voluntary retirement, etc. the surpluses are being progressively reduced.

In view of the importance of this aspect, it is again being brought to the notice of the Enterprises through the administrative Ministries, directing them to review their manpower position and the machinery required for reducing surpluses and to take adequate measures in the light of the Committee's recommendations, a copy of which is enclosed for the information of the Committee. (Appendix XV).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69, dated 11th March, 1971].

### **Recommendation (Serial No. 38)**

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.

(Paragraph 8.25).

### Reply of Government

The Administrative Reforms Commission had also referred to the problem of over-staffing in Public Enterprises. The recommendations made by the Commission in this area and Government's decisions thereon are enclosed. These decisions on the recommendations of the A.R.C. have already been communicated to the administrative Ministries and Public Enterprises for taking necessary action.

Subsequently, specific instructions were also issued to the Public Enterprises emphasising the need for taking urgent remedial steps to deal with the problem of surplus labour in the undertakings wherever they exist. The undertakings were advised to deal with the question under the following two broad categories:—

- (i) Over-manning resulting from employment of a large number of workmen during construction as departmental labour and failure/reluctance to part with their services after the construction work is over; and
- (ii) General over-manning in the regular (Production) organisations of the enterprises.

It was *inter alia* indicated that wherever possible assistance from regular construction organisations set up by the Government like National Projects Construction Corporation, National Building Construction Corporation, Hindustan Steelworks Construction Corporation Ltd., etc., should be asked for by Public Enterprises for construction purposes. As regards the question of reduction of surplus staff, which already exist, the enterprises were advised to follow the example of undertakings like Neyveli Lignite Corporation, National Minerals Development Corporation, etc., who had introduced schemes for voluntary retirement or retrenchment with *ex-gratia* payment. It was pointed out that even though it may entail some immediate additional expenditure to start with, in the long run such a scheme will save the enterprises considerable amount of money both by way of salaries and allowances and by way of hidden subsidies like housing, medical facilities, etc. This step was to be taken by the undertakings over and above the other steps which could be taken to reduce over-staffing, like stoppage of further recruitment, allowing the wastages to be taken care of by the existing surplus staff, etc. A copy of the O.M. No. 2(178)/68-BPE(GM), dated the 14th April, 1969, issued is enclosed. (Appendix XVI).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69, dated 22nd March, 1971].

### Recommendation (Serial No. 39)

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 co-operation of labour towards improvement of production since a contended labour alone can be expected to give their best.

(Paragraph 8.35)

### Reply of Government

Government accept the recommendations of the Committee, which have been brought to the notice of the Public Enterprises *vide* this Ministry's Office Memorandum No. 2(75)/71-BPE(GM.I) dated 12th February, 1971. (Copy enclosed Appendix XVII).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69, dated 9th March, 1971].

### Recommendation (Serial No. 40)

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 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.

(Paragraph 8.36)

### Reply of Government

Government accept the recommendations of the Committee, which have been brought to the notice of the Public Enterprises *vide* this Ministry's Office Memorandum No. 2(76)/71-BPE(GM.I) dated 12th February, 1971, copy enclosed for information. (Appendix XVIII).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69, dated 9th March, 1971].

### **Recommendation (Serial No. 41)**

The Committee recommended 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.

(Paragraph 9.6)

### **Reply of Government**

Government have noted this recommendation. In view of the importance of this technique for planning, progressing and controlling projects construction, the Bureau of Public Enterprises has already envolved broad guidelines for the application of Network Analysis Technique (PERT/CPM) to the projects in the Public Sector and has laid down the necessary framework of the procedures to be adopted by them in this regard, in their circulars O.M. Nos. 32-Adv(C)/Cir-63/70 dated the 30th March, 1970 and 1275-Adv(C) | Cir-79/70 dated the 3rd September, 1970 (Appendix XIX).

The Bureau of Public Enterprises has also conducted a 4-day Seminar on the subject for the benefit of the Chief Construction Executives of Public Sector Undertakings in which 41 delegates from 25 Undertakings/Organisations participated. Action will be taken by the Bureau to arrange and conduct such courses and seminars on the subject in the future also on a regular and systematic basis at important Centres and at project sites for the benefit of the Construction Engineers and Managers at all levels, and also render the necessary assistance for the implementation of this Technique in Public Sector Undertakings.

The Public Sector Enterprises to their Administrative Ministries have also confirmed that they are adopting this technique for the planning, progressing and controlling of construction projects.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69, dated 18th March, 1971].

### **Recommendation (Serial No. 42)**

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 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 recommended 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.

(Paragraph 9.8)

### **Reply of Government**

Government have noted this recommendation. Preventive maintenance programmes have already been introduced in some enterprises. Government have appreciate the importance of preventive maintenance and have issued instructions to enterprises asking them to introduce proper preventive maintenance programmes wherever they are now absent.

Government have also noted the views of the Committee on unreasonable increase of staff strength on this ground. The enterprises have been asked through the administrative Ministries to note the views of the Committee for guidance. A copy of the instructions issued to the Ministries is enclosed (Appendix XX).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/DAP(R)/69, dated 18th March, 1971].

### **Recommendation (Serial No. 43)**

The Committee recommended 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.

(Paragraph 9.11)

### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed. (Appendix XXI).

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. L91(7)/DAP/69, dated 16th January, 1971].

### Recommendation (Serial No. 44)

The Committee are unhappy to note that the giant Public Undertakings like Fertilizer Corporation of India Ltd. and Hindustan Steel Ltd. which 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 overhauls 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 overhauls, capital repairs etc. The Committee, therefore, recommended 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

(Paragraph 9.15)

### Reply of Government

Government have noted this recommendation. It is noticed that a large number of enterprises like Heavy Electricals (India) Ltd., Bharat Heavy Electricals Ltd., Indian Oil Corporation Ltd., Hindustan Steel Ltd., Fertiliser Corporation of India Ltd., Hindustan Aeronautics Ltd., Bharat Earth Movers Ltd. have developed their own cadre of maintenance experts and by and large no foreign technicians are employed for maintenance of equipment. Maintenance Engineers and staff are given training in the plant, as well as by professional organisation in the country and in some cases in foreign countries where necessary.

However a copy of the Committee's recommendation has also been endorsed to the Public Sector enterprises through the Ministries for future guidance and compliance, a copy of which is enclosed for the information of the Committee. (Appendix XXII).

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) | DAP (R) | 69, dated 2-5-1971].

### Recommendation (Serial No. 45)

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 Fertilizer



and Methonal Plants at Trombay remained down for a total period of 173 days, 232 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 recommended that the undertakings 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 recommended 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 suffered on account of downtime and (iii) steps which the enterprises intend to take to arrest the rising trend in down time so that Government and Parliament remained in touch with standards of preventive maintenance in the plants in the public sector. The Committee are unable to accept 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 of which would enable them to quantify the loss in production on account of shut downs in their plants.

(Paragraph 9.25).

#### **Reply of Government**

Government have agreed with this recommendation. A copy of the instructions issued in this regard is enclosed. (Appendix XXIII). [Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) | DAP (R) | 69, dated 2-5-1971].

#### **Recommendation (Serial No. 46)**

The Committee recommended 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 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.

(Paragraph 9.29).

**Reply of Government**

Government have noted this recommendation. A copy of the instruction issued to the administrative Ministries is enclosed. (Appendix XXIV).

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7) |DAP(R) |69, dated 16-1-1971].

**Recommendation (Serial No. 47)**

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.

**Reply of Government**

The utmost need for the development of cost consciousness was impressed on the undertakings and they were required to make available relevant information to management to enable them to keep a continuous watch on costs *vide* O.M. No. 2(43) |66|F.I. dated 5th September, 1966 (Appendix XXV). In O.M. No. 46.Adv.F|BPE|68|12, dated the 12th September, 1968 (Appendix XXVI), the enterprises were required to develop a proper system of cost accounting preferably an integrated system of cost-cum-financial accounting system so where there are major deviations are brought to the notice of the Board. It is true that many enterprises have not developed standards or norms on the basis of which actuals may be compared. The undertakings are more and more being persuaded to develop sound system of cost accounting in their organisations. Besides, during the study in depth of public enterprises the cost of production of major projects is gone into and commented upon.

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7) |DAP(R) |69, dated 13|14-10-1970].

### Recommendation (Serial No. 48)

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.

### Reply of Government

The utmost need for the development of post consciousness was impressed on the undertakings and they were required to make available relevant information to management to enable them to keep a continuous watch on costs *vide* O.M. No. 2(43)|66|F.I. dated **the 5th September, 1966 (Appendix XXV)**. In O.M. No. 46.Adv.F/BPE|68|12 dated the 12th September, 1968(Appendix XXVI), the enterprises were required to develop a proper system of cost accounting preferably an integrated system of cost- *cum*-financial accounting system so that cost data are made available to management and cases where there are major deviations are brought to the notice of the Board. It is true that many enterprises have not **developed standards or norms on the basis of which actuals may be compared**. The undertakings are more and more being persuaded to develop sound system of cost accounting in their organisations. Besides, during the study in depth of public enterprises the cost of production of major projects is gone into and commented upon.

[Ministry of Finance, Bureau of Public Enterprises, D.D. No. 1(7)|RAP(R)|69, dated 13|14-10-1970].

### Recommendation (Serial No. 49)

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.

### Reply of Government

With a view to giving proper orientation to the cost accountants, training courses are organised by the Bureau of Public Enterprises in consultation with the Management Institutes and the programmes are brought to the notice of the enterprises well in advance for their participation. Some of the courses already organised to be conducted during 1969-70 by the training institutions are on subjects

like profitability accounting, management information system, investment planning, economic forecasting, project management and evaluation, cost estimating and pricing, operation research, cost reduction, management controls, performance budgeting etc. The Institute of cost and works accountants of India also conduct cost conferences and seminars on such subjects as inter-firm comparison budgeting, inventory control etc., in which representatives from public enterprises participate.

[Ministry of Finance, Bureau of Public Enterprises D.O. No. 1(77)  
DAP(R)/69 dated 13/14-10-1970].

### **Recommendation (Serial No. 51) Para 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 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.

### **Reply of Government**

The observations of the Committee are noted. The need to bring about reduction in the cost of production has been impressed on the enterprises. Instructions have been issued (Appendices XXVII to XXIX) to the public enterprises in regard to the preparation of feasibility reports and detailed project estimate which require *inter alia* careful preparation of project estimates so as to avoid later revisions.

The feasibility studies and the DPRs are also examined by the Bureau of Public Enterprises before the investment decisions are taken by Government. At the time of examination of the DPRs by and large the cost of production estimates are carefully gone into so as to assess the economic viability of the projects and there is some improvement in the quality of detailed project reports. The observations of the COPU are again being brought to the notice of the enterprises so as to impress on them the need for developing a sound cost accounting system, reviewing cost of production figures from time to time and giving more realistic cost estimates in the DPR.

[Ministry of Finance, Bureau of Public Enterprises D.O. No. 1(7) |  
DAP(R) |69, dated 13|14-10-1970.]

### **Recommendation (Serial No. 52)**

The Committee are of the view that public sector enterprises should evolve some permissible limit for rejections so that **when-ever 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 items or category of items so that the management becomes aware of the increase of rejections well in time and advise remedial measures before it is too late.

(Paragraph 10.31)

### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed.

(Appendix XXX)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) /  
DAP(R) /69 dated 16-1-1971.]

### Recommendation (Serial No. 53)

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 material 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 material 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.

(Paragraph 10.36)

### Reply of Government

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed.

(Appendix XXX)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP (R)/69 dated 16-1-1971.]

### Recommendation (Serial No. 55)

The Committee are of the view that top management 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 management.

(Paragraph 11.15)

### Reply of Government

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed.

(Appendix XXXII)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP (R)/69 dated 16-1-1971.]

### **Recommendation (Serial No. 56)**

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 equality 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.

#### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed.

(Appendix XXXIII)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/  
DAP(R)/69 dated 16-1-1971.]

### **Recommendation (Serial No. 57)**

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 in built mechanism for periodical revision and review of the quality control manuals.

(Paragraph 11.17)

#### **Reply of Government**

Government have noted this recommendation. A copy of instructions issued to the administrative Ministries is enclosed.

(Appendix XXXIV)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/  
DAP(R)/69 dated 16-1-1971.]

**Recommendation (Serial No. 58)**

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 consumer 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.

(Paragraph 11.20)

**Reply of Government**

Many of the Public Enterprises have even at present arrangements for dealing with the complaints from their customers. Apart from the instances cited by the Committee in para 11.18 of the Report, Heavy Electrical (India) Ltd. has also intimated that they got a procedure for registration of consumers' complaints and initiating action on the same. 'No charge' orders are issued by the company for carrying out the rectification and supply of components at no cost to the customers. Moreover, feed back on customers' reaction is obtained through the company's Sales Engineers and Design Engineers, who visit the customers at sit. The company has found the feed back adequate for their purpose. It will be appreciated that there cannot be absolute uniformity about the arrangements in the different undertakings for dealing with problems referred to. At the same time, it will be desirable that all the Public Enterprises review their arrangements in this area, keeping in view the observations of the Committee. Accordingly, the recommendation has been brought to the notice of Public Enterprises for action on these lines, requesting



them also to send a report on the action taken in this regard to the Bureau and administrative Ministry. A copy of the instructions issued is enclosed for the information of the Committee.

(Appendix XXXV)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)|69, dated 12-2-1971.]

#### **Recommendation (Serial No. 59)**

The Committee are of the view that Industrial Engineering functions like the Time and Motion Studies, Works Measurement, Manpower Planning Job Evaluation, application of PERT etc. are vital to every modern industrial enterprise and 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 enterprises should consider the advisability of setting up such a Department if not already done.

(Paragraph 12.7)

#### **Reply of Government**

Government have agreed with this recommendation. A copy of the instructions issued to all the Ministries is enclosed.

(Appendix XXXVI)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)|69, dated 12-2-1971.]

#### **Recommendation (Serial No. 60)**

The Committee recommended 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 these have been instrumental in bringing about operational efficiency and economy in cost of production.

(Paragraph 12.8).

#### **Reply of Government**

Government have agreed with this recommendation. A copy of the instructions issued to all the Ministries is enclosed.

(Appendix XXXVI).

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)|69, dated 12-2-1971.]

#### **Recommendation (Serial No. 61)**

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 difficulties by inter-departmental transfers, the Hindustan Steel Ltd. had ensured acceptability of recommendation 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. (Paragraph 12.9)

#### **Reply of Government**

Government have agreed with this recommendation. A copy of the instructions issued to all the Ministries is enclosed. (Appendix XXXVIII)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) |  
DAP(R)|69, dated 12-2-1971.]

#### **Recommendation (Serial No. 62)**

The Committee note that undertaking 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 formed and the Management should keep strict watch over incidence of accidents and initiate timely remedial measures.

(Paragraph 12-12)

#### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed. (Appendix XXXIX)

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) |  
DAP(R)|69, dated 16-1-1971.]

#### **Recommendation (Serial No. 63)**

The Committee find that developed countries (e.g. U.S.A., 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 process. 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 co-ordination with the Council of Scientific and Industrial Research, other related laboratories and Research Organisation in the country and attend to basic aspects of import substitution and increased productivity with particular reference to cost reduction. Research create 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.

(Paragraph 13.11)

### Reply of Government

Government have noted this recommendation. Some enterprises have already Central Design and Development organisation; for instance, Hindustan Steel Ltd., Fertiliser Corporation of India Ltd., Fertiliser and Chemicals Travancore Ltd. etc., where applied research in a limited way has been initiated. The Bureau of Public Enterprises attaches great importance to the provision of research and development facilities in the industrial enterprises, and where scientific cells already exist, to its growth into an Research and Development organisation. In order to foster the growth of research and direct scientific application to particular needs of the enterprises, the Bureau of Public Enterprises, in consultation with CSIR, have advised the heads of Public Sector Enterprises and those of Central Research Institutes and National Laboratories to establish mutual contacts, not only at the top level but also at the middle and operating levels, for their day-to-day requirements. Since the special needs of research and development vary from enterprises to enterprise it would be more effective if enterprises establish contacts direct with the R & D establishments. In terms of Committee on Public Undertakings observations the Ministries are now being advise to bring to the notice of the enterprises basic aspects of import substitution and increased productivity with reference to cost reduction by way of

research in technology and process for their product mix. A copy of Governments orders is enclosed. (Appendix XL).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/  
DAP(R)|69, dated 20-1-1971.]

#### **Recommendation (Serial No. 64)**

The Committee note that major public undertakings e.g. the Heavy Electricals (India), the Heavy Engineering Corporation 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.

(Paragraph 13.17)

#### **Reply of Government**

Government have noted this observation.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) |  
DAP (R)|69, dated 2-3-1971.]

#### **Recommendation (Serial No. 65)**

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.

(Paragraph 13.18)

#### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed. (Appendix XLI).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7)/  
DAP (R)/69, dated 20-1-1971.]

#### **Recommendation (Serial No. 66)**

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 Fertilizer and 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 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 public undertakings should evolve their own modern well equipped training programme suiting these specialised requirements; and
- (ii) All undertakings engaged in production should take advantage of the course of the Managements Institutes particularly for the senior level of their personnel provided the cost 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.

(Paragraph 14.5)

### **Reply of Government**

Government have accepted the importance of continuous training at the induction stage, followed by referresher courses, of managers of Public Enterprises at various levels. In the context of the recommendations of the Administrative Reforms Commission in their Report on "Public Sector Undertakings", it has been decided that Public Enterprises need not assume responsibility for basic training in general management and training in professions, the idea being that the existing training institutions should be utilised for imparting this type of training. Government also accepted the following recommendation of the A.R.C. :—

"The Bureau in cooperation with the public undertakings and the Ministries concerned, should—

- (a) review the existing training facilities and programmes to avoid duplication of efforts;
- (b) identify areas where the training facilities need to be extended or increased; and

(c) evaluate the suitability of training programmes to the requirements of the public sector."

At present, apart from fertilizer and steel, some of the bigger enterprises like Heavy Engineering Corporation (Central Training Institute), Indian Oil Corporation (Staff College), Hindustan Aeronautics Ltd., etc., have also well-developed training institutions to impart in-company training. In accordance with the Government's decisions on the A.R.C.'s recommendations, referred to above, Bureau has been coordinating the management training efforts of Public Enterprises. Bureau is represented on the Boards of Managements of the premier management training institutions like Indian Institute of Management Calcutta; Indian Institute of Management, Ahmedabad; Administrative Staff College of India, etc. At the instance of the Bureau, selected Public Enterprises are conducting surveys of their managerial training needs, in order to draw up a five year programme of training and management development. Bureau also takes initiative, from time to time, they have special programmes of training run by some of the training institutions in general management and functional areas like Production Management, etc. Bureau has Financial Management, Personnel Management, etc. Bureau has also set up a special Advisory Committee on Management Training, which includes as Members, Director, Indian Institute of Management, Ahmedabad; Director, Indian Institute of Management, Calcutta; Director, National Institute for Training in Industrial Engineering; Principal, Administrative Staff College of India; Head of the Department of Business and Industrial Administration Delhi University, as also Chairman, State Trading Corporation, and Chairman, Hindustan Steel Ltd., to advise the Bureau on the various aspects of managerial training for the public sector. Government, and at Government's instance, Public Enterprises have thus begun to bestow adequate attention to the needs of management training and development in these undertakings, action with regard to which is, however, undoubtedly of a continuous nature.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7) |  
DAP(R)/69, dated 2nd March, 1971.]

#### **Recommendation (Serial No. 67)**

The Committee are of the view that training in multi-trades 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 note that some of the major undertakings (e.g. H.E.I.L., H.S.L., N.C.D.C.) sharing the same view have started job combinations in their respective units. The Committee recommend that every undertakings 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.

(Paragraph 14.8)

### **Reply of Government**

This recommendation has been noted by Government. A copy of the instructions issued to the administrative Ministries is enclosed.

(Appendix XLII)

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1 (7)/DAP(R)/69 dated 20-1-1971.]

### **Recommendation (Serial No. 86)**

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 involve improve techniques of operational efficiency. Too many Seminars/Conferences may, however, lead to fruitless discussion of theoretical aspect of production problems rather than face to face discussion to hammer out to practical approach. The Committee, therefore, recommend that public sector undertakings should introduce the system of "Workshop Discussion" at the level of the undertakings as well as the group of industries so that concrete results emerge out of such discussions. If felt necessary undertakings may ever arrange visitor to more profitable enterprises so as to stimulate "action by example".

(Paragraph 14.10).

### **Reply of Government**

Government have noted this recommendation. A copy of the instructions issued to the administrative Ministries is enclosed.

(Appendix XLIII).

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1 (7)/DAP(R)/69, dated 20th January, 1971].

## CHAPTER III

### RECOMMENDATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE GOVERNMENT'S REPLY

#### Recommendation (Serial No. 5)

A prerequisite 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 arrangement of production in establishment 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 Ltd., and the Mining & 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 private sector industry for the planning and control of production and to ensure that whatever targets were set up in the Five Year Plan were achieved and to evaluate the functioning of the production machinery to achieve these targets.

The Committee are surprised by the statement of the NSDC that planning and control in their enterprises did not follow any specific technique.

#### Reply of Government

Government are aware that in some projects inadequate attention at the planning stage has led to over-estimation of demands, prolongation of the period of construction, increase in capital costs, etc. In order to remedy these deficiencies, the attention of all concerned was drawn in 1967 to the requirement that a Feasibility Study should be made for all projects on the lines indicated in the Manual specially prepared for this purpose by the Planning Commission. This Manual requires that the Feasibility Study should incorporate information on various aspects relevant for the assessment of the viability of the project, such as pattern of demand,



competitive position, optimum product-mix, etc. In a letter addressed in November, 1970, to the Ministers concerned with the economic administration, Finance Minister had again reiterated the need for drawing up comprehensive Feasibility Study Reports| Detailed Project Reports, to facilitate investment decisions being taken on a sound basis. In this context, the attention of the concerned Ministries was drawn *inter alia* to the fact that demand assessment in respect of the projects proposed by them for approval are not always based on a systematic market survey, and hence the capacity proposed in the new investment proposals was higher than what is necessary, which will result in unutilise capacity. Thus, efforts are also constantly being made to improve the planning of projects in so far as proper demand projection is concerned.

As regards arrangements in Public Enterprises for market research and assessment for planning of production including expansion or diversification, it may be mentioned that Government have already urged these undertakings to strengthen and improve the marketing arrangements where these have already been established, and to set up, as speedily as possible, such arrangements where only a beginning has been made. The Sales organisation commended in this context was to embrace a market research unit also which should make a systematic study of the demand pattern for the products. The enterprises were also advised to make full use of the training facilities provided by the Institute of Management, etc., in the field of marketing. Some of the Public Enterprises like Heavy Electricals (India) Ltd., have entrusted the market research function to their commercial departments. In Heavy Electricals (India) Ltd., the commercial section in each product division assess the change in the pattern of customer requirements; demand for new products coming within the capabilities of the company is also assessed by them. Diversification programmes are thus undertaken accordingly in time. Some enterprises like Hindustan Photo Films Manufacturing Co. Ltd. engage outside consultancy organisations for conducting market survey.

With regard to the recommendation for the industry-wise Top Planning Cell, some of the Ministries|Departments do have even at present Advisory Committees|Development Councils, etc., with functions referred to by the Committee. Thus, for correct assessment of demand for petroleum products, there is an Oil Advisory Committee which lays down annual targets of production for each of the petroleum products for the country as a whole. Chief Executives of private oil companies are also members of this Committee. Similarly, under Section 6 of the Industries (D&R) Act, 1951, Government have powers for the establishment of Development

Councils for only scheduled industry or group of scheduled industries. Both public and private sectors are represented in the Council. The functions which may be assigned to the Council are listed in the second Schedule of the Act, one of the functions being recommending targets for production and co-ordinating production programmes. In the field of chemicals, the following councils are functioning:—

- (i) Development Council for Inorganic Chemicals, which will take care of fertilizer, caustic soda, soda ash, sulphuric acid, etc. industries;
- (ii) Development Council for Organic Chemicals, which will take care of pesticides, alcohol, petrochemicals, etc. industries; and
- (iii) Development Council for drugs and pharmaceuticals. As regards mining also, there are Advisory|Development Councils for every major sector, and these Advisory Councils can effectively discuss the problems which impede the progress of the industry in detail and suggest remedial measures. In the Defence sector, the Public Enterprises function in specialised fields like aeronautics, ship building, electronics, etc., mainly to meet the defence requirements where there is no significant private sector industry. However, even in the Defence Ministry a nucleus for the Top Planning Cell is already available. Then there are also industries like Hindustan Cables Ltd., which manufacture mainly for other Government departments, where there will not be any need for a formal Planning Cell, as envisaged by the Committee, although in such cases consultations invariably take place between the consuming departments and the producing undertakings to facilitate proper production programming, keeping in view the actual requirements.

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7)/DAP(R)/69 dated 22-3-1971].

#### **Recommendation (Serial No. 22)**

The Committee are perturbed to know that Barauni Refinery of the Indian Oil Corporation Ltd. had been working far below its designed 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 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 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 offtake as may be agreed upon by mutual consultations between the Oil India and Indian Oil Corporation.

(Paragraph 6.35).

### **Reply of Government**

The observations of the Committee have been noted. It is however, clarified that during the period under review (April to November, 1969) the crude oil receipt at Barauni Refinery was 13.66 lakh tonnes and during the full year 1969-70 it was operated at 105 per cent of the designed capacity of 2 million tonnes and has refined about 20.9 lakh tonnes. The Gauhati Refinery has processed .76 million tonnes in the year and it has also exceeded the installed capacity of .75 million tonnes per annum.

However, out of the total supply of 13.66 lakh tonnes of crude oil for the 8 months (April to November, 1969) for the Barauni Refinery the share of the oil supply from O.N.G.C. Feild should have been 1.67 lakh tonnes. But the actual transportation was 98,000 tonnes, as it has been mentioned that O.N.G.C. crude was a high wax crude and posed problems in transportation through pipeline during winter. As a result, in Oil India pipeline, the transported O.N.G.C. crude is less than 10 per cent. The shortfall in supply of oil was made up by increased share of supply from Oil India Ltd.

It may be seen that both the refineries and the capacity of the pipeline were fully utilised during the period April to November, 1969 under review, and in the full year 1969-70. The problems which used to restrict the crude receipts|throughputs at Barauni Refinery in the past have since been overcome by various operational improvements. The refineries break-up of supplies|offtake of crude oil, considering the total supplies fixed by the Ministry for the year, are decided by mutual consultations between the representatives of the I.O.C. and Oil India Ltd.

Finally, it is emphasised that both the pipelines and the refineries are working to the full capacity and the reason for O.N.G.C. not attaining its target of supply is not due to the under-utilisation of the capacity.

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7)/DAP(R)/69 dated 20-4-1971.]

**Recommendation (Serial No. 30)**

The Committee are surprised at the way the proposal for manufacture of tractors in the public sector was handled by Government primarily appears to be due to indecision of the Government coupled at various stages resulting in an inordinate delay. The delay is 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 avoidable in future. (Paragraph 7.41).

**Reply of Government.**

The delay in the finalisation of Government's decision on the manufacture of tractors took place for the following reasons:—

Originally, the establishment of a public sector project for the manufacture of 20-hp tractors was first considered in 1963. The Ministry of Agriculture favoured the 'Zetor' tractor as a very suitable model. Negotiations for securing credit from Czechoslovakia were taken up and an agreement with M/s. Motkov was signed in August, 1965 for DPR. In the meantime, the Production Committee of Secretaries expressed the view that the manufacture of 20-hp tractor was feasible by utilising the spare capacity available in the engineering industry. In pursuance of a decision by Cabinet Committee on Industries an inter-departmental committee was set up to examine this. According to the Committee, in 1967, the design of the tractor suitable for Indian conditions could be developed by the M.A.M.C., Durgapur with the assistance of the CMERI, Durgapur. The prototypes named 'Swaraj' were thus manufactured by M.A.M.C. and sent for trials in July, 1968. In August, 1968, HMT also proposed to utilise their spare capacity in Pinjore for manufacturing tractors. The NIDC was commissioned in December, 1966 to prepare a Project Report for such a joint venture by HMT and M.A.M.C. The report of the NIDC recommended in 1969 that the Zetor-2011 (20-hp) tractors would be taken up for manufacture first, and that production could be switched over to Swaraj-20 tractors after the prototypes have been thoroughly tested and final prototypes evolved and approved for commercial production. They also recommended that the plant would be located in Pinjore, and that M.A.M.C. would be the principal sub-contractor. The tests revealed that the prototype of Swaraj needed rectification in the transmission and steering and that it would not be suitable when competing with tractors manufactured with foreign collaboration. Zetor design was already available and it was versatile in inter-change of parts between 20, 35 and 50-hp models. It was also decided by Govern-

ment that Zetor tractor may be manufactured by HMT at Pinjore but several items could be sub-contracted to M.A.M.C.

Accordingly, HMT submitted an application for grant of industrial licence and the letter of intent was issued on 25-7-1970. Their collaboration agreement was also approved and final draft taken on record on 20-3-1971. Thus, HMT are now taking action to implement the project.

Thus, it would be seen that detailed expert examination had to be undertaken and a number of major considerations had to be weighed such as the choice of the tractor model, specification, consumer acceptance, development of indigenous design and indigenous capabilities, performance of prototype, ability to compete with other models, etc., etc.

The Punjab State Industrial Development Corporation, Chandigarh (now Punjab Tractors Ltd.) have also submitted a proposal for manufacture of Swaraj-20 tractors and they have been issued a letter of intent.

The above background explains the reasons for the delay in Government's decision on the manufacture of tractors. Government have noted the views of the Committee for future guidance. An extract of the Committee's recommendation has been forwarded to all the Ministries for guidance and future compliance. (copy enclosed).

[Ministry of Finance, Bureau of Public Enterprises O.M. No. 1(7) DAP(R) |69, dated 21-4-1971].

#### **Recommendation (Serial No. 50) Para 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 has undergone a change or some factors were lost sight of at the time of drawing the DPR.**

#### **Reply of Government**

The Committee has commended a comparison of actual costs of production with the cost estimates stipulated in the DPR. It may be proper to compare the actual cost of production with the cost of production given in the budget estimates. No useful purpose may result in comparing the actual cost of production with the DPR estimates, as over a period of time the accuracy of the estimates given in the DPR is lost as a result of general rise in price level; increase in project cost estimates etc.

[Ministry of Finance, Bureau of Public Enterprises D.O. No. 1(7)/ DAP(R)/69 dated 13/14-10-1970].

**Recommendation (Serial No. 54)**

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 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 control like classification and modification 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.

(Paragraph 10.40).

**Reply of Government**

Apart from issuing specific directives on Inventory Control and Materials Management to the public sector enterprises along the lines recommend in the 40th Report of the Committee on Public Undertakings (3rd Lok Sabha), the Government have, through high level expert committee, studied in detail the inventory control and material management aspects of 11 major enterprises between 1968 and 1970 and have in hand the study of 6 more in 1970-71. As a result of the directives and consequent follow-up action it is observed that inventory control has been steadily improving as the level measured in terms of numbers of months of production, which had gone up from 6.6 months on 31-3-1967 to 7.6 months on 31-3-1968 come down to 7.0 months on 31-3-1969 and further down to 6.7 months on 31-3-1970, inspite of steadily increasing production in 1968-69, 1969-70 and 1970-71 (half year). The progress is under continual review.

A detailed set\* of guidelines on developing and maintaining Materials Management Organisation and System in Public Sector Enterprises has been prepared by the Bureau of Public Enterprises and has been printed for issue to all enterprises.

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1(7)|DAP(R)|69, dated 7-1-1970].

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\*One Co<sub>3</sub> of the set has been placed in Parliament Library.

## CHAPTER IV

### RECOMMENDATIONS IN RESPECT OF WHICH REPLIES OF GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE

#### Recommendation (Serial No. 8)

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 & 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 being responsible for one type of industry. (Paragraph 3.37)

#### Reply of Government

The observations made by the Committee in the latter half: viz. that there should not be too much centralisation of powers and functions in the Bureau as it will not be conducive to efficiency and hence will not be in the best interests of the public sector are accepted. With reference to the suggestion that Bureau may consider whether it will not be better for it to function in small working groups being responsible for one type of industry, it may be mentioned that such an arrangement in any agency like Bureau of Public Enterprises, which has to deal with over 90 Public Enterprises ranging from the manufacture of heavy electrical equipments, heavy machine tools, organic chemicals, drugs and surgical instruments, photo films and teleprinters to oil refining, mining of lignite, iron ore, copper and diamonds as well as servicing organisations in aviation, shipping, trading etc., will call for employment of a considerable number of specialists in the Bureau itself. In

different groups of Public Enterprises, this may not, however, be either feasible or practicable. In any case, apart from the fact that even in the Production Division of the Bureau a certain degree of specialisation of an industry-wise basis, is being achieved by having competent persons in engineering, metallurgy, mining, etc., the approach of the Bureau for dealing with the problems of enterprises has been mainly inter-disciplinary in nature in an essentially decentralised set up where the divisions of the Bureau are headed by full time Advisers/Directors, under the overall charge of a full-fledged Additional Secretary in the Department of Expenditure who is also the Director General. In other works, even for going into the problems of a particular enterprise, the two or three concerned Divisions of the Bureau are normally involved to ensure that all the aspects of the working managerial, financial, production, etc.—receive due attention. Considering that all types of expertise—in diverse technological and managerial fields—cannot possibly be located in the Bureau, action has also been taken to draw up a panel of consultants after careful assessment and scrutiny, with a view to making available their services to the Bureau administrative Ministries/Public Enterprises for tackling “specific” problems in the various fields.

[Ministry of Finance, Bureau of Public Enterprises, O.M. No. 1(7)/DAP(R)|69, dated 18-4-1971].

#### COMMENTS OF THE COMMITTEE

Please see paras 1—5 of Chapter I of the Report.



### Recommendation (Serial No. 25)

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 has also been assessed. The assessment made by one Ministry is enough to reveal the gravity of the problem of gross under-utilisation of capacity 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 co-ordination 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 direct 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.

(Paragraph 6.46)

### Reply of Government

Government have noted this recommendation. Government agree with the view expressed that there is at present under-utilisation of capacity in a marked way in the steel plants, heavy equipment manufacturing plants in the mining industry and in some of the fertilizer plants, the extent of under-utilisation in each being as follows:—

Steel Plants . . . . .	upto 40%	
Heavy equipment manufacturing plants. . . . .	upto 30%	(in the captive foundry forge plant the under-utilisation is as high as about 50%)
Mining industry . . . . .	upto 20%	
Fertiliser . . . . .	upto 20%	

The Government have taken a number of steps to accelerate the rate of production build-up to reach levels that would make optimum

utilisation of capacity. In the case of steel plants efficiency and productivity are being increased by improvement the organisation and management of maintenance, improvements in supplies and quality of raw-materials including refractories, improved productivity by operator motivation etc. Diversification of production and increasing experts have also been taken up in the case of industries with under-utilised capacity and simultaneously managerial improvements such as strengthening industrial engineering, design and development activities, laying down of standards of performance of workers and of machinery and plant, production, planning and control, evolving suitable cost systems for cost control and for generating cost consciousness etc. have been initiated under directions of the administrative Ministry with guidance from the Bureau of Public Enterprises.

The performance of the enterprises is constantly reviewed at the beginning of the year, again the middle of the year by the Board of Directors and Government with a view to fix realistic targets, achieve maximum production and resolve major problems inhibiting full utilisation of capacity. The Bureau of Public Enterprises also watches the performance of the enterprises by regular returns received periodically from the units as well as by special visits of officers. Periodic performance reviews of selected major enterprises, particularly from profitability and productivity angles are also carried out at the highest level in the Finance Ministry and administrative Ministries with the top management of the enterprises. In this way every effort is made to watch the performance of the Public Sector enterprises and remedy the defects wherever possible. In the circumstance, Government feel that no useful purpose will be served by appointing a high level expert committee at the present moment to make an assessment of under-utilisation of capacity and suggest remedial measures. If necessary this can be done after the results of all the steps taken fructify.

[Ministry of Finance, Bureau of Public Enterprises, Office Memorandum No. 1 (7) DAP (R) |69, dated 5-2-1971].

### **Comments of the Committee**

Please see Paras 6-7 of Chapter I of the Report.

**CHAPTER V**  
**RECOMMENDATIONS IN RESPECT OF WHICH FINAL REPLIES**  
**OF GOVERNMENT ARE STILL AWAITED**

NIL

NEW DELHI;

September 16, 1971  
Bhadra 25, 1893 (Saka)

M. B. RANA,

Chairman,  
Committee on Public Undertakings

**APPENDIX I**  
No. 1(7)/DAP(R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

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*New Delhi, the 29th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 1, para 2.21.**

The undersigned is directed to enclose extracts of Recommendation No. 1, para 2.21 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government agree with this Recommendation. In this connection attention is invited to the Bureau of Public Enterprises O.M. No. US(BPE)/68-PC&IE dated 28th March, 1969.

A copy of the reply sent on behalf of Government in respect of this Recommendation is also enclosed. In view of the importance of evolving a system of perfect co-ordination at the plant level and with a view to formulate a profit centre of responsibility, it is necessary that all Public Sector enterprises should carry out a review of their respective organisational set up on a continuous basis and plug the loop holes that may appear from time to time in the existing machinery for co-ordination. The Ministry of Industrial Development, etc., are, therefore, requested to issue suitable instructions to the enterprises under their administrative control in this regard and also ensure that their own system of co-ordination at Ministry level is also constantly reviewed and improvements and changes made wherever necessary. A copy of the instructions issued to the enterprises in this regard may be endorsed to the Bureau of Public Enterprises and the enterprises directed to advise the administrative Ministry and the Bureau of Public Enterprises of the action in implementation this recommendation and Govt.'s decision.

**(S. JAGANNARAYANAN)**

*Under Secy. to the Government of India.*

To

All Ministries/Departments of Government of India.

## APPENDIX II

No. 1(7)/DAP(R)|69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

BUREAU OF PUBLIC ENTERPRISES

(PRODUCTION DIVISION)

*New Delhi, the 29th January, 1971.*

### OFFICE MEMORANDUM

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 4 para 3.13.**

The undersigned is directed to enclose extracts of recommendation No. 4 from the 67th Report of Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government's reply to Lok Sabha is also enclosed. The Ministry of Industrial Development, etc. are requested to advise the undertakings under their administrative control which have already set up planning cell, to constantly review the existing planning organisation with a view to evolve a proper concept of production planning taking into account changes in demand and product mix of the undertaking without impairing its long-term objectives. In the case of undertakings where such planning machinery does not exist they may be advised to set up a suitable planning cell taking into account the type of industry and other relevant factors like changes in demand and the product mix of the undertaking without impairing its long-term objectives. A copy of the instructions issued in this regard may be endorsed to the Bureau of Public Enterprises and the enterprises direct to advise the administrative Ministry and the Bureau of Public Enterprises of the action taken in implementing this decision of Government.

S. JAGANNARAYANAN,

*Under Secy. to the Government of India*

To

All Ministries/Departments of Government of India.

**APPENDIX III**

No. 1(7)/DAP(R)|69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**BUREAU OF PUBLIC ENTERPRISES**

**(PRODUCTION DIVISION)**

*New Delhi, the 1st February, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 7, para 3.36.**

The undersigned is directed to enclose extracts of Recommendation No. 7, para 3.36 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management, and to say that Government have accepted this recommendation. Existing undertakings may be advised to introduce computerisation wherever necessary and possible on the lines indicated by the Committee on Public Undertakings after thorough and competent study of the need for and the methods of introducing computerisation. In the case of new undertakings the recommendation of the Committee may be kept in mind and the decision on computerisation in the new enterprises may be taken at an appropriate time, reasonably early. Computerization will not mean installation of a separate computer by all enterprises; computer time can be hired from all available sources. Enterprises possessing computers and having spare computer time should allow other public enterprises in the area needing computer time to use such computer time in preference to other organisations. Advantage should be taken to get computer time from education institutions etc. wherever available.

The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their administrative control and endorse a copy of the instructions to the Bureau of Public Enterprises for completion of record.

**S. JAGANNARAYANAN,**

*Under Secy. to the Government of India.*

To

All Ministries/Departments of Government of India.

**APPENDIX IV**  
No. 1(7)/DAP(R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 1st February, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 9, para 4.7.**

The undersigned is directed to enclose extracts of Recommendation No. 9 para 4.7 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government agree in general with the views of the Committee. It is agreed that not only communication system between labour and management is very important in the day-to-day activities of the enterprises but also that it is desirable to review the effectiveness of such communication system where it already exists from time to time so that improvements could be made with a view to—

- (i) create a proper atmosphere between management and the employees;
- (ii) build up a sense of team-work within the undertaking; and,
- (iii) generate a feeling of involvement by labour in the fulfilment of objectives of production management.

It is noticed that in a few enterprises there are already built-in communication systems and also certain procedures for ventilating grievance etc. and also establishing more cordial relations between labour and management. But, by and large, the communication systems and grievances procedures are not functioning very smoothly in most enterprises. Also in most enterprises, the workers and even the supervisory personnel have not developed a sense of involvement and which can only come when they also develop a sense of

participation. It is, therefore, urged that the enterprises should choose the most appropriate method to be adopted for establishing cordial relations between labour and management according to their needs so that a spirit of greater participation and feeling of involvement by workmen the fulfilment of the long-term objectives of production management may be generated.

The Ministry of Industrial Development etc., are requested to issue suitable instructions to the enterprises under their administrative control and endorse a copy of the instructions to the Bureau of Public Enterprises in due course for completion of record.

S. JAGANNARAYANAN,  
*Under Secy. to the Government of India.*

To

All Ministries/Departments of Government of India.



**APPENDIX V**

No. 1(7) |DAP(R)|69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

BUREAU OF PUBLIC ENTERPRISES

(PRODUCTION DIVISION)

*New Delhi, the 16th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 10 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

S. JAGANNARAYANAN,

*Under Secy. to the Govt. of India.*

To

All the Ministries/Departments of Govt. of India.

**APPENDIX VI,**  
**No. 1(7) |DAP(R)|69**  
**GOVERNMENT OF INDIA**  
**MINISTRY OF FINANCE**  
**BUREAU OF PUBLIC ENTERPRISES**  
**(PRODUCTION DIVISION)**

*New Delhi, the 2nd March, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 21, para No. 6.33.**

The undersigned is directed to enclose extracts of Recommendation No. 21, para 6.33 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management, and to say that Government fully agree with this recommendation. A copy of the Government reply to the Lok Sabha Secretariat on this point is enclosed for information.

The Ministry of Industrial Development, etc., are requested to impress upon the Public Sector enterprises under their control on two aspects, namely, (i) that there should be no unilateral derating of capacity without proper authority, and (ii) that every precaution must be taken that the rated capacity is fully attained by overcoming the deficiencies noticed at the time of trial runs and commissioning within a period generally not to exceed one year. They may also ensure that no final payment to the foreign collaborators is made unless sustained performance at the designed capacity is achieved during commissioning test or guarantee period. The Public Sector enterprises may also take precautions such as acquiring plants of only proven rates capacity after rigid performance tests, maintaining a bank of spares and critical parts by a proper scheme of planning and procurement even at the time of installation, etc. Where defects are noticed after installation these defects should be removed within a period generally not exceeding one year by installation of balancing additional facilities and replacements of unsuitable equipments if justified on the basis of small economic considerations.

The Ministry of Industrial Development, etc., are requested to issue suitable instructions to the Public Sector enterprises under their control in this regard and endorse a copy to the Bureau of Public Enterprises for information.

S. JAGANNARAYANAN,

*Under Secy. to the Govt. of India.*

To

All the Ministries/Departments of Govt. of India.

**APPENDIX VII**  
No. 1 (7) |DAP (R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 16th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:**—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.

The undersigned is directed to enclose extracts of Recommendation No. 23 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

**S. JAGANNARAYANAN.**

*Under Secy. to the Govt. of India.*

To

All the Ministries/Departments of Govt. of India.

## APPENDIX VIII

No. 1(7)|DAP(R)|69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

BUREAU OF PUBLIC ENTERPRISES

(PRODUCTION DIVISION)

*New Delhi, the 2nd February, 1971.*

### OFFICE MEMORANDUM

**SUBJECT:**—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 24, para No. 6.43.

The undersigned is directed to enclose extracts of recommendation No. 24, para 6.43 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government have agreed with this recommendation. While it is true that every effort should be made to attempt diversification and alternative use of manufacturing capacity, the normal production for the main product should not be upset and it should be related to the annual target. There are a number of considerations which may be taken into account before embarking on programme of diversification or alternate use of manufacturing capacity. For instance, no production should be taken up unless firm demand on a repetitive basis for the new product is established. This would apply even to the main product with a view to reduce or minimise any losses due to over stocks. Again, diversification of production and alternate means of absorbing surplus capacity have been consistently processed and vigorously pursued, but on no account even for established production there should be any change in annual target if minor demand fluctuations arise in the course of the year. On every occasion the approval of the Board of Directors as well as the Government may be taken for entering into new lines of production. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the enterprises under their control and endorse a copy to the Bureau of Public Enterprises for completion of records.

S. JAGANNARAYANAN,

*Under Secy. to the Government of India.*

To

All the Ministries/Departments of Govt. of India.

1

**APPENDIX IX**  
No. 1 (7) | DAP (R) | 69  
**GOVERNMENT OF INDIA**  
**MINISTRY OF FINANCE**  
**BUREAU OF PUBLIC ENTERPRISES**  
**(PRODUCTION DIVISION)**

*New Delhi, the 16th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 26 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

**S. JAGANNARAYANAN**

*Under Secy. to the Government of India.*

**To**

All Ministries/Departments of Government of India.

**APPENDIX X**

No. 1(7) |DAP(R)|69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

BUREAU OF PUBLIC ENTERPRISES

(PRODUCTION DIVISION)

*New Delhi, the 18th March, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 27, pp. 7.24.**

The undersigned is directed to enclose extracts of recommendation No. 27, para 7.24 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development etc. are requested to issue suitable instructions to ensure (i) that in case of new units the gestation periods are fixed on firm basis, (ii) that during the gestation periods annual targets are fixed at the beginning of the year which should correspond to the attainable capacity, and (iii) that after the gestation period is over the annual targets correspond to the rated capacity of the plant in operation.

If for any reasons an enterprise wants to fix a target which is more than marginally lower than the attainable capacity or the rated capacity (as the case may be) in spite of there being a clear demand for the products the enterprise should get the prior approval of Government. In deciding the issue, full consideration is to be given to the demand then existing, the inhibiting factors affecting the efficiency of production and output of the enterprise and the state of implementation of the measures necessary for overcoming the bottlenecks for achieving the rated level of capacity.

Copy of instruction issued to the enterprises may also be endorsed to the Bureau of Public Enterprises.

**S. JAGANNARAYANAN,**  
*Under Secy. to the Govt. of India.*

**To**

All the Ministries/Departments of Govt. of India.

**APPENDIX XI**  
No. 1 (7) |DAP (R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 13th/16th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 31.**

The undersigned is directed to enclose extracts of Recommendation No. 31 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government have noted this recommendation. Reply of Government to the Lok Sabha is also enclosed. The Ministry of Industrial Development, etc. are requested to note this recommendation and issue suitable instructions to the Public Sector Undertakings under their administrative control. A copy of the instructions issued may be endorsed to the Bureau of Public Enterprises.

**S. JAGANNARAYANAN,**  
*Under Secy. to the Govt. of India.*

To

All the Ministries/Departments of Govt. of India.



**APPENDIX XII**  
No. 1(7) |DAP(R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 2nd March, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 33, para 8.10.**

The undersigned is directed to enclose extracts of recommendation No. 33 (para 8.10) from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government agree with this recommendation. The Ministry of Industrial Development, etc., are requested to issue suitable instruction to the Public Sector enterprises under their control and to request them to:

- (i) record actual labour utilisation on all activities,
- (ii) compile indices of labour utilisation and labour productivity, and
- (iii) promptly locate areas of under-utilisation and under-productivity of labour in terms of these indices,

and take prompt remedial measures to improve utilisation and productivity of labour and keep a timely check on the persistent tendency to over-staff.

A copy of the instructions sent to the Public Sector enterprises may be endorsed to the Bureau of Public Enterprises for information.

**S. JAGANNARAYANAN,**  
*Under Secy. to the Govt. of India.*

To

All the Ministries/Departments of Govt. of India.

**APPENDIX XIII**  
No. 1(7)|DAP(R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 19th March, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:**—67th Report of the Committee on Public Undertakings (IX Lok Sabha) on Production Management—Recommendation No. 34, para 8.18.

The undersigned is directed to enclose extracts of recommendation No. 34, para 8.18 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management, and to say that Government have noted this recommendation. Government are conscious of the need for sustained efforts by managements of enterprises to raise productivity. Accordingly, the enterprises have been required to identify specific areas where improvements are necessary and to take expeditious remedial action in the managerial, organisational, technological and technical fields. While doing so, the initiative and the methods have been left to the enterprises. In this context, the Ministry of Industrial Development, etc., are requested to emphasise to the enterprises under their control the need for significant rise in productivity and for continuously increasing level of utilisation of resources and requested to raise man-productivity standards by suitable structural and managerial changes, and organise special studies on man-productivity, as and when considered necessary. A copy of the instructions issued to the enterprises may be endorsed to the Bureau of Public Enterprises for information.

**S. JAGANNARAYANAN,**  
*Under Secy. to the Govt. of India.*

To

All Ministries/Departments of Government of India.

**APPENDIX XIV**

No. 1(7)|DAP(R)|69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

BUREAU OF PUBLIC ENTERPRISES

(PRODUCTION DIVISION)

*New Delhi, the 2nd March, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 36, para 8.21.**

The undersigned is directed to enclose extracts of recommendation No. 36, para 8.21 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management, and to say that Government have agreed to this recommendation. In view of the importance of the subject of industrial engineering and also the need for quality production and maintaining adequate organisation and facilities for achieving it, including specifications and standards, independence of inspection, operation control, analyses of results and reviews; education training of staff, etc., Ministry of Industrial Development, etc., are requested to draw the attention of the Public Sector enterprises under their control to these aspects and advise them to take proper action early.

A copy of the instructions issued to the enterprises may be endorsed to the Bureau of Public Enterprises of information.

**S. JAGANNARAYANAN,**

*Under Secy. to the Govt. of India.*

To

All Ministries/Departments of Government of India.

**APPENDIX XV**  
No. 1(7)|DAP(R)|69  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 11th March, 1971.*

OFFICE MEMORANDUM

SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 37, para 8.24.

The undersigned is directed to enclose extracts of recommendation No. 37, para 8.24 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management, together with Government's reply thereto. The Ministries of Industrial Development etc., are requested to instruct the Enterprises under their administrative control to review the existing man-power and the organisational machinery for taking effective steps to reduce surpluses, in the light of the Committee's recommendations and Government observations, at least over a period (by not filling vacancies when waters occur, by making certain jobs red circle jobs on the basis of scientific studies, by negotiating with unions, by offering liberal retirement benefits to induce some people to retire voluntarily prematurely etc.). Public enterprises may also be advised to ensure that there is no undue escalation in their work force in future. Enterprises that are set up in future should be contained from the very beginning to undertake proper scientific studies to determine the work force at a rational level before embarking on a large scale recruitment programme.

A copy of the instructions issued in this matter may be endorsed to the Bureau of Public Enterprises for information.

**S. JAGANNARAYANAN,**  
*Under Secy. to the Govt. of India.*

To

All Ministries/Departments of Government of India.

**APPENDIX XVI**  
No. 2(178)|68-BPE(GM)  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES  
(PRODUCTION DIVISION)

*New Delhi, the 14th April, 1969.*

**OFFICE MEMORANDUM**

**SUBJECT:**—*Surplus labour in Public Enterprises.*

It is a fairly well-known fact that most public sector enterprises are over-staffed and over-manned. Certain informations were called for quite some time ago by the Bureau of Public Enterprises and, in September 1967, the Bureau's assessment on the basis of the information supplied by the enterprises themselves was that the enterprises were carrying surplus labour to the tune of nearly 15000—this was on the basis of rather liberal standards. With more rigid manning standard, perhaps this number would have been much larger.

2. The Administrative Reforms Commission have also referred to the problem of over-staffing in Public Enterprises. The Commission have observed that there is scope for reducing the staff in many undertakings. Various reasons have been given by the Study Team appointed by the Commission for the general pattern of over-staffing in Public Enterprises. Some of the main reasons are :

- (a) employment of large number of unskilled labourers as departmental labour during the construction stage;
- (b) absorption of a majority of them at a later stage in the enterprises as a result of pressures;
- (c) not following any scientific system for man-power planning; and

- (d) adopting Government standards for clerical and office work.

The A.R.C. also recommended certain actions to be taken for overcoming the problem of over-manning. These are :

- “(1) Proper work standards and other control techniques should be adopted from the very beginning to avoid over-staffing.
- (2) In the undertakings where over-staffing has become chronic work studies should be undertaken by industrial engineers to find out the extent and areas of over-staffing.
- (3) The normal vacancies occurring in the over-staffed departments may be left unfilled; employees who are found surplus may be allowed to freely apply for jobs outside. Skilled workmen should be persuaded with the help of incentives, if necessary, to do without the assistance of helpers; the practice of having helpers should not be allowed in the new project.
- (4) Greater use should be made of the construction corporations in the public sector and non-departmental agencies wherever such a course is feasible.”

Government decisions on A.R.C. recommendations have been communicated to the administrative Ministries and it is presumed that they are taking action to implement Government decisions on the subject.

3. The question of over-manning can be divided into two broad heads :

- (i) Over-manning resulting from employment of a large number of workmen during construction as departmental labour and failure/reluctance to part with their services after the construction work is over; and
- (ii) General over-manning in the regular (production) organisations of the enterprises

4. So far as the first problem is concerned, it has to be borne in mind by our Public Enterprises that it would be physically impossible to carry construction labour on their rolls after such construc-

tion labour becomes redundant. However, it is appreciated that there are practical difficulties in dispensing with the services of a very large number of labourers at one time. That is why wherever possible, assistance from regular construction organisations set up by the Government, like the National Projects Construction Corporation, the National Buildings Construction Corporation, the Hindustan Steel Works Construction Ltd., etc., should be asked for by Public Enterprises for construction purposes wherever possible. Even the C.P.W.D., would now be in a position to materially assist the enterprises in their construction activities. In any case, even where a large number of departmental labour has to be appointed by the enterprise itself, a proper plan for the retrenchment of construction workmen should be worked out as early as possible and negotiations carried out with the labour unions, etc., so that demobilisation of construction labour force can be achieved without serious repercussions.

5. Coming to the question of reduction of surplus staff in the regular organisations of the enterprises, it has been found that some of the enterprises like the Neyveli Lignite Corporation, the National Minerals Development Corporation Ltd., etc., have in the past drawn up schemes for voluntary retirement or retrenchment with ex-gratia payment and that it had been possible for them to reduce their surplus staff to a certain extent through such voluntary retirement schemes. It will be worthwhile for other undertakings having large surplus staff to emulate the examples of the Neyveli Lignite Corporation, The National Minerals Development Corporation Ltd., etc. Even though it may entail some immediate additional expenditure to start with, in the long run such a scheme will save the enterprises considerable amounts of money both by way of salaries and allowances and by way of hidden subsidies like housing, medical facilities, etc. This step may be taken over and above the other steps which it is presumed are being taken by the enterprises to reduce over-staffing, like stoppage of further recruitment, allowing the wastages to be taken care of by the existing surplus staff, etc. Any further information in regard to the voluntary retrenchment schemes already formulated by some of the enterprises may be obtained from the Bureau.

6. Representatives of the Government on the Boards of Directors of Companies may please be asked to keep a watch on the implementation of these decisions of the Government and ensure that the position is periodically reviewed by the Boards of Directors. Ministry of Steel and Heavy Engineering, etc., may also please

advise the enterprises to keep the Bureau informed of the progress made in the implementation of these measures.

P. K. BASU,  
Director, Bureau of Public Enterprises.

To

All Ministries/Departments of Government of India.

Copy to:

- (i) Production Division/Adviser (C) | Adviser (F) | D.S. (I&R),  
Bureau of Public Enterprises.
- (ii) Heads of Expenditure Divisions in the Deptt. of Expenditure (with 2 spare copies).

P. K. BASU,  
Director, Bureau of Public Enterprises.

[Enclosure for the Ministry of Finance (Department of Expenditure) O.M. No. 2 (178)/68-BPE (GM)]

Rec. No	Recommendation	Government decision
51	<ol style="list-style-type: none"> <li>(1) Proper work standards and other control techniques should be adopted from the very beginning to avoid over-staffing.</li> <li>(2) In the undertakings where over-staffing has become chronic, work studies should be undertaken by industrial engineers to find out the extent and area of overstaffing.</li> <li>(3) The normal vacancies occurring in the over-staffed departments may be left unfilled; employees who are found surplus may be allowed to freely apply for jobs outside. Skilled workmen should be persuaded with the help of incentives, if necessary, to do without the assistance of helpers. The practice of having helpers should not be allowed in the new projects.</li> <li>(4) Greater use should be made of the construction corporations in the public sector and non-departmental agencies wherever such a course is feasible.</li> </ol>	<p>51(1) to (4)—These recommendations are accepted. Bureau of Public Enterprises should pay constant attention to the various matters covered by recommendation, and in particular explore the possible fields where the public sector Construction Corporations could be usefully utilised.</p>



## APPENDIX XVII

No. 2(75)|71—BPE(GM-I)

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

BUREAU OF PUBLIC ENTERPRISES

*New Delhi, the 12th February, 1971.*

OFFICE MEMORANDUM

**SUBJECT:**—*Securing active cooperation of labour for improvement of production in Public Enterprises.*

The Committee on Public Undertakings in their 67th Report (Fourth Lok Sabha) on "Production Management in Public Undertakings" has recommended as follows:—

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.

The recommendation has been accepted by Government. Ministry of Steel and Heavy Engineering, etc., may kindly bring the same to the notice of the Public Enterprises under their administrative control for guidance in future.

**P. K. BASU,**

*Director, Bureau of Public Enterprises.*

**APPENDIX XVIII**  
No. 2(76)/71—BPE(GM I)  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES

*New Delhi, the 12th February, 1971-*

**OFFICE MEMORANDUM**

**SUBJECT:**—*Establishment of rapport by Management of Public Enterprises with the workers.*

The Committee on Public Undertakings in their 67th Report (Fourth Lok Sabha) on "Production Management in Public Undertakings" has recommended as follows:—

"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."

The recommendation has been accepted by the Government. Ministry of Steel and Heavy Engineering, etc., may kindly bring the same to the notice of the Public Enterprises under their administrative control for guidance in future.

**P. K. BASU,**  
*Director, Bureau of Public Enterprises.*

## APPENDIX XIX

No. 32-Adi-(C)|Cir—63|70

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

DEPARTMENT OF EXPENDITURE

BUREAU OF PUBLIC ENTERPRISES

New Delhi, the 30th March, 1970.

### OFFICE MEMORANDUM

**SUBJECT:**—*Adoption of Network Technique (PERT/CPM) for construction planning and scheduling of projects in Public Sector Undertakings.*

In big projects involving large investments the need for proper planning, programming and control on progress cannot be over emphasised, if timely completion of the projects is to be achieved to ensure economic returns on the investments. The modern industrial Projects are generally so complex and large in magnitude that the traditional planning and monitoring of progress through bar charts or other similar methods are not adequate. These conventional techniques can neither effectively coordinate the efforts of all project participants, nor provide means to identify the jobs, which constrain the project completion. As a result, the project managements, instead of focussing attention on items of work critical to project completion, inadvertently pay equal attention to all jobs at all times. This leads to unbalanced use of resources and increased project costs.

One of the recent developments and potentially valuable to planning, scheduling and controlling enterprises of many kinds and sizes, is the Network Technique, known under different names such as Programme Evaluation and Review Technique (PERT) and Critical Path Method (CPM). Recognising this fact, the Administrative Reforms Commission has also recommended that once a project has been approved, systematic thorough planning of the project should be undertaken by adopting the Network Technique (PERT|CPM) before starting actual construction. Government have accepted this recommendation and have directed that for all big

projects involving an investment of Rs. 1 crore and above, a complete master plan of construction should be drawn up with the help of Network Technique (PERT|CPM).

Accordingly, guidelines laying down the framework of procedures to be followed for planning and scheduling of projects by adopting the Network Techniques (PERT|CPM) have been evolved in the Bureau, and are contained in the Notes enclosed, Viz. :

- (1) Network Technique (PERT|CPM)—Part I, describing briefly, the basic concepts and the principles of the technique (Enclosure 1); and
- (2) Network Technique (PERT|CPM)—PART II, laying down the Frame-work of procedures to be followed in the application of the principles of the technique to planning and scheduling of projects (Enclosure 2).

The Ministry of Industrial Development, Internal Trade and Company Affairs, etc., are kindly requested to bring this to the notice of the public sector undertakings under their administrative control, and impress upon them the importance and the need for systematic thorough planning of the construction programme at the very outset of the project development, and the advantages of using the Network Technique in this regard.

It is made clear that the guidelines given in the notes attached are very broad in nature and will have to be adapted to suit the requirements of each individual undertaking. Under certain circumstances some changes will have to be introduced even in the principles enumerated. However, it is hoped that these guidelines will, by and large, serve as Framework for detailed plans that different undertakings will evolve.

The frame-work of procedures to be followed for monitoring progress of construction by using the Network Technique (PERT/CPM) is being evolved in the Bureau, and would be sent in due course.

(A. N. BANERJI)

*Additional Secretary to Government of India,  
and Director-General, Bureau of Public Enterprises.*

To

All Ministries|Department of the Government of India.  
All FAs in the Department of Expenditure.

2097LS—7.

## NETWORK TECHNIQUE (PERT/CPM)—PART—I

### APPLICATION OF THE NETWORK TECHNIQUE (PERT/CPM) TO PROJECT CONSTRUCTION PLANNING & SCHEDULING. (BASIC PRINCIPLES AND CONCEPTS OF THE TECHNIQUE)

#### 1. INTRODUCTION

1.1. Large and complex projects undertaken in the public sector, during the Plan periods, in various fields of activities have been imposing severe strain on the country's economy, particularly because the majority of the projects could not keep upto their original time schedules and cost estimates. The major reason for overruns in time and cost may be attributed to inadequate planning at the outset of the project. It is, therefore, important to adopt effective planning procedures in the very initial stages of preparation and formulation of work plan of any project.

1.2. Experience has shown that conventional planning and control techniques adopted in the past have not been able to satisfy the requirements of planning and monitoring modern industrial projects. This has led to search for improved methods of planning project construction. Recently, new management techniques for planning, scheduling and controlling a project have been developed. One of the latest of these is the Network Technique known under different names such as the Programme Evaluation and Review Technique (PERT) and the Critical Path Method (CPM), which can be adopted for planning all "Once-through Projects" (non repetitive) where the end objective is a single end item\*—i.e. for all construction projects only.

1.3. The intention of this note is to brief the objectives of the Network Technique\*\*, and explain its concepts, principles and mechanics.

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\* The technique is not applicable to production jobs where the end items are of repetitive nature.

\*\* The procedures to be followed by project management for the application of this technique to their projects is dealt with separately, under 'NETWORK TECHNIQUE (PERT/CPM)-PART II.

## 2. OBJECTIVES OF THE NETWORK TECHNIQUE

2.1. The term Network Technique refers to the *method* of planning, scheduling (programming) and controlling of progress on various components of the projects, especially those projects which are complex in nature. Primarily, it provides an Integrated Construction Management for projects; determine the project duration more accurately than traditional planning and control techniques; identifies activities critical to different stages of project completion to enable management to pay greater attention to those activities, periodically, instead of concentrating on all activities at all times with equal emphasis; identifies the effect of schedule delays, well in advance, for timely corrective action; facilitates optimisation of resources; and provides a scientific method of progress reporting and progress control enabling the management to take better decisions, for effective monitoring of the project.

2.2. Before explaining the principles of the Network Technique, a review may be made of the Conventional planning and control methods. This will provide an opportunity to recognise the advantages of the Network Technique over the former and the contribution that it can make as an aid to better management.

## 3. REVIEW OF CONVENTIONAL PLANNING TECHNIQUES

3.1. The traditional techniques generally adopted for project planning and control are the gantt or the Bar Chart, the Milestone Chart, the Flow Chart, the Line of Balance etc. The Bar Chart being a widely adopted method, its inadequacies alone may be summarised below:

*Inadequacies alone*

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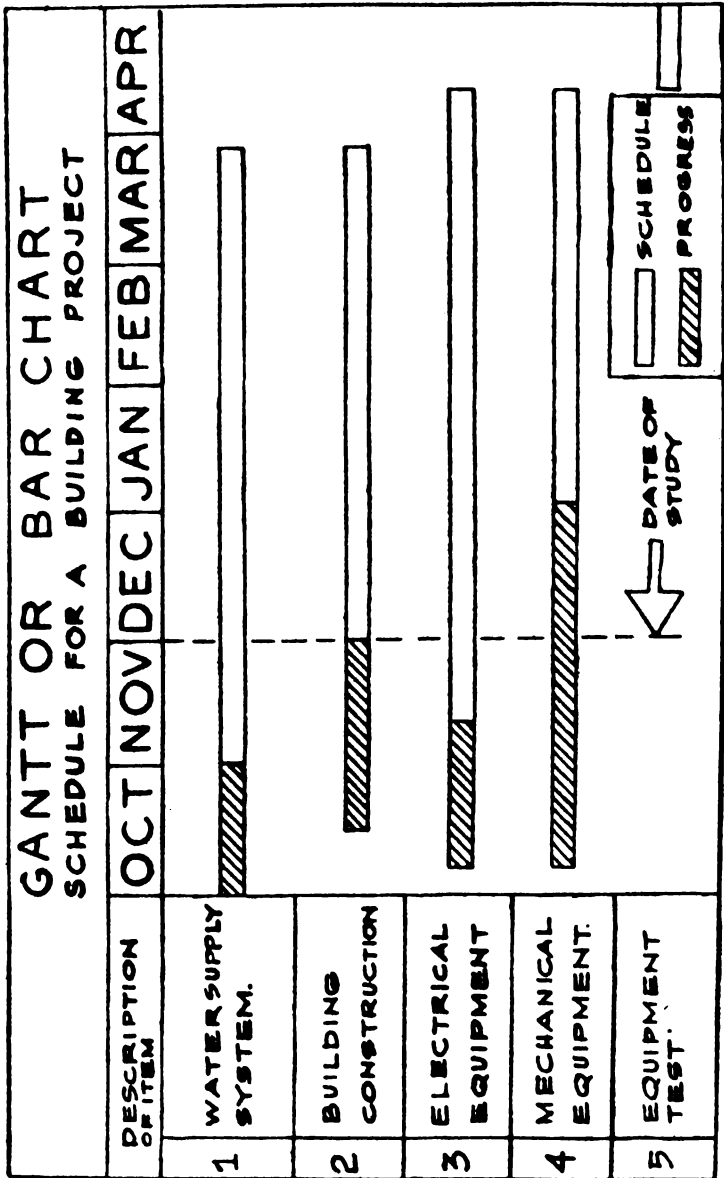


FIGURE 1

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3.2. Figure 1 shows a simple bar chart displaying the schedule of a small building project in which mechanical and electrical equipments are to be erected. The deficiencies of this method of planning and control are: (i) if some work is either behind or ahead of schedule, it cannot indicate their effect on subsequent tasks or on the project completion date. This is because the Bar Chart does not show the inter-dependencies and the inter-relationships between the project tasks, and, as such, it cannot predict the effect of delay in one area over another and on the project as a whole. (ii) Reporting with the help of this chart requires merely guessing or estimating, very broadly, the quantum of work completed or required to be completed. At best it can be in terms of percentages, that is, 25 or 30 per cent or so, according to progress in respect of each task on the date of reporting. This is because the chart does not show any milestones or events along the horizontal bars. (iii) It cannot isolate the critical areas of work, which primarily constrain the project completion date to enable the management to pay greater attention to those activities. In the absence of such indication, the management will be compelled to concentrate on all activities, at all times, with equal attention. (iv) Optimising the use of resources is difficult when this technique is adopted, because it is not possible to identify the non-critical areas, and in turn, the resources kept idle in such areas, for better utilisation.

3.3. Owing to the limitations and inadequacies of the traditional planning techniques, the need for a more effective method of planning and scheduling, therefore, arises. As the Network Technique eliminates all the above deficiencies and provides a rational approach to the aspects of planning and control and forces a logical thinking of the project plan from beginning to the end of the construction period. This technique will be of much help to managers, as in aid to better management, which can lead to achieve the schedule and cost objectives of a construction project. In the following paragraphs, the basic concepts, principles and mechanics of the Network Technique are spelt out briefly.

#### 4. BASIC CONCEPTS, PRINCIPLES & MECHANICS OF THE NETWORK TECHNIQUE

##### 4.1. Definition of Network terms:

4.1.1. A Network is a graphic plan of all tasks that must be completed to reach the end objective of a project, showing their

inter-dependencies and inter-relationships. The components which make up a network are 'Events' and 'Activities'. Events and activities are arranged in the manner in which the project has to be executed. *An Event* is a specific defineable accomplishment in a project plan, recognisable at a particular instant of time. It consumes neither time nor resources. It is a point in time and not a passage of time. Examples of events on a project network are either a commencement point or a completion point of a task to be performed. An event is generally represented on a network by means of a circle. However, different geometrical figures are used to represent different events and also to distinguish between the function of one event as different from the other. Some of the symbols that are generally adopted in Network are shown in Figure 2 below:

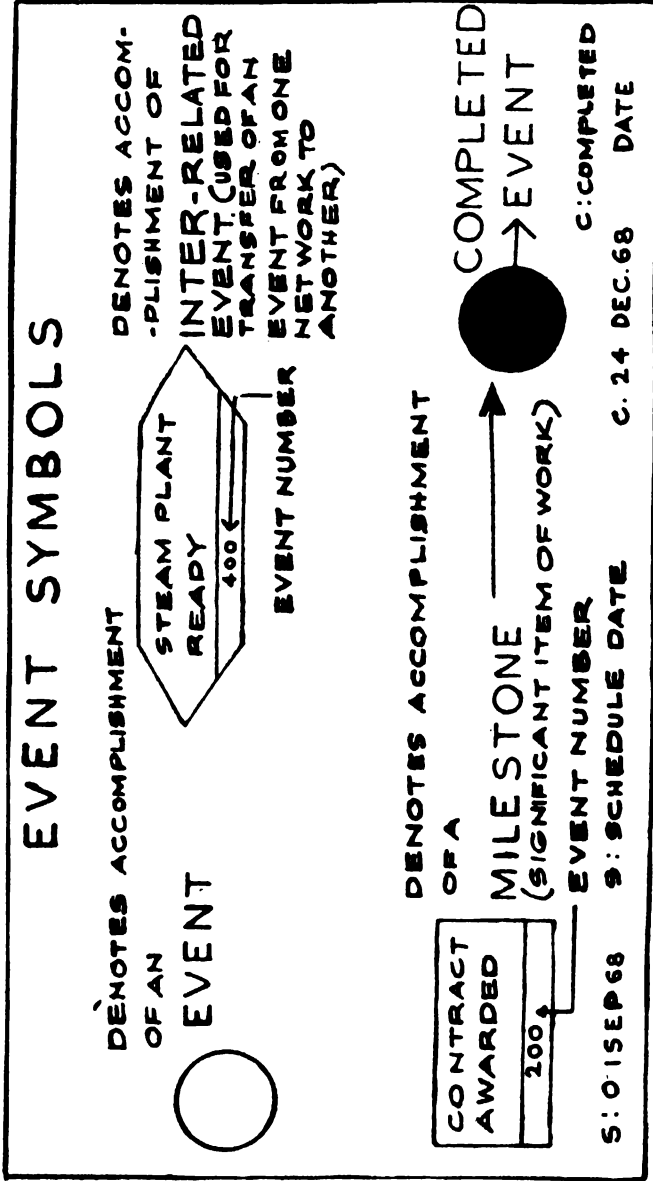


FIGURE - 2.

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An *Activity* is performance of work between any two events. It is a time consuming and a resource-consuming element in a Network Plan. A time-lag or a waiting-time can also be an activity. An activity is represented on a network by means of an arrow (figure 3). There is another component of a network which is called a *Zero-time activity*. It is an activity which consumes neither time nor resources. It is also known as a '*Dummy Activity*' or a *Dummy*. It is represented on a network by means of a broken arrow (figure 3). It plays a very important role in a network. Its functions are two-fold: It helps to maintain the logic of the network diagram by keeping the inter-dependencies and inter-relationships of events and activities in perfect order. Secondly, it helps to maintain the numbering system unique in the network diagram.

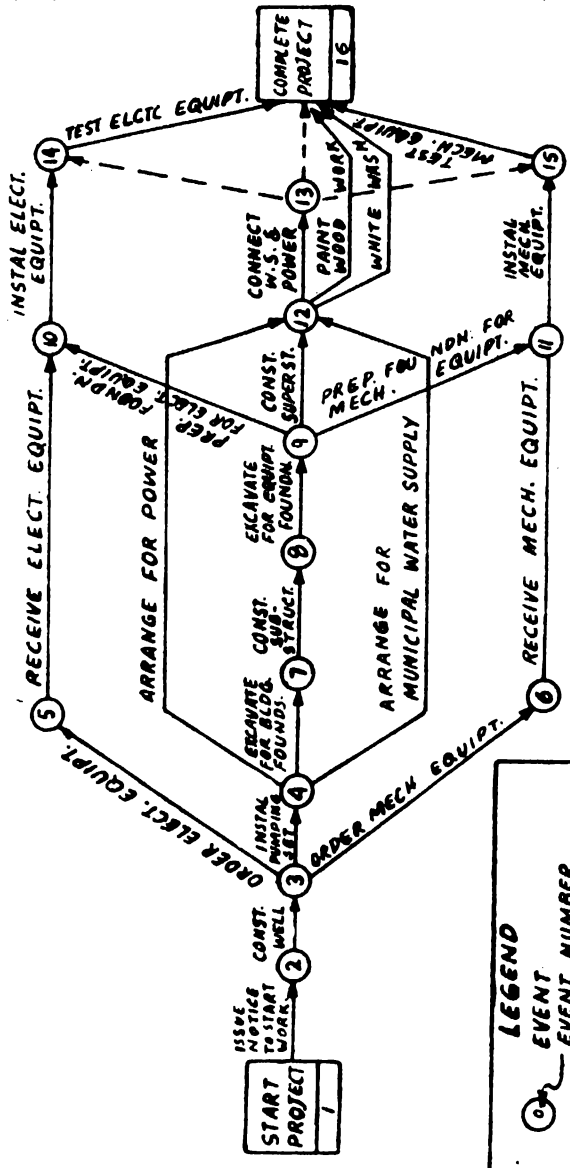
#### **4.2. Ground Rules for developing a Network:**

4.2.1. Certain ground rules are to be observed for developing a Network Plan. They are: An event cannot occur until all the activities leading to it are completed; An activity cannot start until its preceding event has occurred; An event once having occurred cannot occur again, *i.e.* there is no network looping back to a previously accomplished event; Time flows from left to right; Arrows flow from left to right, *i.e.* there is no backward direction to the arrows; Every activity should be completed to reach the end event of the network.

4.2.2. Besides observing the above ground rules, three basic questions should be posed and answered while drawing each and every arrow in a network plan: firstly, what activities should be completed before the activity being drawn? Secondly, what activities should follow immediately after the activity being drawn? and thirdly, what activities can be performed concurrently? A typical network with events, activities and dummies is shown in Figure 3 below:



**NETWORK FOR A BUILDING PROJECT**  
**(IN WHICH MECHANICAL & ELECTRICAL EQUIPMENTS ARE TO BE ERECTED)**



**LEGEND**

- EVENT NUMBER
- MILESTONE
- EVENT NUMBER
- ACTIVITY
- - - DUMMY ACTIVITY

**FIGURE - 3**



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### 4.3. Concurrent and continuous construction

4.3.1. In project construction, many of the jobs can be performed concurrently and continuously, and such performance can reduce project duration. Attempts should, therefore, be made to break up activity arrows into defineable parts, wherever possible, and perform them concurrently and continuously from start to finish. Figure 4 below is a typical example. It explains how a pipe-laying project can be executed by using concept. The project consists of 5 different jobs to be performed: trenching, pipe laying, welding, testing and back-filling. The entire length involved has been conveniently broken into desired number of sections (say 3 here). By arranging the four tasks in the manner indicated in the network, it is possible to complete the project within the minimum required time than it could be, otherwise.



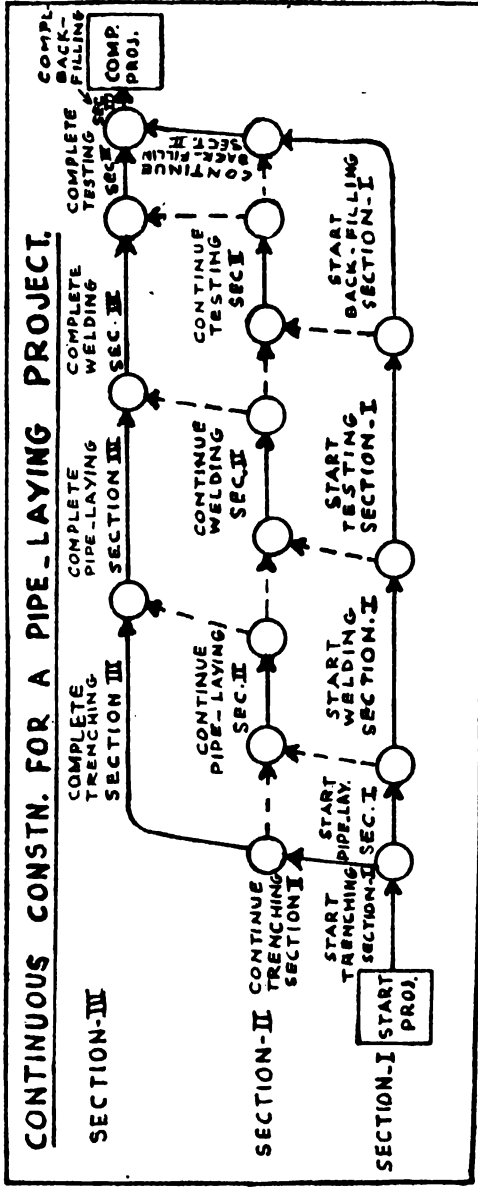


FIGURE - 4



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4.3.2. A Network should always be developed by observing the ground rules, the principles and concepts mentioned above. After the network plan is fully developed, the next step is to estimate the time that is required to complete the project and to identify the critical path. In this context, it is very important to note that, while developing a network initially, no attention is to be paid to the time aspect of the work plan. After developing the network and integrating it with all other networks, wherever necessary, and bringing its logic in perfect order, the element of time is introduced.

## 5. ESTIMATING PROJECT DURATION AND IDENTIFICATION OF THE CRITICAL PATH

5.1. To assess the project duration and identify the Critical Path, four steps are to be gone through in their sequential order. They are: the estimation of the Activity Duration Time ( $t_e$ ); the calculation of the minimum time *required* for the accomplishment of the events (TE); the calculation of the maximum time *allowable* for the accomplishment of the events (TL); and the calculation of the Event Slack. These are dealt with below.

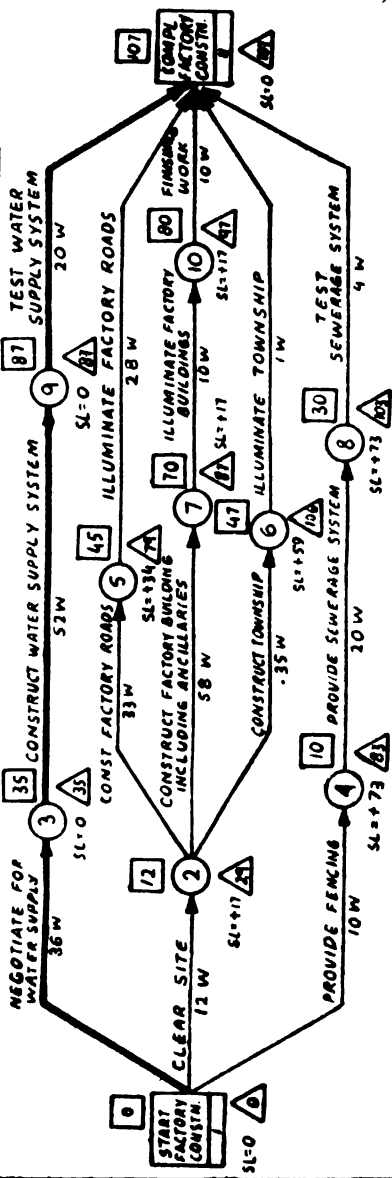
### 5.2. Estimation of the Activity Duration Time ( $t_e$ )

5.2.1. Activity Duration Time is the time that is required for the performance of an activity, Judiciously arrived at, taking due note of the available resources in men, materials, equipment and local working conditions. As activity duration times form the basis for all further network analysis, greater attention should be paid to this aspect of the network. It is, therefore, very necessary that these duration times are arrived at by experienced people who have complete knowledge of work. These times are written below the activity arrows (Figure 5). The 'unit' of this time may be days or weeks whichever is convenient according to the magnitude of the project.

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# NETWORK FOR FACTORY TIMES AND CRITICAL PATH

## EVENT AND ACTIVITY TIMES AND CRITICAL PATH



NOTE: ACTIVITY DURATION TIMES ARE IN WEEKS IN THIS FIGURE

### LEGEND

- 12 DENOTES MINIMUM TIME REQD FOR THE ACCOMPLISHMENT OF THE EVENT (TE) EVENT NO.
- 23 DENOTES MAX TIME ALLOWABLE FOR THE ACCOMPLISHMENT OF THE EVENT (TL)
- SL = ACTIVITY DURATION TIME (TE) IN WEEKS
- CRITICAL PATH

### ACTIVITY TIMES & ACTIVITY SLACK FOR ACTIVITY 2-7

1. EARLIEST ACTIVITY START TIME = 12
2. EARLIEST ACTIVITY FINISH TIME = (12+58)=70
3. LATEST ACTIVITY FINISH TIME = 87
4. LATEST ACTIVITY START TIME = (87-58)=29
5. TOTAL ACTIVITY SLACK = (87-12)-58 = 17

FIGURE - 5



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### 5.3. Calculation of the Minimum Time Required for the accomplishment of the event ( $T_E$ ).

5.3.1. After assigning duration time ( $t_e$ ) to all activities on the network, the next step is to calculate the Minimum Time Required for the accomplishment of all the events in the network. The Minimum Time required for the accomplishment of an event is the time at which that event could occur at its *earliest*, after the occurrence of the beginning event. It is calculated by taking the maximum of the activity duration times between the beginning event and the event in question. This is done in the forward direction on the network, for all the events from the beginning event to the end event, and the values are recorded above the events; thus, (87) in respect of event number 9 in the above figure. The  $T_E$  value of the end event of the project network gives the *earliest* time at which the project could be completed.

### 5.4. Calculation of the Maximum Time Allowable for the accomplishment of the events ( $T_L$ ).

5.4.1. After assessing the  $T_E$  value in respect of the end event, the project management might find this value either equivalent to, more or less than the *desired* or *allowed* or the *stipulated end date*, if any, fixed for the project completion. This time which is *ALLOWED* for the completion of the project is known as the 'Maximum Time Allowable' ( $T_L$ ) for accomplishment of the end event of the project network. In the case of *Any event* of the network, this time ( $T_L$ ) will be the time at which that event could occur at its *latest*, without causing any delay on the end event. In the absence of any stipulated end date for the project, the  $T_L$  value in respect of the end event should generally be taken as equivalent to the  $T_E$  value (Figure 5).

5.4.2. Having fixed the  $T_L$  value of the end event, the next step is to determine the  $T_L$  value in respect of all the events in the network. The method of calculating  $T_L$  is just the reverse that of  $T_E$  that is, backward from the end event of the network. It is obtained by subtracting, from the  $T_L$  of the end event, the sum of the activity durations, leading from the event, to the end event, and choosing the least of these values. They are written below the events, enclosing them in triangles; thus, 97 in respect of event number 10 in figure 5.

### 5.5. Event Slack

5.5.1. Having calculated the  $T_E/T_L$  values of all the events in a network, the next step is to calculate the 'Event Slack' in respect of all the events. *Event Slack* is the free time upto which the

occurrence of an event can be delayed without causing any delay on the completion date of the project  $T_L - T_E$  gives the slack value of an event.

5.5.2. Event Slack may be zero, positive or negative. Zero slack occurring at any event will indicate that the 'event is on schedule'; if it occurs at the end event, that the 'project is on schedule'. Positive slack occurring at any event will indicate that the 'event is ahead of schedule'; that occurring at the end event, that the 'project is ahead of schedule'. Negative Slack occurring at the end event will immediately caution that the 'project will be behind schedule'. If it occurs at any event, it will indicate that the 'event is behind schedule'. Negative slack aspect is very important and needs immediate special attention of the management. The management has to rework the time durations of the activities to eliminate the negative slack. This has to be done after identifying the Critical Path. Elimination of negative slack is, therefore, treated later in para 5.9. All slack values are written below the events (Figure 5).

## 5.6. Identification of Critical Path

5.6.1. Though on a project network, the slack values of the events may be either zero or positive or negative, however, there will be one set of events from beginning to end for which the values of events lack may be the *least* compared to all other values. The path containing these events, obviously, impose rigorous time constraint on the end event of the project. This path of activities and events is known as the *Critical Path*. Any event on the Critical Path is called the *Critical Event*; similarly, any activity on this path, the *Critical Activity*.

5.6.2. Further, a examination of all the paths leading from the start to the end event, will indicate that the path which determines the  $T_E$  value of the end event is the same Critical Path which imposes rigorous-time-constraint on the project schedule. This path is, however, the 'longest' of all other paths as is obvious from the calculation of the  $T_E$  value of the end event. As such, the *Critical Path is also, the longest path of the project network*.

5.6.3. *There are, therefore, two criteria for the identification of the Critical Path. They are: the algebraic value of the event slack in respect of the events on the path should be the minimum when compared to all other paths; and it should also be the longest path (Figure 5).*

5.6.4. The critical path concept is very important. It is this path which determines the project duration; if any time is to be saved on the project, it has to be on the critical path activities only; if any delay is caused on any one of the critical activities, it will immediately have its consequential effects on the subsequent activities as well as on the end date of the project. This is an important predicative feature of the Network Technique.

**5.7. Activity Times:**

5.7.1. In the foregoing paragraphs, Event Time and Event Slack were described. There are also *Activity Times* and *Activity Slack*. There are four activity times. They are: Earliest Start Activity Time (ES); Earliest Finish Activity Time (EF); Latest Finish Activity Time (LF); and Latest Start Activity Time (LS). The objective of calculating the activity times is to prepare a detailed time table for the 'start' and 'finish' of all the activities. These times are calculated as follows:

- (i)  $ES = TE$  of the preceding event of the activity;
- (ii)  $EF = ES + t_e$  of the activity;
- (iii)  $LF = TL$  of the succeeding event of the activity; and
- (iv)  $LS = LF - t_e$  of the activity.

In figures 5, the Earliest and the Latest Start and Finish Activity Times in respect of Activity 2—7 are also calculated and shown.

**5.8. Total Activity Stock**

5.8.1. The Total Activity Slack is the free time that is available in the performance of an activity without causing any delay in the occurrence of the end event. It is the difference between the time required for the performance of an activity and the time available for it. The objective of calculating the total activity slack is to identify the slack resources (idle resources) in activities and re-allocate them to expedite the Critical activities, wherever possible. This leads to optimisation of use of resources in a project which is an important cost-reduction aspect. Total activity slack is calculated as follows:

$$\text{Total Activity Slack} = TL \text{ of succeeding event } \textit{minus} \\ \text{of preceding event } \textit{minus} \\ \text{of the activity.}$$

The total Activity Slack in respect of activity 2—7 is shown in Figures 5.

### **5.9. Negative Slack**

5.9.1. Occurrence of negative slack at the end event, as already mentioned, will indicate that the project will be in danger with regard to its completion time—Figure 6 below. A typical case with a stipulated time ( $T_L$ ) as 87 Weeks is illustrated in this figure.

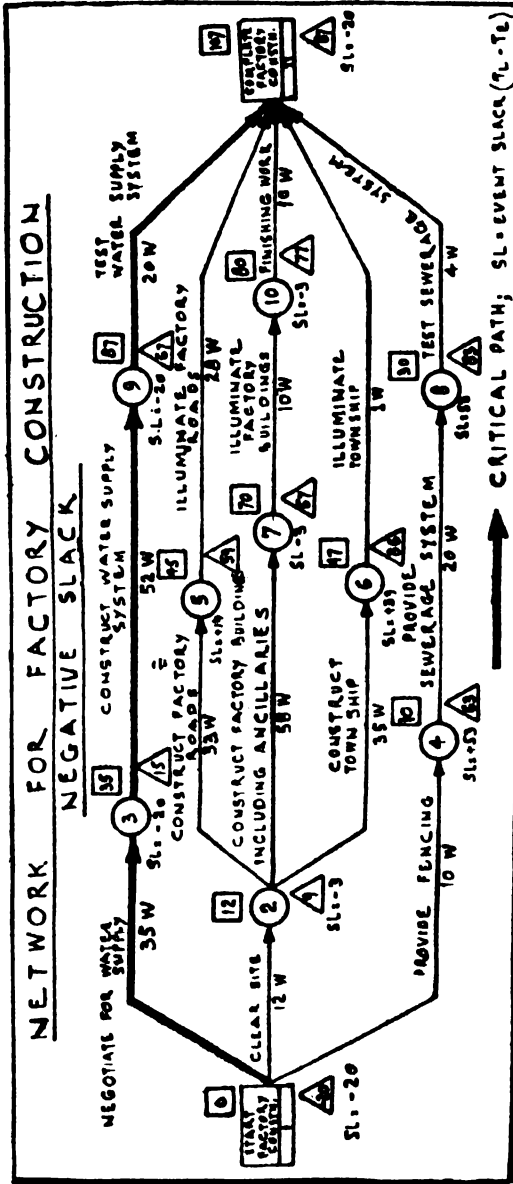


FIGURE-6



It is very important to note that the *negative slack should be completely eliminated before the plan is implemented*. Elimination of negative slack would mean reducing the (TE) value of the end event so that it is brought equivalent to its (TL) value. As the (TE) value is obtained along the longest path i.e. the Critical Path, this amounts to reducing the time of the Critical Path. This is, therefore, known as *Compressing the Critical Path*.

#### **5.10. Compressing the Critical Path**

5.10.1. Compressing of the Critical Path can be achieved in one or more of the following methods: Re-examination of the Activity Duration Estimates along the Critical Path and reducing any excess in those estimates; performing jobs concurrently and continuously as explained earlier; reallocating the slack resources to the Critical activities, wherever possible, with a view to expediting them; lowering performance requirements of activities i.e. reducing specification, if possible, consistent with quality and technical requirements; dropping unimportant activities, if any; and as a last resort, increasing resources for early completion of the Critical activities, which should be consistent with the cost-economics of such a proposition.

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## ENCLOSURE-2

## NETWORK TECHNIQUE (PERT/CPM)—Part-II

## FRAME-WORK OF PROCEDURES TO BE ADOPTED FOR THE APPLICATION OF THE NETWORK TECHNIQUE TO PLANNING AND SCHEDULING OF PROJECTS

## 1. INTRODUCTION

1.1 The objectives of the Network Technique (PERT/CPM), its advantages over the other planning and control techniques traditionally adopted in the construction industry, its basic concepts and the principles etc., have all been briefly enumerated under Network Technique (PERT/CPM)—Part I. Now, the Frame-work of Procedures to be followed for the application of the principles of the Network Technique to planning and Scheduling of Projects is briefly dealt with in the paragraphs that follow.

## 2. STEPS TO BE GONE THROUGH IN PROJECT PLANNING

2.1. The construction of a project depends primarily on the co-ordinated, cyclic action of planning, scheduling, reviewing of progress, making management decisions and implementing corrective actions. This cycle may be called the *Project Construction Management Cycle*. It consists of two phases, namely, the *Project Planning Phase* and the *Project Control Phase*. This note deals with the Project Planning Phase\*. The procedure for project planning, by using the Network Technique, will consist of eight steps to be gone through in their sequential order. They are:

- (1) developing a Work Breakdown Structure of the Project;
- (2) developing a Tentative Master Control Network of the entire Project, based on the Work Breakdown Structure;
- (3) preparing Detailed Networks for the different components of the Project;
- (4) Integrating the Networks;
- (5) compressing the Critical Path of the Tentative Master Network to meet the stipulated date;
- (6) preparing the Modified or the Final Master Control Network;
- (7) scheduling the networks; and
- (8) according Management's approval to the networks and communicating them to all concerned for adoption. These concepts are spelt out below.

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\*The Project control phase (i.e. monitoring progress of construction) is dealt with in a Separate note.

## 2.2. Developing the Work Breakdown Structure of the Project

2.2.1. The first step in the early planning stages of a project is the identification of its primary objectives within an organised structure. These major items are further broken down systematically into smaller elements to successively lower levels, reducing the complexity of work at each level until it reaches the level upto which planning and control are necessary. A frame-work containing such a break-up is called the *Work Breakdown Structure* of the project. This break-up depends on the size and complexity of the project. Such a frame-work will ensure that all the work required to achieve the project objectives is included in the project plan; and that the objectives are established for each work element of the project also and will form the very basis for all further planning and control. Figure 1-A is an example (indicative) of a Work Breakdown Structure for a Fertilizer Project.

## 2.3. Developing the Tentative Master Control Network

2.3.1. With the completion of the Work Breakdown Structure, a work plan for achieving the project objectives need to be developed in the form of a Network, organised in accordance with the Work Breakdown Structure. This Network should contain all the major events and gross blocks of work in the construction plan and serve as a summary or management display of the project schedule. This initial network is called the *Tentative Master Control Network OF THE PROJECT*. Figure 1-B is an example (indicative), developed for a Fertilizer Project. Such a Tentative Master Network is generally based on certain broad assumptions in planning which become necessary at the initial planning stage. It is for this reason, it is called the Project's Tentative Master Control Network. This Master Plan, provides a comprehensive picture of the entire project at a glance; determine, at the outset, the project duration approximately; identifies the critical major activities of the whole project; assures that no work elements of the project are overlooked; and provides guidelines for developing further detailed networks.

## 2.4. Developing detailed networks for the elements of the project

2.4.1. The next step is to develop *detailed networks* for each major element of the project, (say, Urea Plant—Fig. I—C), based on the Work Breakdown Structure. These are developed to the depth of detail necessary and will provide most of the information needed for firm planning at the operating level. While developing these networks, all earlier assumptions would get clarified. The numbr of detailed networks required for a project depends on the complexity and magnitude of the project.

## 2.5. Network Integration

2.5.1. The process of breaking the networks into Master and several detailed networks creates problem of ensuring consistency and coordination among all these networks. This is accomplished by *Network Integration* where information is transferred from one network to another and all the networks are adjusted so that they present a *consistent work plan of the whole project*.

2.5.2. An example of network integration is illustrated in figures 2A, 2B and 2C. It explains coordination of activities that has to be brought about amongst Ammonia, steam and Water Plants. It shows the following features: (i) The requirements of boiler-feed-water can be determined (event No. 800) only after the specifications for the steam plant (event No. 901) and Ammonia plant (event No. 202) have been finalised; (ii) specifications for cooling tower and pumps can be determined (event No. 500) only after the total requirements of cooling water is established (event No. 870); (iii) erection of cooling tower should be completed (event No. 520) before trial runs on Ammonia plant can start (event No. 280); (iv) water plant is to be ready (event No. 840) before starting trial runs on steam plant (event No. 930); (v) steam plant should be ready (event No. 391) before starting trial runs on Ammonia plant (event No. 280).

2.5.3. Further, by this process, the time of occurrence of the inter-related events, i.e. the minimum times required ( $T_E$ s) and the maximum times allowable ( $T_L$ s) for the accomplishment of these events, get automatically integrated. Establishment of this consistency is also shown in Figures 2A, 2B & 2C.

## 2.6. Compressing the Critical Path

2.6.1. After integrating all the networks and bringing in consistency both with regard to inter-dependencies between the events, as well as their times of occurrence, it should be possible to compare the project duration as indicated by the Tentative Master Control Network i.e., the minimum time required for the completion of the project ( $T_E$  value of the end event of this Tentative Master), and the one desired by the management i.e., the maximum time allowable for the completion of the project ( $T_L$  value of the end event). If the latter is shorter than the former, then the Critical Path on the Tentative Master is analysed and compressed by various methods provided by the Network Technique to bring back the project duration ( $T_E$ ) equivalent to the allowable completion time ( $T_L$ ).



# INDICATIVE

## ANCILLARY FACILITIES

PRODUCT  
LOADING  
PLANT

STEAM  
GENERATION  
PLANT

SERVICES  
AND  
UTILITIES

LANDS  
ROADS  
&  
TOWNSHIP

ENGINEERING PLANT

FUEL SYSTEM

ELECTRIC POWER

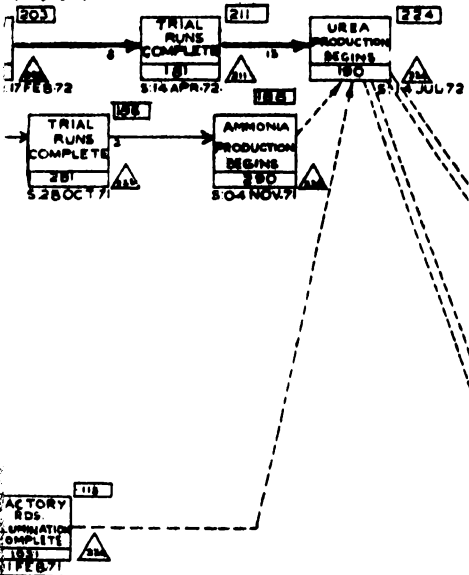
LAND ACQUISITION

.....2..... 2..... 2.....  
 INDICATIVE, TO MAKE IT COMPLETE,  
 TAKEN INTO ACCOUNT.

FIG. 1A

# RK

## INDICATIVE



## LEGEND

- 15 — DENOTES TIME REQUIRED FOR THE ACCOMPLISHMENT OF AN EVENT (T<sub>e</sub>)
- 42 — DENOTES ACCOMPLISHMENT OF AN EVENT
- 42 — DENOTES EVENT NUMBER
- △ — DENOTES MAX. TIME ALLOWABLE FOR THE ACCOMPLISHMENT OF AN EVENT (T<sub>a</sub>)
- CONTRACT AWARDED — DESCRIPTION OF MILESTONE
- 300 — DENOTES ACCOMPLISHMENT OF A MILESTONE
- 300 — DENOTES EVENT NUMBER
- STEAM PLANT READY — DENOTES ACCOMPLISHMENT OF INTER-RELATED EVENT (USED FOR TRANSF. OF AN EVENT FROM ONE NETWORK TO ANOTHER)
- PREPARE SPECS — ACTIVITY DESCRIPTION
- 15 — ACTIVITY DURATION TIME (WEEKS)
- — DUMMY ACTIVITY
- — CRITICAL PATH
- 5 — SCHEDULE DATE

FIG. 1B

INDICATIVE MASTER CONTROL NETWORK IS ONLY INDICATIVE.

SHOULD BE TAKEN INTO ACCOUNT TO MAKE IT COMPLETE.



## **2.7. Preparation of the Modified or the Final Master Control Network**

2.7.1. As the Tentative Master Control Network is framed prior to developing detailed networks and as the assumptions made initially get clarified only when the latter are developed, if any changes are made subsequently in planning and timing during the preparation of the detailed networks, the Tentative Master must be modified to reflect these changes. *This Modified Master will be the Final Master Control Network of the Project.* (The concept is illustrated in Figures 3A, 3B & 3C).

## **2.8. Network Scheduling**

2.8.1. 'Scheduling' means establishing firm calendar dates for the accomplishment of the events. A date should be conveniently selected between the minimum time required ( $T_E$ ) and the maximum time allowable ( $T_L$ ) for the accomplishment of the events. Care should, however, be taken to see that as far as possible this date is not very near to the ( $T_L$ ) value, because it will increase the criticality of the events; it should not also be equivalent to the ( $T_E$ ) value, because the management will be unnecessarily expediting the activities. For the purpose of scheduling, a conversion table—say, week-to-calendar date—will be helpful.

## **2.9. According Management's approval to the networks and communicating them to all concerned for implementation**

2.9.1. After finalising the Master and the detailed networks and translating them into detailed time tables, the Management should accord its approval to the networks and communicate them to all concerned in the project for adoption. Thereafter, *none* in the project will have authority to carry out modifications to these approved networks, except the Top Management.

2.9.2. This brings to the end of the Planning Phase, and the Project then moves from Planning Phase to Control Phase.



TENTATIVE MASTER NETWORK, DETAILED NETWORK & MODIFIED MASTER

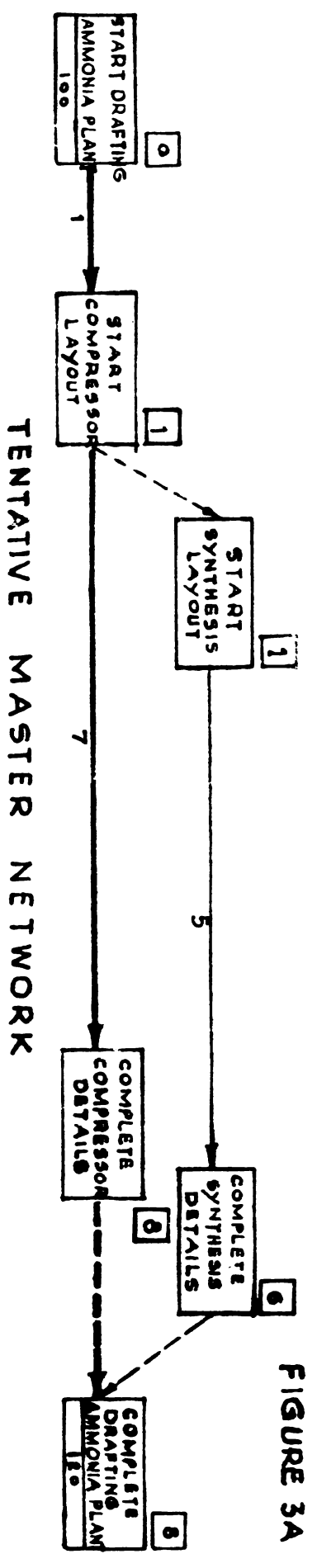


FIGURE 3A

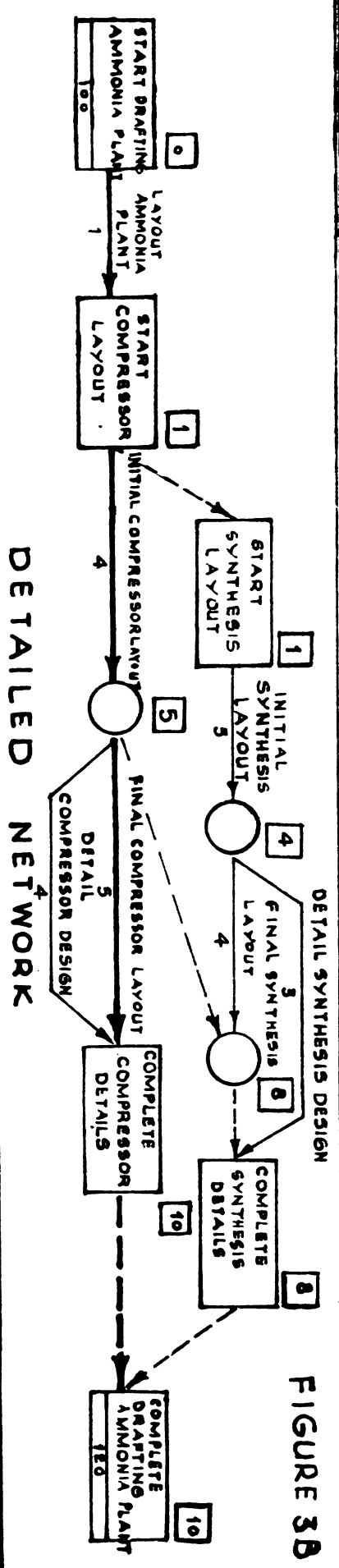


FIGURE 3B

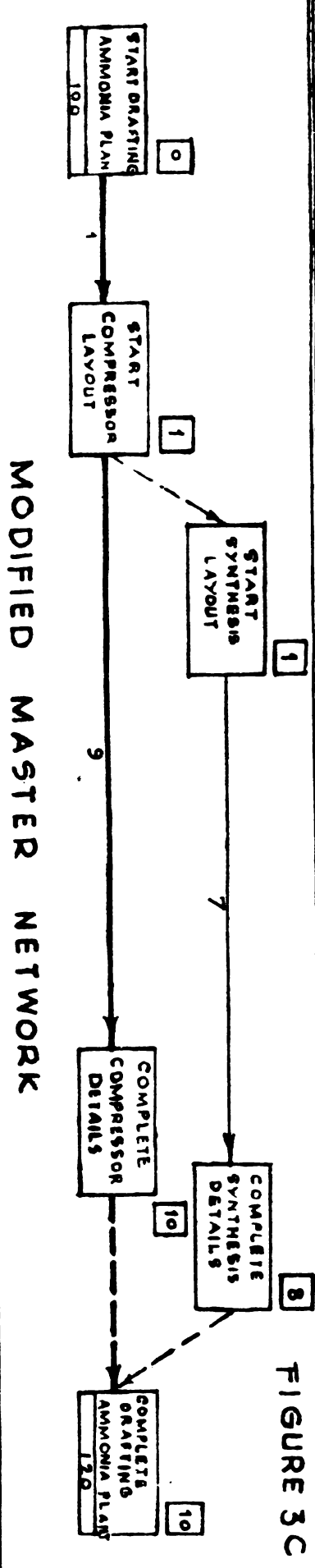


FIGURE 3C

FIGURE NO 3

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**APPENDIX XIX A**

No. 1275-Adv (c)/Cir-79/70  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES

New Delhi, the 3rd September, 1970.

**OFFICE MEMORANDUM**

**SUBJECT:—Adoption of Network Technique (PERT/CPM) for monitoring progress of project construction in Public Sector Undertakings.**

The guidelines and the framework of procedures, evolved in the Bureau, for the application of the Network Technique (PERT/CPM) to planning and scheduling of project, in Public Sector Undertakings, have been communicated *vide* Bureau's O.M. No. 32-Adv (c)/Cir-63/70 dated the 30th March, 1970 in two sets of Notes viz :

1. Network Technique (PERT/CPM)-PART I-Application of the Network Technique (PERT/CPM) to Planning and Scheduling of Project Construction (Basic concepts and principles of the Technique); and
2. Network Technique (PERT/CPM)-PART-II-Framework of procedure to be adopted for the application of the Network Technique (PERT/CPM) to Planning and Scheduling of Projects.

The framework of procedures to be adopted for monitoring the progress of project construction, through the Network Technique (PERT/CPM), evolved in the Bureau is contained in the Note enclosed, viz :

“Network Technique (PERT/CPM)-PART-III-Framework of procedures to be adopted for monitoring the progress of project Construction through the Network Technique (PERT/CPM)”.

The enclosed Note contains the reporting procedures to be followed by projects for monitoring progress, in cases where the

Network Technique is adopted for construction planning and scheduling. The objectives of the procedures outlined are primarily twofold, Firstly, it is intended to highlight current critical problem areas on every progress review date, predict future slippages, and aid to initiate timely corrective actions at different management levels. Secondly, it is intended to reduce the volume and quantity of reporting, because reports which carry a large amount of data, even though they may be of general informative interest, tend to obscure points on which managerial analysis is required.

In this context, it may be noted that the procedure laid down in the Note is not a formula or a thumb-rule for solving problems and cannot, in itself, prevent delays and reduce excessive costs due to slippages. Only the corrective actions taken by management, at different levels, will lead towards problem solution. Thus, it is primarily how the information is analysed, how it is utilised and how effectively and rapidly corrective action are taken, based on the flow of information, which determine the effectiveness of the results obtained. The quantity, quality and timeliness of information provided are of paramount importance in this process.

Recognising its significant advantages in the area of project control, the Administrative Reforms Commission has also, recommended that Network Technique should be adopted for monitoring the progress of construction.

The Ministry of Industrial Development, Internal Trade and Company Affairs etc., are kindly requested to bring this to the notice of the Public Sector Undertakings under their administrative control, and to the Directors on the Board of Management thereof for their guidance and adoption.

(A. N. BANERJI)

*Addl. Secy. to the Govt. of India, and  
Director-General, Bureau of Public Enterprises.*

To

All Ministries/Departments of the Government of India.  
All FAs in the Department of Expenditure.  
All Public Sector Undertakings.

**NETWORK TECHNIQUE (PERT/CPM)  
(PART-III)**

**FRAME—WORK**

**OF**

**PROCEDURES TO BE ADOPTED**

**FOR**

**THE APPLICATION OF THE NETWORK TECHNIQUE  
(PERT/CPM)**

**TO**

**CONTROLLING/MONITORING THE PROGRESS OF PROJECT  
CONSTRUCTION**

## **NETWORK TECHNIQUE (PERT/CPM)-PART-III**

### **FRAME-WORK OF PROCEDURES TO BE ADOPTED FOR MONITORING THE PROGRESS OF PROJECT CONSTRUCTION THROUGH THE NETWORK TECHNIQUE**

#### **1. INTRODUCTION**

1.1. In Bureau's Circular O. M. No. 32-Adv(c)/Cir-63/70 dated the 30th March, 1970, the basic concepts and principles of the Network Technique (PERT/CPM) have been briefly enumerated under PART-I of the Note, attached to the Circular. The Framework of procedures to be followed for the application of its principles to planning and scheduling of projects has also been indicated in PART-II of the Note. This Note, PART-III, deals with the Control Cycle, i.e. the application of this technique to controlling/monitoring the progress of project construction.

#### **2. MONITORING DEFINITION.**

2.1. In PART-II of the Note, referred to in the preceding paragraph, it is mentioned that after the Master and the detailed networks have been assigned schedule dates, duly approved by the Top Management, the concerned officers will have to adhere to the time table given in the networks for the execution of works. Monitoring of progress means periodic checking of progress of works against the targets laid down in order to ensure timely completion of the project. For this purpose, it would be necessary that information flows from the field to higher authorities, through the means of a Reporting System.

2.2. The characteristics of an effective reporting and control system should be such that it should be able to :

- (i) Summarise relevant information of the status of the various components of the project in such a manner as to bring most critical activities directly to the attention of the project management at appropriate levels; and
- (ii) Highlight deviations from the original plan, and indicate the effect of such deviations on the completion of the project as a whole.

The monitoring process, through the Reporting System, based on the Network Technique (PERT/CPM), is discussed in the following paragraphs.

### 3. MONITORING PROCESS

#### 3.1. Levels Of Reports

3.1.1. For carrying out the monitoring process, there can be generally three levels of reports in a project, as under, in addition to the 'Field Reports' which emanate from the field officers :

Level III Reports : Intended for the Branch Heads of Civil, Mechanical, Electrical etc. who are directly in charge of construction.

Level II Reports : Intended for the Managing Director/ the General Manager/ the Chief Construction Executive.

Level I Reports : Intended for the Ministry/ the Board of Directors.

The flow pattern of these reports is illustrated in Figure 1. (Enclosed).

#### 3.2. Updating Of Networks

3.2. 1. Based on these reports, the networks developed for a particular project, will have to be updated periodically, say every month, in the light of progress achieved. That is, activities and events are completed, the actual times taken for their completion are noted and their effects on future portion of the work analysed. Only such updating can portray the current status on every reporting date. The principles of the technique will then help predict the effect of a particular delay on the future work, or on the overall completion of the project and focus management's attention for timely corrective action.

The reports mentioned above are discussed briefly in the paragraphs that follow.

### 4. FIELD REPORTS

4.1. The Field Officers are required to report the actual progress to the respective Branch Heads-Civil, Mechanical, Electrical etc., periodically, say once a month, with reference to planned targets. For obtaining this information, the Branch Heads should have effective proforma. Such field reports should cover both 'times

of *accomplishments*' as well as *'quantities achieved'* against the *scheduled targets* on various items of works relating to each project component.

4.2. Two kinds of proformae, one to cover the time aspect, and the other, the quantity aspect, relating to a fertilizer project have been shown as typical examples in Figures 2 and 3 (Enclosed). The Construction Planning Cell should distribute them to the field officers, every month (the necessity for the creation of Construction Planning Cell is discussed later in this Note). Before distribution, the *scheduled date* columns of Figure 2 and the *scheduled quantity* columns of Figure 3 should be filled-in by the Construction Planning Cell. The dates for the former should be derived from the approved networks and the quantities for the latter, from the original targets set out by the management. However, it is not necessary to fill-in all the columns of these proformae, upto the end date of the project (i.e. the commissioning date), every time it is circulated to the field officers, but it would be necessary to fill-in the columns only upto the relevant date of review of progress. The procedure to be adopted in this regard should be that in respect of every reporting date, the columns pertaining to the period in question should only be filled-in, allowing an extra period of, say about 3-6 months beyond the reporting date, to facilitate reporting of accomplishments of events ahead of schedule. The Construction Planning Cell should decide about this extra period for every reporting date. Similarly, the past dates, both scheduled as well as actual accomplishments of events, which will be only historical, should also be filled-in by the Construction Planning Cell, before circulating the field reports proformae to the field officers, every month. This will save much of the time of the field officers in filling them up. The field officers should, periodically, say monthly, fill-in the *actual dates* of occurrence of the events and the *quantities achieved* and send them back to their Branch Heads in duplicate. The latter should send one copy of these to the Construction Planning Cell so that they become authentic documents to the Cell. (Flow Chart at Figure 1).

## 5. LEVEL III REPORTS

5.1. Based on the information contained in the field reports, the Construction Planning Cell should prepare the Level III Reports on behalf of the Branch Heads. In order to make these documents authentic, the Cell should obtain the signatures of the Branch Heads in these reports, and then send them on to the latter for their own use for monitoring their works (Flow Chart at Figure 1).



The following are the Reports:

- (i) Status Report for individual components of the Project-Monthly.
- (ii) Summary Report of performance of work (this is supplement to status report mentioned above)-Monthly.
- (iii) Milestone Chart for individual components of the project-monthly.

These are discussed below:

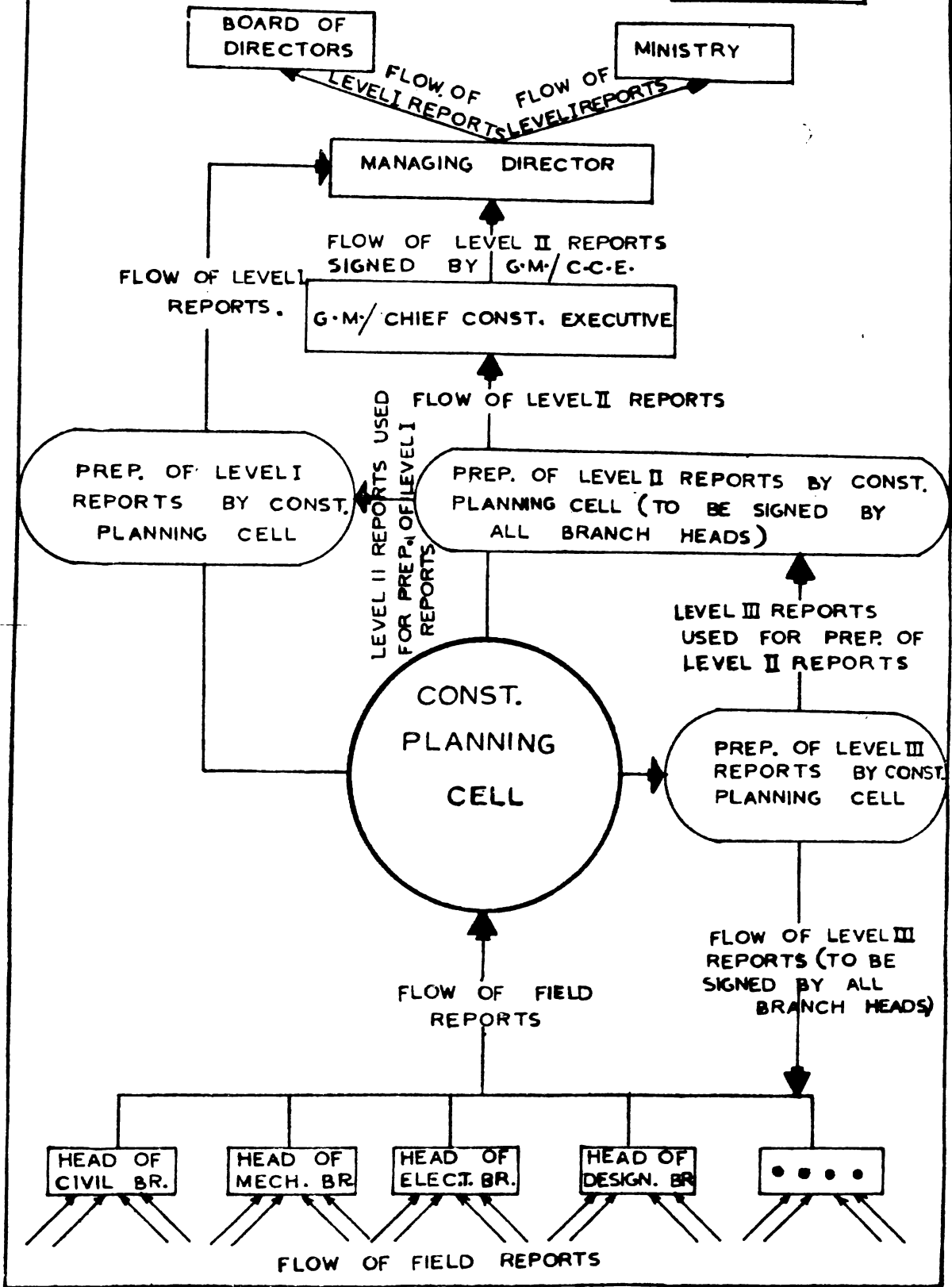
## 5.2. Status Report for Individual Components of the Project-Monthly

5.2.1. This report (Figure-4) is a summary of the most critical milestones which are next to be completed in respect of each section of the project component, on the date of reporting. It is a simple proforma which will be effective in bringing information on the status of the project component in question. The proforma is self-explanatory, and the description of each column has been given in it. All the sections of project component-should be included in the report in order to show the overall status. The milestones shown in the report should be those defined in the detailed network of the component. At the time of reporting, among several milestones which are next to be completed in each section, it has to be identified as to which specific milestone has the least event slack, because it is the degree of slack which determines the criticality of an event. Only such a milestone has to be defined as '*most critical*' on the date of reporting, and included in the report. If several milestones from the same section have the same slack value (least), but different dates of accomplishment, normally, the one to be completed nearest to the date of reporting should be shown. On the other hand, if more than one milestone from the same section have identical slack value (least), and are to be finished at the same time, then all of them may be reported. The report, therefore, highlights a current event which has least slack, and indicates its current effect as well as its effect on the project completion date, if no action is taken by the Management. The report is thus, predictive in nature, and quickly shows where immediate attention is required. This should be prepared as a monthly report.



# FLOW CHART SHOWING THE LEVELS OF REPORTING

FIGURE - 1



A. FERTILIZER PROJECT

**UREA PLANT**

FIELD REPORT A

(SHOWING SCHEDULED / ACTUAL DATES)

**FIGURE 2**

< BREAK-DOWN	SUPPLY OF DRAWINGS.	FOUNDATION FOR EQUIPMENT	BUILDING WORK	DELIVERY OF EQUIPMENT FOR PLANT	DELIVERY OF ELECTRICAL EQUIPMENT	DELIVERY OF STRUCTURAL STRUCTURALS	FABRICATION OF STRUCTURALS	ERECTION OF EQUIPMENT FOR PLANT	ELECTRICAL INSTALLATION	INSTRUMENTATION	PROCESS PIPING	YARD PIPING	EQUIPMENT TEST	TRIAL RUNS	REASONS FOR THE INSUFFICIENT SHEETS
THEISIS SECTION	11-4-69 SCHEDULED 13-6-69 ACTUAL	11-7-69 SCHEDULED 18-8-69 ACTUAL	9-1-70 SCHEDULED 12-12-69 ACTUAL	9-1-70 SCHEDULED 9-1-70 ACTUAL											
FICATION SECTION	9-5-69 SCHEDULED 10-5-69 ACTUAL	13-6-69 SCHEDULED 17-6-69 ACTUAL	13-2-70 SCHEDULED 5-5-70 ACTUAL	4-12-70 SCHEDULED 9-2-71 ACTUAL											
STAL SEPARATOR SECTION	11-4-69 SCHEDULED 2-3-69 ACTUAL	23-5-69 SCHEDULED 6-2-69 ACTUAL	3-1-70 SCHEDULED 2-3-70 ACTUAL												
YING & PRILLING SECTION	5-5-69 SCHEDULED 8-7-69 ACTUAL	27-6-69 SCHEDULED 28-8-69 ACTUAL													
COVERY EQUIPT SECTION	25-4-69 SCHEDULED 25-4-69 ACTUAL														
IGHING & BAGGING SECTION															

PERFORMANCE AS OF TIME AS

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## (v) Project Expenditure Progress Chart—Quarterly.

The details of the Level II Reports are discussed below:

### 6.2. Project Status Report—Monthly

6.2.1. While the report mentioned in para 5.2.1. (Figure-4) shows the status of each component of the project for monitoring progress at the field level, the Project Status Report will indicate the status of the entire project as well as its components, for controlling progress by the top level management. The format is the same as that mentioned in para 5.2.1. (Figure-4) and will have identical columns. It is to be prepared as a monthly report. The report is a summary of those milestones, which are the most critical on the entire project, and which are next to be completed on the date of reporting. It will indicate, on any reporting date, the current status of the Total Project and its components, highlight deviations from the original scheduled plan, and indicate the effect of such deviations on the project completion date. The milestones shown as most critical are those already defined in the Master and detailed networks. The report will highlight critical problem areas so that top management takes early decision for timely corrective action. The General Manager|the Chief Construction Executive should record his specific recommendations|views, if any, in respect of each item, under the remarks column of this report before submitting it to the Managing Director (Flow Chart at Figure-1).

6.2.2. A typical example, prepared for a fertilizer project, is shown in Figure-7. The report is self-explanatory, and the column descriptions are given at the bottom of the report.

### 6.3. Summary Report of Performance of Work (Quantitatively) (Supplement to Project Status Report)—Monthly

6.3.1. This report is the same as that described in para 5.3.1. (Figure-5) except that it relates to the whole project. This should also be a monthly report, and supplement to Project Status Report. While the latter gives the status of the most critical milestones of the project, the former would give the achievements in respect of the same milestones in their quantitative terms, viz. cubic metres of concrete laid, masonry erected; tonnes of equipment received, equipment erected etc. Through this report the achievements are thus compared with the scheduled quantities. In this report also, the General Manager|the Chief Construction Executive, should record his specific recommendations|views, if any, in respect of each item, in the remarks

column of this report before submitting it to the Managing Director (Flow Chart at Figure-1).

A typical report is shown in Figure-8.

#### **6.4. Project Milestone Chart—Monthly**

6.4.1. This chart will show the status of all the components of the project in terms of their milestones and will include the common items. The break-up of the items will be in accordance with the Project Work Breakdown Structure (defined in Part II of the Note). In order to provide clarity, and to make this report simple and effective for top management, only very few and significant milestones should be chosen for display. The chart will include the scheduled milestones and highlight the critical ones. It should be updated monthly showing completed milestones, slippages, likely completion dates etc., by using different notations.

6.4.2. A typical chart for a fertilizer project is shown in Figure-9.

#### **6.5. Project Schedule Outlook Chart—Quarterly**

6.5.1. This chart has been designed as a quarterly report, (Figure-10) for use by the Managing Director|General Manager|Chief Construction Executive. It has to be used as a display and is intended to show, every quarter, the status of the whole project, viz. whether the project is on schedule, ahead of schedule or behind schedule. This will serve as a best indicator to assess the effectiveness of management's decisions, and its control over monitoring the progress of construction.

#### **6.6. Project Expenditure Chart—Quarterly**

6.6.1. In addition to the schedule aspect of the project, the top management will also be keen to watch periodically, the current cost overrun|underrun in relation to the scheduled expenditure. An expenditure progress chart has, accordingly, been designed for the purpose (Figure-11) which can be used as a quarterly progress report. The Chart will show the actual expenditure against scheduled. In addition, it will indicate the revised expenditure targets, the anticipated cost overrun|underrun, the original estimated cost and the revised estimated cost. The chart can also show the revised estimated completion date in relation to the original estimated completion date and the anticipated schedule slippage. Through this chart, the top management can examine the schedule and cost aspects at a glance.

## 7. LEVEL I REPORTS

### 7.1. Project Status Report—Quarterly

7.1.1. As discussed earlier, Level I Reports are intended for the Board of Directors, Ministry. To make progress reporting simple and effective at this level, only one report viz. Project Status Report, may be prepared, quarterly. The form (Figure-12) is the same as that explained in paragraph 6.2.1. (Figure-7). The status of the Total Project (ahead, on or behind schedule) should be shown as the first item. Routine progress on all components need not be shown. Instead, the most critical problem areas requiring attention| action of the Board of Directors, Ministry alone need be included. Such a report thus avoids unnecessary and unwanted information at this level and focuses attention on problems.

## 8. MANAGEMENT DECISION AND ACTION

8.1. Based on the analysis of the reports described above, the management, at each level, can determine where action is necessary. Normally, when there is a slippage, which is likely to cause a delay in the overall completion of the project, it should be possible to catch up and get back on the schedule by analysing the network and compressing the time on future activities on the critical path. The techniques of compressing the critical path discussed earlier in PART-I of the Note are used and the effect of alternative actions stimulated in the network. The management decisions are made and future actions decided.

8.2. However, when the delay is of such magnitude that it is not possible to compress all the time on future activities, or if it is too costly, then revision of the original schedules should be considered.

## 9. INTEGRATED APPROACH FOR PLANNING AND PROGRESS REPORTING, AND CREATION OF A CONSTRUCTION PLANNING CELL

9.1. The successful implementation of the planning and control procedures described in these Notes (PARTS I, II and III), can be effectively accomplished only by setting up a separate Construction Planning Cell directly under the control of the top management.



\*STATUS REPORT FOR UREA PLANT OF A FERTILIZER PROJECT  
(TIME ASPECT)

DATE OF REPORT : 31 MAY, 1970

Project Component/Section	Critical Milestones	Mile-From No. (From (Net- work)	Scheduled Date (From (Net- work)	Latest Date (From (Net- work)	Assessed Date (to be assessed of Report)	Event + or - (C.O.I. 5)	Description Problems	Impact of Problems	Action taken Branch Heads	Action recommended M.D./G.M./Comdr. Executive	Cost Implications, If any	Remarks
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STATUS OF UREA PLANTS

1	2	3	4	5	6	7	8	9	10	11	12	13
Project Component/Section (Summary)	Urea Production Begins.	190	14 Jul. 72	14 Jul. 72	15 Feb. 73	-31	Urea Plant 31 weeks behind schedule due to delay in issue of 1st issue of report. Ministry and consequent delay of 27/8 weeks by supplier.	Synthetic equipment contractor is held up for claim for 31 weeks by Ministry. M.D. to Ministry for early report if necessary. Further investigation if further delay.	Matter come up with top management.	M.D. to Ministry for early report if necessary. Further investigation if further delay.	Extra cost on cost of 1st issue. Further investigation if further delay.	Cost Implications

STATUS OF THE VARIOUS SECTIONS OF THE UREA PLANT

1. Synthetic Section.	Delivery of Synthetic Equipment Complete.	160	07 Aug. 70	07 Aug. 70	12 Mar. 71	-31	Delay in issue of 1st issue by Ministry.	Do.	Do.	Do.	Do.	Cost Implications
2. Purification Section	Foundation for equipment Complete.	161	04 Dec. 70	16 Apr. 71	20 Aug. 71	-18	Delay due to Labour trouble.	Start of equipment construction will be delayed by 18 weeks.	Labour Union enters reports of suspension of work created out.	Nil.	Nil.	Cost Implications
3. Crystall Separator Section.	Delivery of Crystall Separator Complete.	162	30 Oct. 70	29 Jan. 71	30 Apr. 71	-13	Transport of equipment delayed due to delay in issue of report of specifications by Railways.	Start of Stage-I will be delayed by 13 weeks.	Matter taken up with Comdr. of the Zonal Railway.	Nil.	Nil.	Cost Implications
4. Drying and Section.	Equipment for Complete First Stage	168	03 Sep. 69	30 Apr. 70	30 Jun. 70	-9	Exception could be taken due to delay in issue of report of specifications.	Nil.	Matter taken up with Comdr. of the Zonal Railway.	Nil.	Nil.	Cost Implications
5. Recovery Section.	Equipment for Complete Stage.	169	06 Feb. 70	15 Nov. 70	15 Nov. 70	0	---	---	---	---	---	Cost Implications
6. Weighing and Section.	Fabrication of equipment complete.	170	21 Mar. 70	10 Sep. 70	20 Jul. 70	+7	---	---	---	---	---	Ahead of Schedule

\*The status report shown in this figure is only indicative. It may be suitably prepared to meet particular project's requirements.

## DESCRIPTION OF COLUMNS USED IN THE REPORT

COLUMN—1: (PROJECT COMPONENT/SECTION)	The first item to be shown under this column should be the nomenclature of project component in question, so that this item gives the summary status of the component.
COLUMN—2: (CRITICAL MILESTONE)	Subsequent items should be the different sections of the component. If, however, the structure is small and if there are no defined sections as such, then the subsequent items to be shown will be the functional works such as civil, mechanical, electrical, instrumentation etc.
COLUMN—3: (MILESTONE NO.)	The milestone to be shown against each item should be the most critical milestone for that item (with the least event slack as indicated in the Network), which is next to be completed, on the date of reporting. If several milestones have the same slack value, but different schedule dates, the one to be completed nearest to the date of report should be shown in the report. If more than one milestone have identical slack value and schedule dates, then all of them may be shown. The milestones may be, preferably, in the order of their criticality.
COLUMN—4: (SCHEDULED COMPLETION DATE)	The milestone numbers to be shown under this column should be the same as those adopted in the approved networks.
COLUMN—5: (LATEST ALLOWABLE DATE—TL)	This is the schedule date for the accomplishment of the milestone, as per approved networks.
COLUMN—6: (ASSESSED LIKELY COMPLETION DATE)	This is TL of the Milestone as per approved networks.
COLUMN—7: (EVENT SLACK+OR—(WEEKS))	This is the date, assessed by the Branch Heads for the accomplishment of the event, on the date of reporting, taking into account the delays that have already occurred and other likely impacts thereof.
COLUMN—8: (DESCRIPTION OF PROBLEMS)	Slack value, for the purpose of this column, will be the difference between the Assessed Likely Completion Date and the Latest Allowable Date.
COLUMN—9: (IMPACT OF PROBLEMS)	In case of schedule slippage, problems should be described in brief.
COLUMN—10: (ACTION TAKEN BY BRANCH HEADS)	The impact of schedule slippage on subsequent milestones should be indicated briefly.
COLUMN—11: (ACTION RECOMMENDED TO M/D/G/M/ CHIEF CONSTRUCTION EXECUTIVE)	Action taken by the Branch Heads (Executives directly in charge of work), to overcome the problems, should be stated briefly.
COLUMN—12: (COST IMPLICATIONS, IF ANY)	If action has to be taken by top management, to overcome the problems, such actions as are recommended by Branch Heads, should be briefly indicated under this column.
COLUMN—13: (REMARKS)	Any cost implications that might arise either due to the slippage that has occurred or due to remedial actions taken by the management, to overcome the problems, should be indicated under this column.

Any general remarks on each item may be written under this column.

## DESCRIPTION OF COLUMNS USED IN THE REPORT

- COLUMN-1: (PROJECT COMPONENT/SECTION) . . . . . The first item to be shown under this column should be the nomenclature of project component in question, so that this item gives the summary status of the component.
- COLUMN-2: (CRITICAL MILESTONE) . . . . . Subsequent items should be the different sections of the component. If, however, the structure is small and if there are no defined sections as such, then the subsequent items to be shown will be the functional works such as civil, mechanical, electrical, instrumentation etc.
- COLUMN-3: (MILESTONE NO.) . . . . . The milestone to be shown against each item should be the most critical milestone for that item (with the least event slack as indicated in the Network), which is next to be completed, on the date of reporting. If several milestones have the same slack value, but different schedule dates, the one to be completed nearest to the date of report should be shown in the report. If more than one milestone have identical slack value and schedule dates, then all of them may be shown. The milestones may be, preferably, in the order of their criticality.
- COLUMN-4: (SCHEDULED COMPLETION DATE) . . . . . The milestone numbers to be shown under this column should be the same as those adopted in the approved networks.
- COLUMN-5: (LATEST ALLOWABLE DATE-TL) . . . . . This is the schedule date for the accomplishment of the milestone, as per approved networks.
- COLUMN-6: (ASSESSED LIKELY COMPLETION DATE) . . . . . This is TL of the Milestone as per approved networks.
- COLUMN-7: (EVENT SLACK + OR - (WEEKS)) . . . . . This is the date assessed by the Branch Heads for the accomplishment of the event, on the date of reporting, taking into account the delays that have already occurred and other likely impacts thereof.
- COLUMN-8: (DESCRIPTION OF PROBLEMS) . . . . . Slack value, for the purpose of this column, will be the difference between the Assessed Likely Completion Date and the Latest Allowable Date.
- COLUMN-9: (IMPACT OF PROBLEMS) . . . . . In case of schedule slippage, problems should be described in brief.
- COLUMN-10: (ACTION TAKEN BY BRANCH HEADS) . . . . . The impact of schedule slippage on subsequent milestones should be indicated briefly.
- COLUMN-11: (ACTION RECOMMENDED TO M.D/G.M./ CHIEF CONSTRUCTION EXECUTIVE) . . . . . Action taken by the Branch Heads (Executives directly in charge of work), to overcome the problems, should be stated briefly.
- COLUMN-12: (COST IMPLICATIONS, IF ANY) . . . . . If action has to be taken' by top management, to overcome the problems, such actions as are recommended by Branch Heads, should be briefly indicated under this column.
- COLUMN-13: (REMARKS) . . . . . Any cost implications that might arise either due to the slippage that has occurred or due to remedial actions taken by the management, to overcome the problems, should be indicated under this column.

Any general remarks on each item may be written under this column.

(To be prepared by Construction Planning Cell and signed by all Heads of Branches).

\*SUMMARY REPORT OF PERFORMANCE OF WORK-UREA PLANT  
(SUPPLEMENT TO STATUS REPORT-LEVEL III, FOR UREA PLANT)

(QUANTITATIVE)

DATE OF REPORT : 31 MAY, 1970.

Sl. No.	Section of the Project Component	Critical Milestone	Milestone No.	Quantity of work as per Estimate	Quantity As Actually Done	Remarks
1	2	3	4	5	6	7
1.	SYNTHESIS SECTION	Delivery of Synthesis Equipment complete.	160	3800 Tonnes of equipment supply.	Nil.	Target not achieved due to delay in issue of Import Licence by Ministry.
2.	PURIFICATION SECTION	Foundation for Equipment comp-lete.	161	(a) 30,000 cubic metre of earth-work. (b) 9000 cubic metre of concrete.	(a) 22,000 cubic metre of earth-work. (b) 5000 cubic metre of concrete.	Target not achieved due to labour trouble.
3.	CRYSTAL SEPARATOR SECTION	Delivery of Crystal Separator Complete.	162	2900 Tonnes of equipment.	1200 Tonnes of equipment.	Target not achieved due to delay in placement of special wagons by railways for transport of equipment.
4.	DRYING AND PRILLING SECTION	Equipment Erection Complete First Stage.	168	2500 Tonnes of equipment erection.	1900 Tonnes of equipment erection.	Target not achieved due to delay in supply of fabricated items.
5.	RECOVERY EQUIPMENT SECTION	Equipment Erection complete First Stage.	169	2800 Tonnes of equipment erection.	2800 Tonnes of equipment erection.	Target achieved.
6.	WEIGHING AND BAGGING SECTION	Fabrication and Delivery of Structural complete.	170	1500 Tonnes of Structural.	1500 Tonnes of Structural.	Target achieved ahead of schedule.

\*The Summary Report of Performance of work shown in this figure is only indicative. It may be suitably prepared to meet particular project's requirements.  
\*If the structure is small and if there are no defined sections as such, then the items to be shown under this column (Column No. 2) should be in terms of functional works of the component such as Civil Works, Equipment Supply, Mechanical Erection, Electrical Installation, Instrumentation, etc.

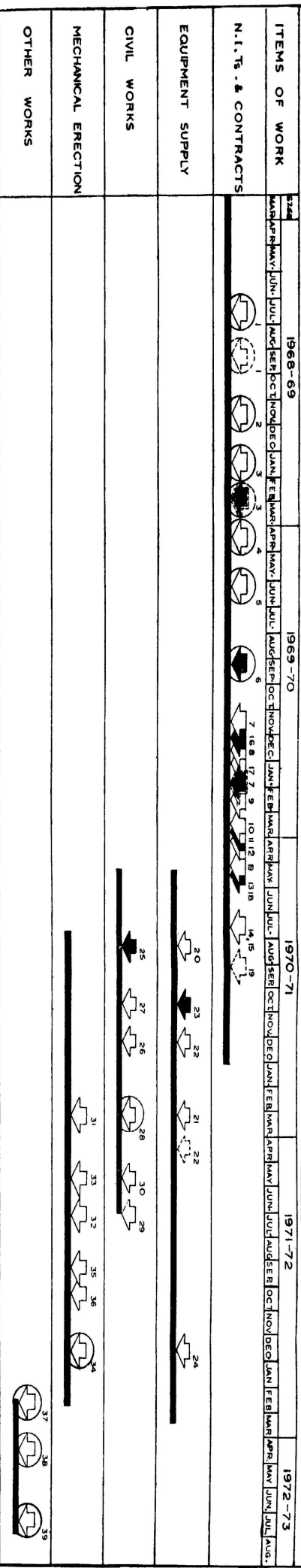
# MILESTONE CHART FOR UREA PLANT

## FIGURE-6

LEVEL III REPORT - MONTHLY  
(FOR USE BY HEADS OF BRANCHES)

A FERTILIZER PROJECT

AS ON DATE: .....



### GLOSSARY OF MILESTONES

(NOTE: - THE MILESTONE CHART SHOWN IN THIS DRAWING IS ONLY INDICATIVE, IT MAY BE SUBJECTS DRAWING TO MEET PARTICULAR PROJECTS REQUIREMENTS)

### LEGEND

DESCRIPTION	SCHEDULE DATE	DESCRIPTION	SCHEDULE DATE	DESCRIPTION	SCHEDULE DATE	DESCRIPTION	SCHEDULE DATE
<b>DEPARTMENTAL</b>		<b>EQUIPMENT SUPPLY</b>		<b>MECHANICAL ERECTION</b>		<b>OTHER WORKS</b>	
1. N.I. ISSUED FOR UREA PLANT	19. JUL. 68	20. COMPLETE DELIVERY OF SYNTHESIS EQUIPMENT	07. AUG. 70	31. COMPLETE ERECTION STAGE I - UREA SYNTHESIS SECTION	08. MAR. 71	37. UREA PLANT TRIAL RUNS BEGIN	17. FEB. 72
2. TENDERS RECEIVED FOR UREA PLANT	15. NOV. 68	21. COMPLETE DELIVERY OF COMPRESSOR, REACTOR	05. MAR. 71	32. COMPLETE ERECTION STAGE I - UREA PURIFICATION SECTION	02. JUL. 71	38. UREA PLANT TRIAL RUNS COMPLETE	14. APR. 72
3. TENDERS SCRUTINISED	15. JUN. 69	22. COMPLETE DELIVERY OF PURIFICATION EQUIPMENT	04. DEC. 70	33. COMPLETE ERECTION STAGE II - UREA CRYSTAL SEPARATOR SECTION	21. MAY. 71	39. UREA PRODUCTION BEGINS	4. JUL. 72
4. CONTRACT AWARDED FOR UREA PLANT	11. APR. 69	23. COMPLETE DELIVERY OF CRYSTAL SEPARATOR EQUIPMENT	23. OCT. 70	34. COMPLETE ERECTION STAGE II - UREA SYNTHESIS SECTION	24. DEC. 71		
5. FOREIGN EXCHANGE ESTIMATED	06. JUN. 69	24. COMPLETE SUPPLY OF 5-S. VESSELS	24. DEC. 71	35. COMPLETE ERECTION STAGE II - UREA PURIFICATION SECTION	24. DEC. 71		
6. IMPORT LICENSE OBTAINED FOR EQUIPMENT SUPPLY	05. SEP. 69	<b>CIVIL WORKS</b>		36. COMPLETE ERECTION STAGE II - UREA CRYSTAL SEPARATOR SECTION	08. OCT. 71		
7. RECEIVED SCOPE DRAWINGS & PREPARED SPECS FOR STRUCTURALS	14. NOV. 69	25. COMPLETE FOUNDATION FOR EQUIPT, UREA SYNTHESIS	07. AUG. 70	37. UREA PLANT TRIAL RUNS BEGIN	17. FEB. 72		
8. N.I.T. ISSUED FOR STRUCTURALS	19. DEC. 69	26. COMPLETE FOUNDATION FOR EQUIPT, UREA PURIFICATION SECTION	04. DEC. 70				
9. TENDERS RECEIVED FOR STRUCTURALS	13. FEB. 70	27. COMPLETE FOUNDATION FOR CRYSTAL SEPARATOR CONSTRUCTION OF BUILDING	23. OCT. 70				
10. CONTRACT AWARDED FOR STRUCTURALS	12. MAR. 70	28. COMPLETE CONSTRUCTION OF BUILDING UREA SYNTHESIS SECTION	05. MAR. 71				
11. RECEIVED SCOPE DRAWINGS & PREPARED SPECS FOR 5-S. VESSELS	20. MAR. 70	29. COMPLETE CONSTRUCTION OF BUILDING UREA PURIFICATION SECTION	02. JUL. 71				
12. N.I.T. ISSUED FOR 5-S. VESSELS	03. APR. 70	30. COMPLETE CONSTRUCTION OF BUILDING UREA CRYSTAL SEPARATOR SECTION	21. MAY. 71				
13. TENDERS RECEIVED FOR 5-S. VESSELS	15. MAY. 70						
14. IMPORT LICENSE OBTAINED FOR 5-S. VESSELS	15. APR. 70						
15. FABRICATION CONTRACT AWARDED	16. JUL. 70						
16. RECEIVED SCOPE DRAWINGS & PREPARED SPECS FOR ELECTRICAL EQUIPMENT	03. DEC. 70						
17. N.I.T. ISSUED FOR ELECTRICAL EQUIPMENT	02. JAN. 70						
18. TENDERS RECEIVED FOR ELECTRICAL EQUIPMENT	15. MAY. 70						
19. CONTRACT AWARDED FOR ELECTRICAL EQUIPMENT	07. MAY. 70						

# MILESTONE CHART FOR UREA PLANT

## FIGURE-6

LEVEL III REPORT - MONTHLY  
(FOR USE BY HEADS OF BRANCHES)

OF  
A FERTILIZER PROJECT

1968-69

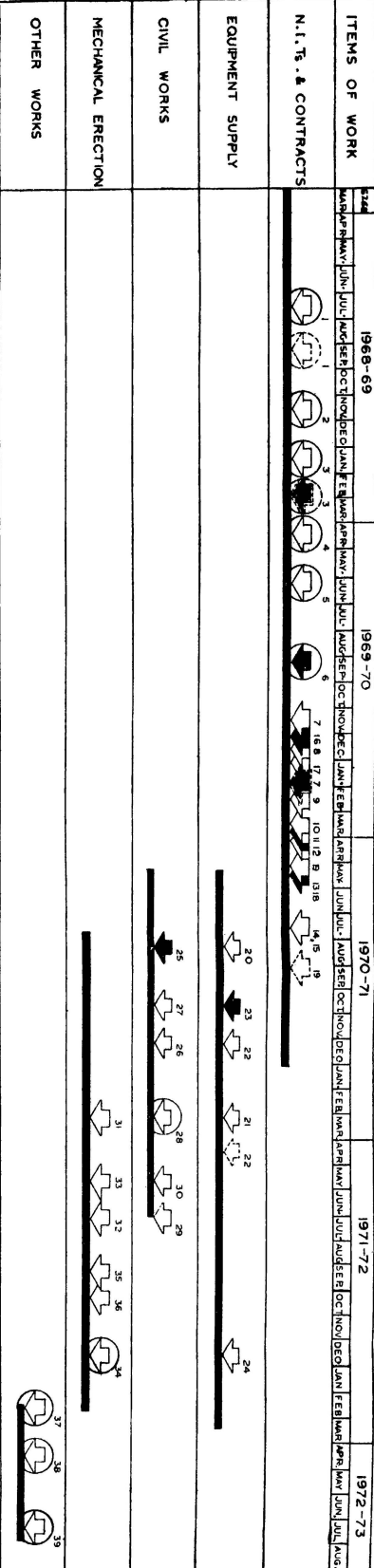
1969-70

1970-71

1971-72

1972-73

AS ON DATE: .....



### GLOSSARY OF MILESTONES

(NOTE:—THE MILESTONE CHART SHOWN IN THIS DRAWING IS ONLY INDICATIVE. IT MAY BE SUITABLY DRAWN TO MEET PARTICULAR PROJECT'S REQUIREMENTS.)

### LEGEND

DESCRIPTION	SCHEDULE DATE	DESCRIPTION	SCHEDULE DATE	DESCRIPTION	SCHEDULE DATE
<b>DEPARTMENTAL</b>		<b>EQUIPMENT SUPPLY</b>		<b>MECHANICAL ERECTION</b>	
1. M.T. ISSUED FOR UREA PLANT	19. JUL. 68	20. COMPLETE DELIVERY OF SYNTHESIS EQUIPMENT	07. AUG. 70	31. COMPLETE ERECTION STAGE I-UREA	05. MAR. 71
2. TENDERS RECEIVED FOR UREA PLANT	15. NOV. 68	21. COMPLETE DELIVERY OF COMPRESSOR REACTOR	05. MAR. 71	32. COMPLETE ERECTION STAGE I-UREA	02. JUL. 71
3. TENDERS RECEIVED FOR UREA PLANT	15. JUN. 69	22. COMPLETE DELIVERY OF PURIFICATION EQUIPMENT	04. DEC. 70	33. COMPLETE ERECTION STAGE I-UREA	02. JUL. 71
4. CONTRACT AWARDED	11. APR. 69	23. COMPLETE DELIVERY OF CRYSTAL SEPARATOR EQUIPMENT	23. OCT. 70	34. COMPLETE ERECTION STAGE II-UREA	21. MAR. 71
5. FOREIGN EXCHANGE ESTIMATED	06. SEP. 69	24. COMPLETE SUPPLY OF 5-5-VESSELS	24. DEC. 71	35. COMPLETE ERECTION STAGE II-UREA	24. DEC. 71
6. IMPORT LICENSE OBTAINED FOR EQUIPMENT	05. SEP. 69	<b>CIVIL WORKS</b>		36. COMPLETE ERECTION STAGE II-UREA	10. SEP. 71
7. RECEIVED SCOPE DRAWINGS & PREPARED	14. NOV. 69	25. COMPLETE FOUNDATION FOR EQUIPT. UREA	07. AUG. 70	37. UREA PLANT TRIAL RUNS BEGIN	17. FEB. 72
8. M.T.T. ISSUED FOR STRUCTURALS	19. DEC. 69	26. SYNTHESIS	07. AUG. 70	38. UREA PLANT TRIAL RUNS COMPLETE	14. APR. 72
9. TENDERS RECEIVED FOR STRUCTURALS	13. FEB. 70	27. COMPLETE FOUNDATION FOR EQUIPT. UREA	04. DEC. 70	39. UREA PRODUCTION BEGINS	14. APR. 72
10. CONTRACT AWARDED FOR STRUCTURALS	12. MAR. 70	28. PURIFICATION SECTION	04. DEC. 70		
11. RECEIVED SCOPE DRAWINGS & PREPARED	20. MAR. 70	29. SEPARATOR SECTION	23. OCT. 70		
12. SPECS FOR 5-5-VESSELS	30. MAR. 70	30. COMPLETE CONSTRUCTION OF BUILDING	05. MAR. 71		
13. M.T.T. ISSUED FOR 5-5-VESSELS	03. APR. 70	31. UREA SYNTHESIS SECTION OF BUILDING	05. MAR. 71		
14. TENDERS RECEIVED FOR 5-5-VESSELS	15. MAY. 70	32. UREA PURIFICATION SECTION OF BUILDING	02. JUL. 71		
15. IMPORT LICENSE OBTAINED FOR 5-5-VESSELS	16. JUN. 70	33. COMPLETE CONSTRUCTION OF BUILDING	02. JUL. 71		
16. FABRICATION CONTRACT AWARDED	18. JUL. 70	34. COMPLETE CONSTRUCTION OF BUILDING	02. JUL. 71		
17. SPECS FOR ELECTRICAL EQUIPMENT	05. DEC. 70	35. COMPLETE CONSTRUCTION OF BUILDING	21. MAR. 71		
18. TENDERS RECEIVED FOR ELECTRICAL EQUIPMENT	02. JAN. 71	36. UREA CRYSTAL SEPARATOR SECTION	21. MAR. 71		
19. CONTRACT AWARDED FOR ELECTRICAL EQUIPMENT	15. MAR. 71				
	15. MAR. 71				

\*PROJECT STATUS REPORT FOR A FERTILIZER PROJECT

(To be prepared by Construction Planning Cell and signed by all Heads of Branches)

(TIME ASPECT)

DATE OF REPORT : 31 MAY, 1970

S. No.	Unit	Total Project Component	Critical Stone	Mill-Positive No. (From Net work)	Scheduled Start-Date (From Net work)	Latest Start-Date (From Net work)	Assessed Completion Date (Col. 7) on date of Report	Event + or - (Weeks) (Col. 8)	Description of Problems	Impact of Problems	Action Taken By Branch Heads	Action Recommended to M.D./G.M./C.E.	Cost Implications if any	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
									STATUS OF TOTAL PROJECT					
T									Project 31 weeks behind schedule. Delay in completing design of Urea Plant. Equip-ment delay in issue of license by Ministry.	There will be 31 weeks delay in the erection of Urea Plant. Mechanical erection delay due to claim extras caused to him in commencing erection.	Matter constantly pursued with top management.	Ministry to be urged for releasing Import Licence.	Project cost will increase by an additional Rs. 10000000. Further schedule slippage and increase in price will be inevitable if there is further delay.	
O														
T														
A														
L														
TOTAL PROJECT (SUMMARY)			Urea Production begins.	190	14 Jul. 72	14 Jul. 72	15 Feb. 73	---31						

STATUS OF THE VARIOUS COMPONENTS OF THE PROJECT

1.	M		Delivery of Synthesis Equipment Complete	160	7 Aug. 70	7 Aug. 70	12 Mar. 71	---31	Delivery of Synthesis Equipment Complete 31 weeks behind schedule due to delay in issue of Import License by Ministry.	Do.	Do.	Do.	Do.	Do.
	A													
	N													
	I													
	N													
	T													
	S													
2.	F	AMMONIA PLANT	Equipment Erection Complete	270	15 Jul. 71	4 Feb. 72	30 Jun. 72	---21	21 weeks delay due to delay in supply of equipment.	Urea Plant will start running in 19 weeks.	Penal clauses imposed on contractor.	Original Contractor to deliver the equipment to manufacturer as early as possible. Difficulties reported by him. Alternate equipment to be located by top management. Bonus clauses offered for competing design. In order to make Urea start Trial Runs on schedule.	Rs. 5 lakhs (approx) additional premium to be paid to new supplier.	

\*The Project Status Report shown in this figure is only indicative. It may be suitably prepared to meet particular project's requirements.  
 \*The G.M./The Chief Construction Executive should record his specific recommendations/reviews, if any, in respect of each item, in the Remarks column, before submitting this report to the Managing Director.  
 Modified: 4/8/70—





(FIGURE-7 *Continued*)

DESCRIPTION OF COLUMNS USED IN THE REPORT

COLUMN— 2 (UNIT) . . . . . The first item to be shown under this column should be 'Total Project'. Subsequent items should be the major break-up (divisions) of Project, viz: 'Main Plants', 'Ancillary Plants', 'Ancillary facilities' etc.

COLUMN— 3 (TOTAL PROJECT/PROJECT COMPONENT) . . . . . Under this column, the first item should indicate the summary status of the entire project. The subsequent items should indicate the status of each project component. Functional works such as Civil Design, Civil Works Mechanical Erection etc. are not included in this column, because the purpose of this report is to show the overall status of each component (structure).

COLUMN— 4 (CRITICAL MILESTONE) . . . . . The milestone to be shown against each item should be the most critical milestone for that item (with the least event slack as indicated in the Network which is next to be completed, on the date of reporting. If several milestones have the same slack value, but different schedule dates, the one to be completed nearest to the date of report, should be shown in the report. If more than one milestone have identical slack values and schedule dates, then all of them may be shown. The milestones may be preferably, in the order of their criticality.

COLUMN— 5 (MILESTONE NO.) . . . . . The milestone numbers to be shown under this column should be the same as those adopted in the approved networks.

COLUMN— 6 (SCHEDULED COMPLETION DATE) . . . . . This is the schedule date for the accomplishment of the milestone, as per approved networks.

COLUMN— 7 (LATEST ALLOWABLE DATE—TL) . . . . . This is TL of the Milestone as per approved networks.

COLUMN— 8 (ASSESSED LIKELY COMPLETION DATE) . . . . . This is the date, assessed by the Branch Heads for the accomplishment of the event, on the date of reporting, taking into account the delays that have already occurred and other likely impacts thereon.

COLUMN— 9 (EVENT SLACK + OR — (WEEKS)) . . . . . Slack value, for the purpose of this column, will be the difference between the Assessed Likely Completion Date and the Latest Allowable Date.

COLUMN—10 (DESCRIPTION OF PROBLEMS) . . . . . In case of schedule slippage, problems should be described in brief.

COLUMN—11 (IMPACT OF PROBLEMS) . . . . . The impact of schedule slippage on subsequent milestones should be indicated briefly.

COLUMN—12 (ACTION TAKEN BY BRANCH HEADS) . . . . . Action taken by the Branch Heads (Executives directly in charge of work), to overcome the problems, should be stated briefly.

COLUMN—13 (ACTION RECOMMENDED TO M.D./G.M./CHIEF CONSTRUCTION EXECUTIVE) . . . . . If action has to be taken by top management, to overcome the problems, such actions as are recommended by Branch Heads, should be briefly indicated under this column.

COLUMN—14 (COST IMPLICATIONS, IF ANY) . . . . . Any cost implications that might arise either due to the slippage that has occurred or due to remedial actions taken by the management, to overcome the problems, should be indicated under this column.

COLUMN—15 (REMARKS) . . . . . Any general remarks on each item may be written under this column.

LEVEL II REPORT - MONTHLY  
 To be prepared by Construction Planning Cell and signed by all Heads of Branches.

\*SUMMARY REPORT OF PERFORMANCE OF WORK IN RESPECT OF A FERTILIZER PROJECT  
 (SUPPLEMENT TO PROJECT STATUS REPORT-LEVEL II)

(QUANTITATIVE)

DATE OF REPORT : 31 MAY 1970

Unit	Project Component	Critical Milestone	Milestone No.	Quantity of work as per Estimate	Quantity as actually done	Remarks
1	2	3	4	5	6	7
M						8
A	UREA PLANT	Delivery of Synthetic Equipment complete.	160	3800 Tonnes of equipment supply.	Nil	Target not achieved due to delay in issue of import licence by Ministry.
N	AMMONIA PLANT	Equipment Erection Complete	270	8000 Tonnes of equipment erection.	5000 Tonnes of equipment erection.	Target not achieved due to delay in supply of compressor equipment.
P	COMPLEX FERTILIZER PLANT	Structural Works Awarded	330			Target not achieved due to unavailability of funds and delay in tenders which had led to retardance of the work.
L	PHOSPHORIC ACID PLANT	Civil Works Equipment Foundations and Buildings	470	(a) 20000 cubic metre of earth work (b) 8000 cubic metre of concrete.	(a) 17000 cubic metre of earth work (b) 5000 cubic metre of concrete.	Target not achieved due to difficulties in land acquisition in small sites.
N						
T	SULPHURIC ACID PLANT	Acid Proof Rooms Complete.	540	7000 cubic metre of lining.	7000 cubic metre of lining.	Target achieved.
S						
	AMMONIUM SULPHATE PLANT	Erection of Synthesis Section Complete.	630	1200 Tonnes of equipment erection.	1200 Tonnes of equipment erection.	Target achieved ahead of schedule.
A						
N	WATER SUPPLY					
C						
L	COOLING POWER & PUMP HOUSE					
L						
A						
N	STEAM GENERATION PLANT					
A						
C						
F	SERVICES AND UTILITIES					
L						
L						
T	LANDS, ROADS, TOWNSHIP					
R						
I						
B						

\*The Summary Report of Performance of work shows in this figure is only indicative. It may be suitably prepared to meet particular project's requirements.  
 \*\*The G. M./The Chief Construction Executive should record the specific recommendations/views, if any, in respect of each item in the remarks column before submitting the report to the Managing Director.



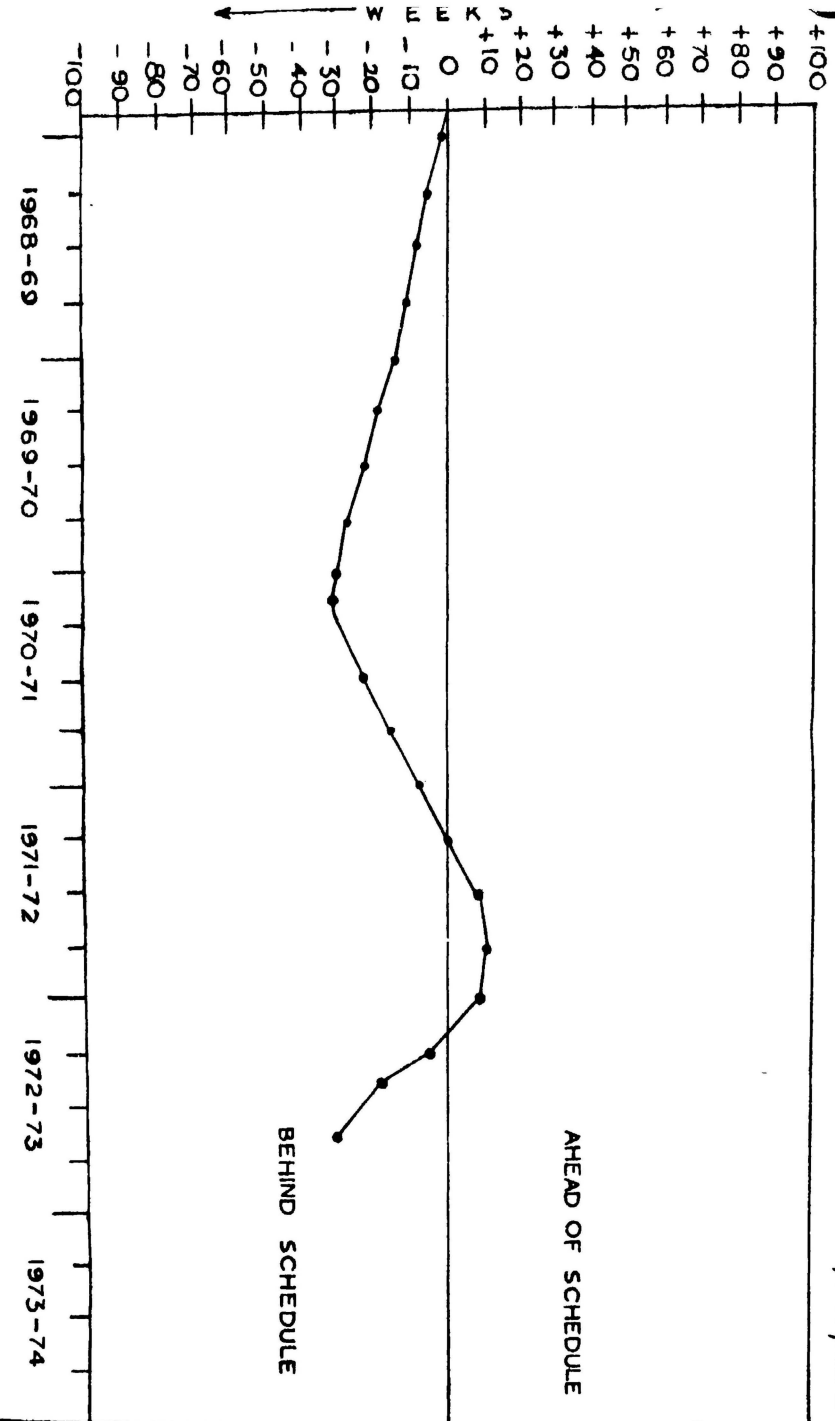


PROJECT SCHEDULE OUTLOOK DISPLAY

FIGURE 10.

(QUARTERLY)

LEVEL II REPORT (FOR  
USE BY MD./G.M./CCE)

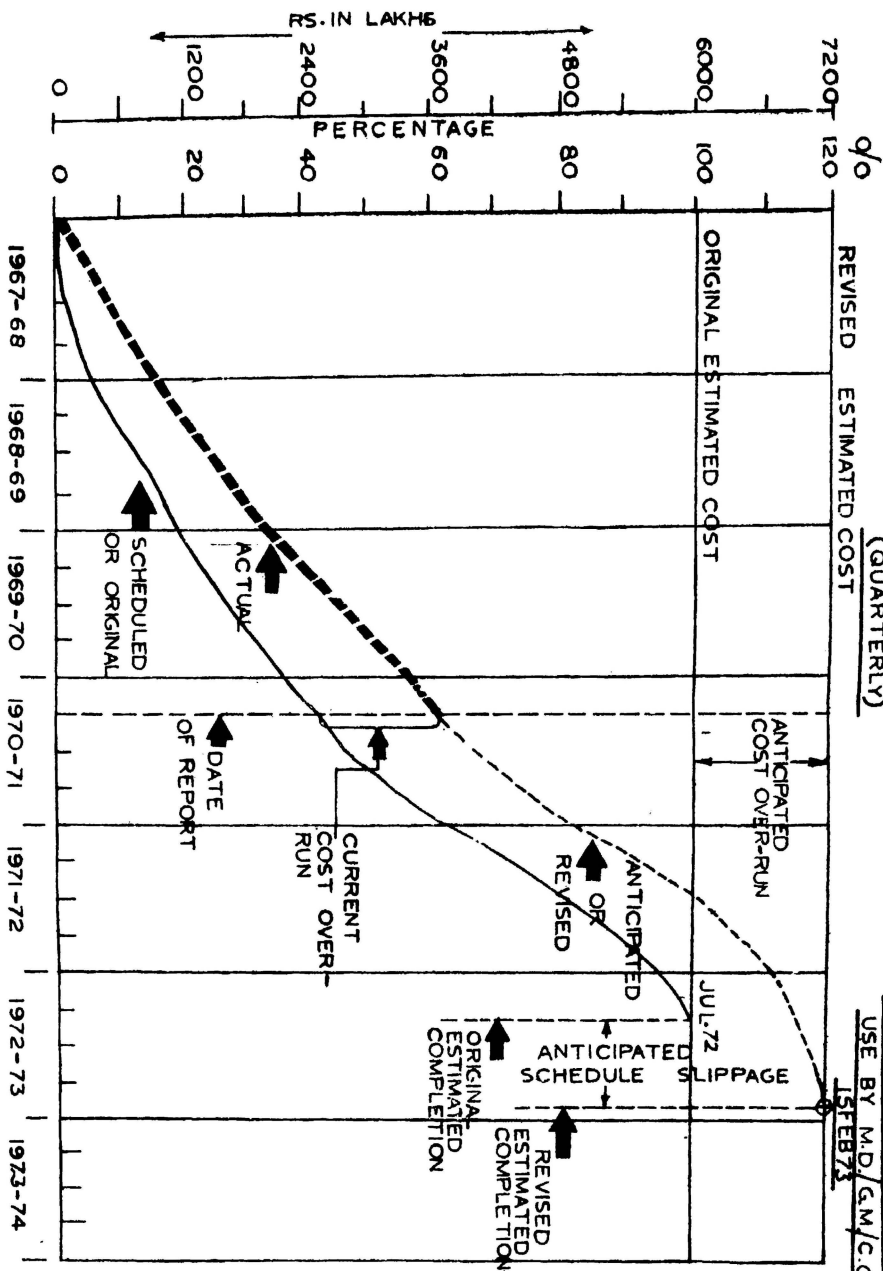


# EXPENDITURE PROGRESS CHART

**FIGURE 11**

LEVEL II REPORT (FOR USE BY M/D/GM/C/C/E)

1 FEB 73



LEVEL I REPORT—QUARTERLY  
 (To be prepared by Construction  
 Planning Cell and approved by Managers  
 Director)

\*PROJECT STATUS REPORT FOR A FERTILIZER PROJECT  
 (TIME ASPECT)

DATE OF REPORT : 31 MAY, 1970

2	3	4	5	6	7	8	9	10	11	12	13	14	15
Task No.	Total Project Component	Critical Store	Mile-Post No. (From Work)	Schedule-Complete (From Next work)	Latest-able (From Next work)	Assessed-Completion (to be assessed as of Report)	Event + one (Weeks) (Code: 7)	Description Problems	Impact Problems	Action taken Management	Action to be taken to Report/Ministry	Cost Imp. if any	Remarks

STATUS OF TOTAL PROJECT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TOTAL PROJECT (SUMMARY)	Urea	190	14 Jul. 72	14 Jul 72	15 Feb. 73	—31		Project 31 weeks behind Schedule on date due to delay in the import of Limestone, with consequent delay in the delivery of these Equip-ment.	Mechanical Erection Com-pletion. Heavy tra-ckers due to 31 weeks delay caused to Man-agement by Synthesis Erection.	Board and Ministry inter-ested	Ministry to expedite Com-pletion of Report by an addi-tional 100000 cost. Further review, if necessary is advised.			

STATUS OF THE VARIOUS COMPONENTS OF THE PROJECT (ONLY PROBLEM AREAS REQUIRING ATTENTION/ACTION OF BOARD/MINISTRY)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Task No.	Component	Critical Store	Mile-Post No. (From Work)	Schedule-Complete (From Next work)	Latest-able (From Next work)	Assessed-Completion (to be assessed as of Report)	Event + one (Weeks) (Code: 7)	Description Problems	Impact Problems	Action taken Management	Action to be taken to Report/Ministry	Cost Imp. if any	Remarks	
1	UREA PLANT	Equipment Delivery Complete	160	07 Aug. 70	07 Aug. 70	12 Mar. 71	—31	Synthesis Equip-ment complete, will be handed over to Ministry due to delay in issue of license by Ministry.	Do.	Do.	Do.	Do.	Do.	Do.
2	KNITLANDS													
3	PLANT													
4	KNITLANDS													
5	ACILLIT													
6	ACILLIT													

\*The Project Status Report shown in this figure is only indicative. It may be suitably prepared to meet particular Project's requirements.

## DESCRIPTION OF COLUMNS USED IN THE REPORT

COLUMN—2 (UNIT)	The first item to be shown under this column should be 'Total Project'. Subsequent items should be the major break-up (divisions) of project, viz. 'Main Plants', 'Auxiliary Plants', 'Auxiliary Facilities' etc.
COLUMN—3 (TOTAL PROJECT/PROJECT COMPONENT)	Under this column, the first item should indicate the summary status of the entire project. The subsequent items should indicate the status of each project component. Functional works such as Civil Design, Civil Works, Mechanical Erection etc. are not included in this column, because the purpose of this report is to show the overall status of each component (structure).
COLUMN—4 (CRITICAL MILESTONE)	The milestone to be shown against each item should be the most critical milestone for that item (with the least event slack as indicated in the Network), which is next to be completed, on the date of reporting. If several milestones have the same slack value, but different schedule dates, the one to be completed nearest to the date of review should be shown in the report. If more than one milestone have identical slack values and schedule dates, then all of them may be shown. The milestones may be, preferably, in the order of their criticality.
COLUMN—5 (MILESTONE NO.)	The milestone numbers to be shown under this column should be the same as those adopted in the approved net works.
COLUMN—6 (SCHEDULED COMPLETION DATE)	This is the schedule date for the accomplishment of the milestone, as per approved networks.
COLUMN—7 (LATEST ALLOWABLE DATE—T <sub>1</sub> )	This is T <sub>1</sub> of the Milestone as per approved networks.
COLUMN—8 (ASSESSED LIKELY COMPLETION DATE)	This is the date, assessed by the management for the accomplishment of the event, on the date of reporting, taking into account the delays that have already occurred and other likely impacts thereof.
COLUMN—9 (EVENT SLACK + OR — (WEEKS))	Slack value, for the purpose of this column, will be the difference between the Assessed Likely Completion Date and the Latest Allowable Date.
COLUMN—10 (DESCRIPTION OF PROBLEMS)	In case of schedule slippage, problems should be described in brief.
COLUMN—11 (IMPACT OF PROBLEMS)	The impact of schedule slippage on subsequent milestones should be indicated briefly.
COLUMN—12 (ACTION TAKEN BY MANAGEMENT)	Action taken by the Project Management viz. Managing Director, to overcome the problems, should be stated briefly.
COLUMN—13 (ACTION RECOMMENDED TO BOARD/MINISTRY)	If actions, have to be taken by Board/Ministry, to overcome the problems, such actions as are recommended by the Management viz. Managing Director, should be briefly indicated under this column.
COLUMN—14 (COST IMPLICATIONS, IF ANY)	Any cost implications that might arise either due to the slippage that has occurred or due to remedial actions taken by the Management remedial actions recommended to Board/Ministry, to overcome the problems, should be indicated under this column.
COLUMN—15 (REMARKS)	Any general remarks on each item may be written under this column



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9.2. This Cell can most effectively provide the guidance and assistance in obtaining uniformity in planning approach, implementation of methods and integration in progress reporting. This Cell assumes the role of a service organisation, implementing the Network System, collecting all data, processing and analysing them for management use and preparing the different reports required at each level of management.

9.3. The organisational structure should be such that the Construction Planning Cell works under the direct control of the Managing Director|General Manger|Chief Construction Executive of the Project. The strength of the Cell will depend upon the magnitude and complexity of the project. It is, therefore, necessary to determine the strength in each case, separately, according to the actual needs. The head of the Cell should have adequate knowledge and experience of the applications of Network Technique, and his status should be sufficiently high in the project|undertaking to enable him to function effectively while dealing with the Heads of different branches—Civil, Mechanical, Electrical, Designs, stores and purchases etc.

9.4. It is highly essential to have, in the Cell, one or more officers, according to the needs, whose responsibility should be to keep an effective liaison between the field and the planning Cell. Their functions, among other works relating to the Cell, should be to closely watch the progress of the works in the field, render necessary assistance to the field officers in the matter of collection of required data, preparation of field reports etc., and to see that these reports reach the Construction Planning Cell, timely. It is on this timely receipt of the field reports, the whole process of Progress Reporting System will be dependent.

**APPENDIX XX**

No. 1(7)|DAP(R)|69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 2nd March, 1971*

**OFFICE MEMORANDUM**

**SUBJECTS—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management-Recommendation No. 42, para 9.9. . .**

The undersigned is directed to enclose extracts of recommendation No. 42, para 9.9 from the 67th Report of the Committee on Public Undertakings (IV of Lok Sabha) on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc., are requested to advise the enterprises under their control that the subject of planned preventive maintenance is very important and it should be placed on a proper 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 and in the case of enterprises not having any planned preventive maintenance, they should be advised to introduce such preventive maintenance proformance as early as possible. In this context utilization of modern management tools and techniques like PERT, CPM, SQC, etc., should also be introduced and employed to derive maximum advantage in implementing the programmes. The enterprises may also be requested to note the Committee's recommendation that unreasonable increase of staff strength on this ground may be resisted by them wherever possible. A copy of the instructions issued to the enterprises may be endorsed to the Bureau of Public Enterprises for information.

**Sd/- S. JAGANNARAYANAN,**

*Under Secretary to the Government of India.*

**To**

**All Ministries/Departments of Govt. of India.**

**APPENDIX XXI**

No. 1(7)|DAP(R) 69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 16th January, 1971*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 43 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc., are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,

*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XXII**

No. 1(7)|DAP(R)|69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 2nd March, 1971*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management—Recommendation No. 44, para 9.15.**

The undersigned is directed to enclose extracts of recommendation No. 44, para 9.15 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. It is noticed from the replies that many Public Sector enterprises have developed their own cadre of maintenance experts and that no foreign technician is retained for this purpose and that some engineers are also sent abroad for training in foreign factories wherever necessary. However, in view of the importance to develop a cadre of maintenance experts to handle major overhaul and capital repairs in all the major enterprises with a view to reduce India's dependence to the minimum on foreign experts, the Ministry of Industrial Development, etc., are requested to communicate the views of the Committee and Government's decision thereon for appropriate action. A copy of the instructions issued to the enterprises may be endorsed to the Bureau of Public Enterprises for information.

Sd/- S. JAGANNARAYANAN,

*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

## APPENDIX XXIII

No. 1(7)|DAP(R)|69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

Bureau of Public Enterprises

(Production Division)

New Delhi, the 2nd March, 1971

### OFFICE MEMORANDUM

SUBJECT:—67th Report of the Committee on Public Undertakings  
(IV Lok Sabha) on Production Management—Recommendation No. 45, para 9.25.

The undersigned is directed to enclose extracts of recommendation No. 45, para 9.25 from the 67th Report of the Committee on Public Undertakings (IV Lok Sabha) on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc., are requested to direct the enterprises under their control to examine the system of maintenance in force in their plants, identify the weaknesses and determine the corrective steps required to remedy the state of affairs without any loss of time. They should also ensure that the enterprises include in the Annual Reports submitted by them adequate information on (i) the extent of downtime each year due to breakdowns, Maintenance shut-down and other reasons; (ii) the losses in production suffered on account of downtime; and (iii) briefly the major steps which the enterprises have taken and plan to take to arrest the rising trend in downtime so that Government and Parliament may be kept in touch with the state of maintenance in the plants in the Public Sector enterprises. A copy of the instructions issued to the enterprises may be endorsed to the Bureau of Public Enterprises for information.

Sd/- S. JAGANNARAYANAN,

*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XXIV**

No. 1(7)|DAP(R)|69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 16th January, 1971*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 46 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,

*Under Secretary to the Government of India.*

To

**All Ministries/Departments of Govt. of India.**

**APPENDIX XXV**

No. 2(43)/66-F.I.

**GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
(Department of Coordination)  
Bureau of Public Enterprises)**

*New Delhi, the 5th September, 1966.*

**OFFICE MEMORANDUM**

**SUBJECT:—Cost control in Public Sector Undertakings—Submission of Cost data, etc to the Board of Directors.**

The undersigned is directed to state that it has been observed that the many public sector undertakings adequate cost records are not maintained and linked with the Financial Accounts. There is also delay in preparation of Cost statements. It is, however, of utmost importance that cost data is presented regularly and promptly to the Board of Directors to enable them to take corrective action and policy decisions. The Finance Minister has emphasised in this connection the utmost need for cost consciousness, and has stated that all relevant information should be made available by the managements to the Boards of Directors so that the latter could keep a continuous watch on costs. He has also pointed out that productivity should be carefully watched, and for this purpose necessary work studies undertaken. Control of Inventories is another matter to which attention should be given by Board of Directors.

2. Ministry of Industry, etc. are, therefore, requested to bring these observations to the notice of the Board of Directors of the Public Enterprises with which they are concerned. The Board of Directors may draw up detailed procedure to ensure that cost analysis is made promptly and watched carefully, that cost statements are fully reconciled with Financial Accounts, that productivity studies are undertaken and regular system of inventory control introduced.

**Sd/- B. C. DAS GUPTA**  
*Finance Officer*

To

All Ministries/Departments of Govt. of India.  
All F.As in the Department of Expenditure.



**APPENDIX XXVI**

No. 46|Adv-F|BPE|68|12

**GOVERNMENT OF INDIA  
MINISTRY OF FINANCE**

**(Bureau of Public Enterprises)**

*New Delhi, the 12th September, 1968*

**OFFICE MEMORANDUM**

**SUBJECT:—***Financial Management in Public Undertakings—15th Report of the Committee on Public Undertakings—Need for developing efficient cost accounting system.*

The Committee on Public Undertakings in its 15th Report on Financial Management in Public Undertakings have observed as under:—

‘The whole economic success of any project depends on an efficient and accurate system of cost control. The Committee would, therefore, urge that a proper costing system should be introduced in all public undertakings. Without a proper costing system, it will not be possible to fix the prices correctly to exercise adequate control over various elements of cost.’

‘The Committee further consider that since the detailed project report is the basis of judging the profitability of a project, Government should insist that an estimates of the cost of production must be included in the detailed project report. The vast experience gained so far in establishing and running of industrial projects should be utilised in making available to the consultants|collaborators such data as may be required by them for correctly estimating the cost of production and for making an independent check of the estimate made by them.’

‘The Committee consider that each undertaking will be in the best position to judge whether or not the integrated system of cost and financial accounts would be suited to it. But

whatever the system, collection of cost data should be completed as speedily as possible. It will be seen from the statement at Appendix XVI that in a number of undertakings, the compilation of cost data takes more than a month's time, and in some cases it takes as much as three months. Prompt steps for cost reduction can be taken only if full data for cost analysis is readily available. The Committee therefore recommend that the undertakings should gear up their costing organisations so that cost data is compiled by each undertakings within the shortest possible time.'

'The Committee feel that introduction of standard cost is very necessary for exercising effective cost control. The standard cost should be calculated on the basis of normal levels of activity and efficiency and should be reviewed periodically so as to take into accounts changing conditions. There may be some difficulty in expressing the standard cost in monetary terms, as due to the all round increase in price, standard cost is likely to become out of date very often. The Committee, therefore, consider that it will be advantageous to lay down physical norms for determining standard cost, i.e., the quantity of materials that should be consumed per unit of end product, labour hours, machine hours, etc., per unit of end products.'

2. Government have accepted these recommendations and attach great importance to an efficient development of cost accounting system in all undertakings. In this connection reference also invited to this office circulated No. 2(43)66 dated 5th September, 1966 (copy enclosed). In the case of manufacturing industries, it will be desirable to develop an integrated system of cost and finance accounts so that the necessity of request reconciliation of figures between financial figures and cost accounts is avoided. Standard costing has been recognised as an essential management tool for the purpose of cost control. Standard costing provides the necessary data against which actual performance can be compared and variations determined for initiating necessary remedial measures.
3. The Ministry of Industry etc. are requested to bring to the contents of this O.M. to the notice of the undertakings under the control and impress upon them the need to organise a sound cost accounting system based on integrated system of accounts wherever possible and also develop the standard costing at a every early date.

4. It is suggested that the progress made in this direction be intimated to the Bureau of Public Enterprises at an early date but not later than 31st December, 1968.

Sd/- P. GOVINDAN NAIR,  
*Secretary to the Govt. of India and Director-General,  
Bureau of Public Enterprises.*

To

All Ministries/Departments of Govt. of India.  
Copy to the Financial Adviser.

## APPENDIX XXVII

No. 2(4?)|66-F.I.

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

(Department of Coordination)

Bureau of Public Enterprises

New Delhi, the 5th September, 1966

OFFICE MEMORANDUM

SUBJECT:—*Cost control in Public Sector Undertakings—Submission of Cost data, etc. to the Board of Directors.*

The undersigned is directed to state that it has been observed that in many public sector undertakings adequate cost records are not maintained and linked with the Financial Accounts. There is also delay in preparation of Cost statements. It is, however, of utmost importance that cost data is presented regularly and promptly to the Board of Directors to enable them to take corrective action and policy decisions. The Finance Minister has emphasised in this connection the utmost need for cost consciousness, and has stated that all relevant information should be made available by the managements to the Boards of Directors so that the latter could keep a continuous watch on costs. He has also pointed out that productivity should be carefully watched, and for this purpose necessary work studies undertaken. Control of Inventories is another matter to which attention should be given by Board of Directors.

2. Ministry of Industry, etc. are, therefore, requested to bring these observations to the notice of the Board of Directors of the Public Enterprises with which they are concerned. The Board of Directors may draw up detailed procedure to ensure that cost analysis is made promptly and watched carefully, that cost statements are fully reconciled with Financial Accounts, that productivity studies are undertaken and regular system of inventory control introduced.

Sd/- B. C. DAS GUPTA,  
*Finance Officer*

To

All Ministries/Departments of the Government of India.  
All F.As. in the Department of Expenditure.

## APPENDIX XXVIII

No. 46|Adv-F|BPE|68|12  
GOVERNMENT OF INDIA  
**MINISTRY OF FINANCE**  
(Bureau of Public Enterprises)

New Delhi, the 12th September, 1968

### OFFICE MEMORANDUM

**SUBJECT:—***Financial Management in Public Undertakings—15th Report of the Committee on Public Undertakings—Need for developing efficient cost accounting system.*

The Committee on Public Undertakings in its 15th Report on Financial Management in Public Undertakings have observed as under:—

‘The whole economic success of any project depends on an efficient and accurate system of cost control. The Committee would, therefore, urge that a proper costing system should be introduced in all public undertakings. Without a proper costing system, it will not be possible to fix the prices correctly to exercise adequate control over various elements of cost.’

‘The Committee further consider that since the detailed project report is the basis of judging the profitability of a project, Government should insist that an estimates of the cost of production must be included in the detailed project report. The vast experience gained so far in establishing and running of industrial projects should be utilised in making available to the consultants|collaborators such data as may be required by them for correctly estimating the cost of production and for making an independent check of the estimate made by them.’

‘The Committee consider that each undertaking will be in the best position to judge whether or not the integrated system

of cost and financial accounts would be suited to it. But whatever the system, collection of cost data should be completed as speedily as possible. It will be seen from the statement at Appendix XVI that in a number of undertakings, the compilation of cost data takes more than a month's time, and in some cases it takes as much as three months. Prompt steps for cost reduction can be taken only if full data for cost analysis is readily available. The Committee therefore recommend that the undertakings should gear up their costing organisations so that cost data is compiled by each undertakings within the shortest possible time.'

'The Committee feel that introduction of standard cost is very necessary for exercising effective cost control. The standard cost should be calculated on the basis of normal levels of activity and efficiency and should be reviewed periodically so as to take into accounts changing conditions. There may be some difficulty in expressing the standard cost in monetary terms, as due to the all round increase in price, standard cost is likely to become out of date very often. The Committee, therefore, consider that it will be advantageous to lay down physical norms for determining standard cost, i.e. the quantity of materials that should be consumed per unit of end product, labour hours, machine hours etc. per unit of end product.'

2. Government have accepted these recommendations and attach great importance to an efficient development of cost accounting system in all undertakings. In this connection reference also invited to this office circular No. 2(43)/66 dated 5th September, 1966 (copy enclosed). In the case of manufacturing industries, it will be desirable to develop an integrated system of cost and finance accounts so that the necessity of request reconciliation of figures between financial figures and cost accounts is avoided. Standard costing has been recognised as an essential management tool for the purpose of cost control. Standard costing provides the necessary data against which actual performance can be compared and variations determined for initiating necessary remedial measures.

3. The Ministry of Industry etc. are requested to bring the contents of this O.M. to the notice of the undertakings under the control and impress upon them the need to organise a sound cost accounting system based on integrated system of accounts wherever possible and also develop the standard costing at a very early date.

4. It is suggested that the progress made in this direction be intimated to the Bureau of Public Enterprises at an early date but not later than 31st December, 1968.

Sd/- P. GOVINDAN NAIR,

*Secretary to the Govt. of India and Director-General,  
Bureau of Public Enterprises.*

To

All Ministries/Departments of Government of India.

Copy to the Financial Adviser.

## APPENDIX XXIX

No. BPE/Adv.(F)/1(100)/70

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

**Bureau of Public Enterprises**

New Delhi, the 10th August, 1970.

### OFFICE MEMORANDUM

**SUBJECT:**—*Production Management in Public Undertakings—67th Report of the Committee on Public Undertakings (4th Lok Sabha)—Cost Control in Public Enterprises.*

In this Department O.M. Nos. 2/43/66.FI dated 5th September, 1966 and 46/Adv(F)/BPE/68/12 dated 12th September, 1968 the need for developing a proper system of cost accounting and preferably an integrated system of cost-cum-financial accounting system as also the need for the development of cost consciousness in public enterprises were emphasised.

The Committee on Public Undertakings in their 67th Report on 'Production Management in Public Enterprises' have made the following observations:

"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., Loco 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 extraordinary escalation in cost of production became unavoidable. They recommend that all public sector undertakings should make concerted effort 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."

The Ministry of Steel and Heavy Engineering etc. are requested to bring to the notice of the public undertakings the observations of the Committee and to impress upon the enterprises on the utmost need for developing a sound cost accounting system reviewing of the cost of production figures from time to time and giving a more realistic cost estimates in the detailed project reports on future schemes.

Sd/- A. N. BANERJI,

*Additional Secretary and Director General*

**To**

All Ministries/Departments to the Government of India.

Copy to:

All Officers in the Finance Ministry of the rank of Deputy Secretary and above.

**APPENDIX XXX**

No. 1(7)/DAP(R)/69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 16th January, 1971.*

! **OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 52 from the 67th Report of the Committee on Public Undertakings on Production Managements and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

**To**

All Ministries/Departments of Govt. of India.

**APPENDIX XXXI**

No. 1(7)/DAP(R)/69

**GOVERNMENT OF INDIA  
MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

(Production Division)

*New Delhi, the 16th January, 1971.*

! **OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 53 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,

*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XXXII**

No. 1(7)/DAP(R)/69  
GOVERNMENT OF INDIA  
**MINISTRY OF FINANCE**  
**Bureau of Public Enterprises**  
**(Production Division)**

*New Delhi, the 16th January, 1971.*

!            *OFFICE MEMORANDUM*

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 55 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XXXIII**

No. 1(7)/DAP(R)/69  
**GOVERNMENT OF INDIA**  
**MINISTRY OF FINANCE**  
**Bureau of Public Enterprises**  
**(Production Division)**

*New Delhi, the 16th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings**  
**(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 56 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Government of India.

**APPENDIX XXXIV**

No. 1(7)/DAP(R)/69  
**GOVERNMENT OF INDIA**  
**MINISTRY OF FINANCE**  
**Bureau of Public Enterprises**  
**(Production Division)**

*New Delhi, the 16th January, 1971.*

! **OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 57 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

**Sd/- S. JAGANNARAYANAN,**  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Government of India.

## APPENDIX XXXV

No. 2(81)/71-BPE(GM I)  
GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
Bureau of Public Enterprises  
(Production Division)

New Delhi, the 18th March, 1971.

### OFFICE MEMORANDUM

SUBJECT:—*Arrangements in Public Enterprises for dealing with consumers' complaints and ensuring feed back of consumers' reaction to their products.*

The Committee on Public Undertakings in their 67th Report (Fourth Lok Sabha) on "Production Management in Public Undertakings" has made the following recommendation:—

"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".

Many of the Public Enterprises have even at present arrangements for dealing with complaints from their customers. The organisation existing for this purpose in some of the enterprises has been referred to in the Committee's Report mentioned above. However, the recommendation of the Committee is mainly aimed at introducing a systematic procedure for registration of consumers' complaints and recording of the action taken on each complaint, as this system would enable the undertaking to have a clear picture of the nature of complaints and the success of the quality control measures adopted by the undertaking. The Committee's other main recommendation relates to the establishment of adequate organisation and facilities in the undertakings for feed back on consumers' reaction to their products by conducting field surveys, etc. Ministry of Steel and Heavy Engineering are requested to advise the Public Enterprises under their administrative control to review their existing arrangements in this area, keeping in view the observations of the Committee. The enterprises may also be requested to send a report on the action taken in this regard to the administrative Ministry and the Bureau by 31st March, 1971.

Sd/- P. K. BASU,  
*Director, Bureau of Public Enterprises.*

To

All Ministries/Departments of Government of India.

Copy to:

- (i) The Comptroller & Auditor General of India.
- (ii) Production Division/Adviser (C)/Adviser (F)/Director (I&R)/D.S.(Coord), Bureau of Public Enterprises.
- (iii) Heads of Expenditure Divisions in the Deptt. of Expenditure.
- (iv) Representatives of the Ministry of Finance on the Boards of Public Enterprises.

(P. K. BASU)  
Director, Bureau of Public Enterprises.



**APPENDIX XXXVI**

No. 1(7)/DAP(R)/69

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 29th January, 1971.*

! **OFFICE MEMORANDUM**

**SUBJECT:—Production Management—Recommendations of Co. P.U.**  
*(4th Lok Sabha) on Production Management—Recommendation No. 59.*

The undersigned is directed to refer to Recommendation No. 59 of the Committee on Public Undertakings Report on Production Management (extracts given) and to say that Government have agreed with this recommendation.

“The Committee are of the view that Industrial Engineering functions like the Time and Motion Studies, Works Measurement Manpower Planning, Job Evaluation, application of PERT etc. are vital to every modern industrial enterprises and 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 enterprises should consider the advisability of setting up such a Department if not already done.”

The Ministry of Industrial Development etc. are requested to note the above recommendation and Government's decision thereon and also intimate this to the enterprises under their administrative control for compliance and future guidance. In this connection a copy of the Bureau of Public Enterprises letter No. 1(7)/DAP(R)/69 dated the 18th January, 1971 to all the heads of the Public Sector enterprises setting out the guidelines for Industrial Engineering is

enclosed. These guidelines may also be taken into account. The enterprises may be requested to furnish a completion report within six months.

Sd/- S. JAGANNARAYANAN,

*Under Secretary to the Government of India.*

To

All Ministries/Departments of Government of India.

*(Enclosure on the Ministry of Finance Bureau of Public Enterprises;  
O./M. No. 1(7)/DAP(R)/69, dated 29-1-1971).*

A. N. BANERJI

*Adl. Secretary and Director General*

D.O. No. 1(7)/DAP(R)/69

GOVERNMENT OF INDIA  
MINISTRY OF FINANCE  
BUREAU OF PUBLIC ENTERPRISES

My dear

In the studies of the performance of a number of Public Sector Enterprises undertaken by the Bureau of Public Enterprises so far a recurring observation has been the absence of performance standards and norms relating to labour, material, and equipment-utilisation without which loading, scheduling, progressing and on controlling of work cannot be effectively performed. Other operating areas in which the need for improvement has been recommended in these studies and in several performance reviews carried out are:—standardisation, simplification and sepecification of jobs, material conservation and scrap reduction, economic analysis of operations, determination of production capacities, systematic and organised approach to problem-identification and solution, designing, installing and maintaining incentive schemes, etc.

It is to be appreciated that by and large these duties and responsibilities, to be effectively discharged on a continuing basis, would devolve on specialist members of the organisation at various levels and are in the nature of technical staff functions distinct from those of line management. In the management philosophy of the majority of progressive modern industries today these activities generically referred to as Industrial Engineering are grouped into one department under the exclusive charge of a senior executive reporting directly to the Head of the Organisation.

The Committee on Public Undertakings (4th Lok Sabha) in their study of production management in public sector enterprises have

laid considerable emphasis on the establishment of industrial engineering departments in all public sector enterprises and on intensifying the use of industrial engineering techniques on a continuing and purposeful basis to cover all operating activities of an enterprise. Formal directives in this regard will be issuing from the respective administrative Ministries to the Public Sector Enterprises for the implementation of the relevant recommendations (Nos. 59, 60 & 61) contained in the Committee's 67th Report on "Production Management in Public Undertakings". It is, however, felt that an appreciation of the latest trends in management concept of industrial engineering organisation in a compact and ready-to-hand form may prove of some assistance to top management in discharging their responsibilities for introducing or improving the industrial engineering approach in their organisation.

It is with that hope that a note on "Industrial Engineering Approach to the Management and Operation of an Enterprise" is enclosed for your perusal and suitable implementation.

Yours sincerely,  
(A. N. BANERJEE)

#### INDUSTRIAL ENGINEERING APPROACH TO MANAGEMENT AND OPERATION OF AN ENTERPRISE

In the operation of a plant, factory or industrial enterprise the need for sustained, systematic and organised improvement in productivity cannot be over-emphasised. Whereas increased "effort" at all levels from management through supervision down to unskilled labour on the shop floor is necessary to achieve any significant increase in output it is the "effectiveness" with which this human resource as well as the material resources of equipment, power, raw-material, money etc. is employed that generates the real increase in productivity. In fact, the organisational approach in industry to operational improvement contributes in a much greater measure to overall productivity gains than does increased effort alone. Amongst the several approaches adopted by the management of an enterprise, either concurrently or sequentially, to achieve increased productivity "industrial engineering" is not only one of the most important ones but in the present stage of development is the most essential for adoption by enterprises in operation in order to make the most economic use of their resources.

I.E. is concerned with the design, improvement and installation of integrated systems of men, materials and equipment within an enterprise. It achieves this through the application of basic scientific and engineering knowledge and specialised skills in the mathematical and social sciences to the operation of an industrial enterprise and, together with the principles and methods of engineering

analysis and design, to specify, predict and evaluate the results to be obtained from such integrated systems.

For the purpose of introducing and maintaining the I.E. approach in the management and operation of an enterprise it needs to be appreciated that I.E. is a staff activity of management and is concerned with:

- (a) decisions on what to produce,
- (b) the design of the product,
- (c) standardisation,
- (d) the influence of cost analysis on methods of production and investigation of these methods,
- (e) planning and control of production,
- (f) designing and organising the provision of production aids (tooling, jigs, fixtures, etc.).
- (g) calculation of the most efficient machinery for production including the movement and handling of materials for production,
- (h) the layout of the plant,
- (i) the maintenance of equipment,
- (j) time and motion study, and
- (k) motivation of operating personnel (incentives, wage structure, suggestion schemes etc.) and industrial relations.

In order that this involvement is effective I.E. requires consideration to be given to the communication of new ideas among the senior and junior managers, among supervisors and to and from workers on the shop floor, giving careful regard to the well-being, attitudes and opinions of workers.

The tendency in most progressive industries is to group all industrial engineering functions in one department under one executive, functioning as staff officer of the chief executive. He exercises direct authority over his subordinates in the lower schemes, each of whom, in turn, functions as a staff adviser to his counterpart in line management. A diagrammatic presentation of the conceptual field of industrial engineering as suggested by the American Society of Mechanical Engineers has been reproduced in the enclosed chart (Annexure I). This does not purport to be an organisation chart but it does emphasise and accentuate the need for placing the head of the I.E. organisation at the same level of reporting as that of any other major operating division.

Considering that I.E. tasks demand the application *inter alia* of basic engineering knowledge pertinent to the operations of the enterprise, the head of the I.E. organisation should be more than ordinarily familiar with the technologies involved. Furthermore, for the effective implementation of the major changes inevitable in the I.E. approach to management the top industrial engineer's competence to make these recommendations must be readily acceptable to operational managers. There is a case, therefore, for a production specialist to hold the charge of I.E., provided he is unquestionably a well-trained and experienced industrial engineer and an able and competent manager of I.E. operations and staff. The functions, responsibilities and relationships of the head of the Division need to be very clearly specified. For ensuring complete integration with and whole-hearted support from the operating divisions of the organisation, the functions etc. of I.E. should be thoroughly understood by all senior members of the organisation. A sample "job description" of the head of the industrial engineering is attached for information (Annexure II).

Although theoretically the work of I.E. is supposed to be mainly advisory, in practice increasingly greater responsibility for implementation needs to be laid on the Department. The greatest demand to be placed on I.E. is of cutting costs and reducing waste. He has not only to find out, in cooperation with the various operating and service departments concerned, where and how savings are possible, he has to show the changes made on action initiated by him have proved successful. In other words, industrial engineering as to prove its worth and often carries its own burden of accountability. It is necessary, therefore, to define precisely and to specify in qualitative terms the objectives of the I.E. department and to have built into the system of management controls a procedure for continual evaluation of the effective contribution made by I.E. in achieving these objectives.

The most important factor in improving work is the industrial engineer himself. As he gains experience in the disciplines of investigation, his ability to analyse and think logically will create an attitude of mind and a versatility capable of handling all kinds of operational imperfections, not necessarily confined within his own particular technological field. He will be able to produce solutions which will be adequate and complete for correcting such imperfections. It is only through his personal attention to details and by abiding by absolute standards of effectiveness as determined by measurement techniques that he can produce such workable solution. It is obvious that any one who does not possess this strict

standard and professional outlook cannot come up with a practical and applicable solution every time.

Training is thus vitally necessary for the success of industrial engineering application. But the approach to the organisation of this training has to take into consideration one major difference from training in traditional engineering and technological subjects. Whereas management and labour have always upheld the need for organised training of staff in technological and in trade skills, towards industrial engineering there is considerable apathy if not active resistance from both. As industrial engineering is more than just a technique, affecting the entire organisation of any undertaking and as its proper use calls for its appreciation by and co-operation from staff at all levels, formulation of a training scheme must take into account the need for top management education, education of organised labour as well as the training of individuals who are to practise industrial engineering. For industrial engineering with the probing impact of its basic procedure, questioning all activities without exception, affecting all employees without discrimination, is good for all three sections of industry. In other words, education and training have both to be catered for education of management and organised labour towards a sense of general appreciation of the purpose and the practice of industrial engineering; education of middle management for the control, guidance and supervision of industrial engineering and training of industrial engineering practitioners in the detailed know-how and skills.

It is not unlikely that the tasks and scope outlined for I.E. in the foregoing may seem to encroach on the area generally considered to lie within the scope of Operational Research if the OR approach is already in existence in addition to I.E. activities. In determining the boundaries as well the necessity for inter-related cooperation between OR & IE the following factors need to be considered:—

1. OR application in industry is a more recent approach than that of I.E. and is necessarily equipped with more sophisticated and modern tools (e.g. Linear Programming, Queueing theory, Simulation, Operational gaming, Decision theory, Game theory, Information theory, Evolutionary operation, Cybernetics, Search theory, Symbolic logic, Boolean algebra, Dynamic programming, etc.) for dealing with considerably more complicated and complex problems.

2. It is generally accepted that O.R. is concerned with total system/s and was often to go outside the boundaries of the enterprise in search of the optimum solution, whereas I.E.'s concern is quite often satisfactorily concluded with finding a solution that provides the efficient use of physical aspects of an enterprise (compare Management Accountancy, Organisation and Methods, Work Study approaches which are respectively concerned with the effective use of finances, clerical and administrative needs and operative effort).

3. Although I.E. employs several disciplines, the inter-disciplinary approach to problem solving and providing decision making also in the *sine qua non* of the management attitude that distinguishes the O.R. approach from that of I.E. Moreover, in O.R. application techniques from studying systems in one discipline are used with success for solving problems in systems outside that discipline.

4. O.R. is concerned or should be concerned with truly optimal solutions in a total system. By the very nature of its equipment it can experiment with the "model" of a system implementing various alternative solutions in turn without in any way interfering with the operation of the existing system. This is what gives O.R. the characteristic of a research approach as distinct from the "trouble-shooting" approach of I.E.

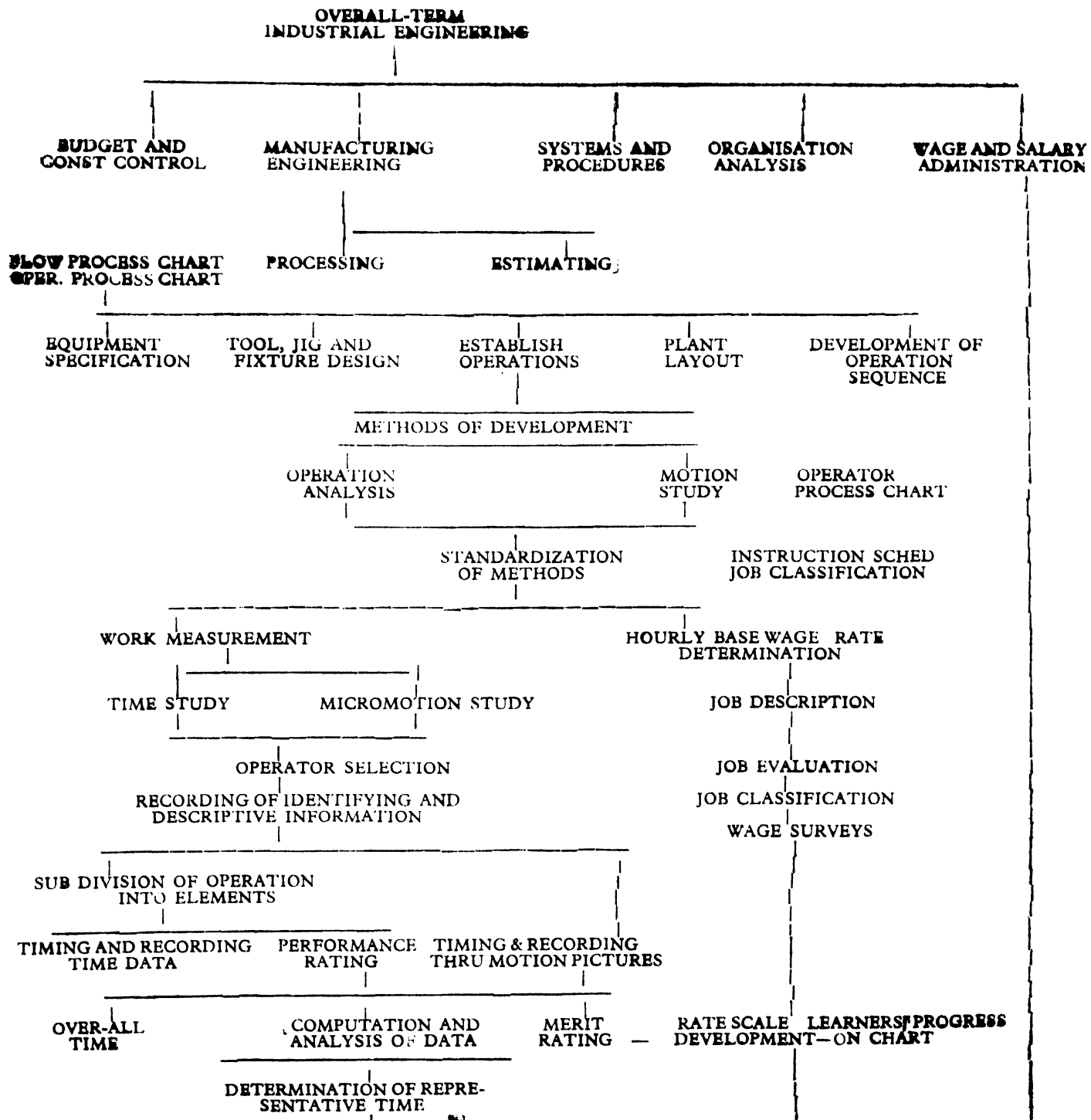
5. Perhaps the most significant difference is that O.R. is not technique-bound; in other words, although it may, in the preliminary course of analysis, survey existing techniques and even use some of them successfully with or without modifications, it more often than not evolves a new technique arising out of the study of the problem it is attempting to solve. It is this challenge which attracts that type of specialist to work in an O.R. team who would not be satisfied with I.E.

Nevertheless both approaches have much the same ultimate objective—the optimum utilisation of resources. In that sense O.R. may be considered as an extension of I.E. and by bringing into active use more of the scientific disciplines and mathematical techniques enables management to investigate problem areas inaccessible to conventional I.E. techniques, to search deeper for the underlying causes and relationship behind these problems and provides not only optimal solutions and alternatives but dependable quantitative predictions of the results likely to be achieved in the short as well as the long run.



In the field of I.E. there are many problems where O.R. could be profitably employed for refined solutions, namely:

1. Analysis leading to the best selection of one out of several, Incentive schemes, SOC procedures, Methods, improvement plans, plant layouts, processes, levels of maintenance.
2. Determining practical process scrap allowances.
3. Minimising waiting time in production operations.
4. Determining production requirements against variable sales orders.
5. Determining inventory levels and re-ordering criteria.
6. Machine Loading systems for meeting different criteria.
7. Determining most economic maintenance schemes.
8. Predicting breakdowns.
9. Determining plant capacity in complex multi-units situations.
10. Optimising plant replacement.
11. Determining the staffing requirement in I.E.



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**ANNEXURE II**  
**JOB DESCRIPTION**  
**DIRECTOR OF INDUSTRIAL ENGINEERING**

**I. Major function**

1. Formulates and administers plans and programmes involving all phases of industrial engineering application, including special cost reduction studies, analysis of industrial processes, and evaluation of work methods; and develops implementing procedures incident thereto.

2. Exercises staff supervision over System industrial engineering personnel.

**II. Specific responsibilities**

1. Directs a continuing programme of cost reduction analysis through application of industrial engineering techniques.

2. Organises project committees to make special studies of various functions in the enterprise in the interest of promoting efficiency and economy.

3. Assumes responsibility for proper evaluation of project reports submitted by industrial engineers, and on the basis of such reports, makes recommendations to the Managing Director|General Manager| Heads of Divisions, as may be appropriate.

4. Assumes responsibility for training of assigned engineers in the techniques of analysis and development phase of industrial engineering.

5. Advises and assists officers of other departments with respect to specific problems such as space layout, materials handling, time-keeping procedures, stores procurement, transport, marketing, etc.

6. Keeps abreast of modern techniques in the industrial engineering field, and makes appropriate application of such techniques where feasible.

7. Maintains liaison with officers of other enterprises, N.P.C., I.I.M. and professional societies and other organisations as necessary in order to effectively carry out the responsibilities of his position.

### III. Relationships

1. The Director of Industrial Engineering is responsible to the Managing Director and the General Manager.

2. The following are responsible to the Director of Industrial Engineering:—

Industrial Engineers.

Assistant Industrial Engineers.

3. The Director of Industrial Engineering exercises staff supervision over the senior Industrial Engineers reporting to the Divisional Heads.

## **APPENDIX XXXVII**

No. 1 (7) /DAP (R) /69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

Bureau of Public Enterprises

(Production Division)

*New Delhi, the 29th January, 1971.*

### **OFFICE MEMORANDUM**

**SUBJECT:—Production Management—Recommendations of Co. P.U. (4th Lok Sabha) on Production Management—Recommendation No. 60.**

The undersigned is directed to refer to Recommendation No. 60 of the Committee on Public Undertakings Report on Production Management (extracts given) below and to say that Government have agreed with this recommendation.

“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 these have been instrumental in bringing about operational efficiency and economy in cost of production.”

The Ministry of Industrial Development etc. are requested to note the above recommendation and Government's decision thereon and also intimate this to the enterprises under their administrative control for compliance and future guidance. In this connection a copy of the Bureau of Public Enterprises letter No. 1(7)|DAP(R)|69 dated 18th January, 1971 to all the heads of the Public Sector enterprises setting out the guidelines for Industrial Engineering is enclosed (enclosures in Appendix XXXVI). These guidelines may also be taken into account. The procedure that each enterprise has introduced may be briefly intimated within the next three months.

**S. JAGANNARAYANAN**

*Under Secretary to the Government of India.*

To

All Ministries Deptt. of Govt. of India.

## APPENDIX XXXVIII

No. 1(7)/DAP(R)/69

GOVERNMENT OF INDIA  
MINISTRY OF FINANCE

Bureau of Public Enterprises  
(Production Division)

New Delhi, the 29th January, 1971.

### OFFICE MEMORANDUM

**SUBJECT:**—*Production Management—Recommendations of Co. P.U. (4th Lok Sabha) on Production Management—Recommendation No. 61.*

The undersigned is directed to refer to Recommendation No. 61 of the Co. P.U. Report on Production Management (extracts given below) and to say that Government have agreed with this recommendation. The Bureau of Public Enterprises would also assist the undertakings in the intensification of industrial engineering departments in these undertakings.

*Extracts:—*

"The Committee note that Industrial Engineering Departments sometimes face difficulties in selling their ideas and recommendations to the production staff. While the Fertiliser 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 Department 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."

The Ministry of Industrial Development, etc. are requested to note the above recommendation and Government's decision thereon and also intimate this to the enterprises under their administrative control for compliance and future guidance. The compliance of this may be reported by the enterprises within the next six months.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.



**APPENDIX XXXIX**

**No. 1(7)/DAP(R)/69**

**GOVERNMENT OF INDIA**

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 16 January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings  
(4th Lok Sabha) on Production Management.**

The undersigned is directed to enclose extracts of Recommendation No. 62 from the 67th Report of the Committee on Public Undertakings on Production Management and to say that Government have agreed with this recommendation. The Ministry of Industrial Development, etc. are requested to issue suitable instructions to the undertakings under their control for future guidance and compliance including progress report on implementation and endorse a copy of their instructions to the Bureau of Public Enterprises in due course.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Govt. of India.*

To

All Ministries/Departments of Govt. of India.

## APPENDIX XL

No. 1(7)/DAP(R)/69

GOVERNMENT OF INDIA

MINISTRY OF FINANCE

Bureau of Public Enterprises

(Production Division)

New Delhi, the 20th January, 1971.

### OFFICE MEMORANDUM

**SUBJECT:—Production Management—Recommendations of Co. P.U.  
(4th Lok Sabha) on Production Management Recommendation No. 63.**

The undersigned is directed to refer to recommendation No. 63 of the Co. P.U. Report on Production Management (extracts given below) and to say that Government have agreed with this recommendation. The Bureau of Public Enterprises would also assist the undertakings in the intensification Research and Development activities of the undertakings.

“The Committee find that developed countries (e.g. U.S.A. 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 continue activity and can be carried on only if there is an organisation for it. This 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., and 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 co-ordination with the Council of Scientific and Industrial Research, other related laboratories and Research Organisations in the country and attend to basic aspects 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."

Action in regard to the growth of research and development in Public Sector Undertakings has already been initiated by the Bureau of Public Enterprises, *vide* their letter No. 1(2)DAP (R) |70-R&D dated 9/10.4.1970 in which the Public Sector Undertakings were requested to establish contacts with the National Laboratories for their day-to-day needs. It is also suggested that contacts at the operational level and medium level may be established by the Public Sector Undertakings with the officers of the National Laboratories. In addition, the undertakings may also be advised to give special importance to the basic aspects of import substitution and increased productivity with particular reference to cost reduction by undertaking research in new process and technology for the product mix.

Ministry of Industrial Development, etc., are requested to note the above recommendation and Government's decision thereon and also intimate Govt.'s views to the undertaking under their administrative control for compliance and future guidance and endorse a copy thereof to the Bureau of Public Enterprises.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XLI**

No. 1(7)/DAP(R)|69

GOVERNMENT OF INDIA

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises  
(Production Division)**

*New Delhi, the 7th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—Production Management—Recommendation of Co. P.U.  
(4th Lok Sabha) on Production Management—Recommendation No. 65.**

The undersigned is directed to refer to Recommendation No. 65 of the Co. P.U. Report on Production Management (extracts given below) and to say that Government have agreed with this recommendation. Bureau of Public Enterprises would also assist the undertakings in the intensification of Research and Development facilities in the undertakings wherever necessary.

“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 of the high side, e.g. wheels in Durgapur Steel Plant so that remedial measures are developed after intensive study.”

The Ministry of Industrial Development etc. are requested to note the above recommendation and Government's decision thereon and also intimate this to the Undertakings under their administrative control for compliance and future guidance.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XLII**

No. 1(7)/DAP(R)|69

GOVERNMENT OF INDIA

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 7th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—Production Management—Recommendations of Co. P.U.  
(4th Lok Sabha) on Production Management Recommendation No. 67.**

The undersigned is directed to refer to Recommendation No. 67 of the Co. P.U. Report on Production Management (extracts given below) and to say that Government have agreed with this recommendation.

“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 undertakings [e.g. Heavy Electrical (India) Ltd., Hindustan Steel Ltd., National Coal Development Corporation Ltd.] 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.”

The Ministry of Industrial Development etc. are requested to note the above recommendation and Government's decision thereon and also intimate this to the Undertakings under their administrative control for compliance and future guidance.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XLIII**  
**No. 1(7)/DAP(R)|69**  
**GOVERNMENT OF INDIA**  
**MINISTRY OF FINANCE**  
**Bureau of Public Enterprises**  
**(Production Division)**

*New Delhi, the 7th January, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—***Production Management—Recommendations of Co. P.U. (4th Lok Sabha) on Production Management—Recommendation No. 68.*

The undersigned is directed to refer to Reconsideration No. 68 of the Co. P.U. Report on Production Management (extracts given below) and to say that Government have agreed with this recommendation.

“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 improve techniques of operational efficiency. To 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”.”

The Ministry of Industrial Development etc. are requested to note the above recommendation and Government's decision thereon and also intir ate this to the Undertakings under their administrative control fo compliance and future guidance.

**Sd/- S. JAGANNARAYANAN,**  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XLIV**

No. 1(7)/DAP(R)/69

**MINISTRY OF FINANCE**

**Bureau of Public Enterprises**

**(Production Division)**

*New Delhi, the 20th April, 1971.*

**OFFICE MEMORANDUM**

**SUBJECT:—67th Report of the Committee on Public Undertakings (4th Lok Sabha) on Production Management—Recommendation No. 30, para 7.41.**

The undersigned is directed to forward herewith extracts of Recommendation No. 30, para 7.41 from the 67th Report of the Committee on Public Undertakings (Fourth Lok Sabha) on Production Management and to say that Government have replied that the views of the Committee have been noted. The Ministry of Industrial Development, etc., are requested to note the views of the Committee for guidance and future compliance.

Sd/- S. JAGANNARAYANAN,  
*Under Secretary to the Government of India.*

To

All Ministries/Departments of Govt. of India.

**APPENDIX XLV**

*(Vide para 4 of Introduction)*

*Analysis of Action Taken by Government on the recommendations contained in the Sixty-Seventh Report of the Committee on Public Undertakings (Fourth Lok Sabha)*

	<b>PAGE</b>
I. Total number of recommendations . . . . .	68
II. Recommendations that have been accepted by Government ( <i>Vide</i> recommendations at S. Nos. 1, 2, 3, 4, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67 and 68).	
Number . . . . .	61
Percentage to total . . . . .	90
III. Recommendations which the Committee do not desire to pursue in view of Govt.'s reply ( <i>Vide</i> recommendations at S. Nos. 5, 22, 30, 50 and 54)	
Number . . . . .	5
Percentage to total . . . . .	7
IV. Recommendations in respect of which replies of Government have not been accepted by the Committee ( <i>Vide</i> recommendations at S. Nos. 8 and 25)	
Number . . . . .	2
Percentage to total . . . . .	3
V. Recommendations in respect of which final replies of Govt. are still awaited	
Number . . . . .	Nil
Percentage to total . . . . .	Nil