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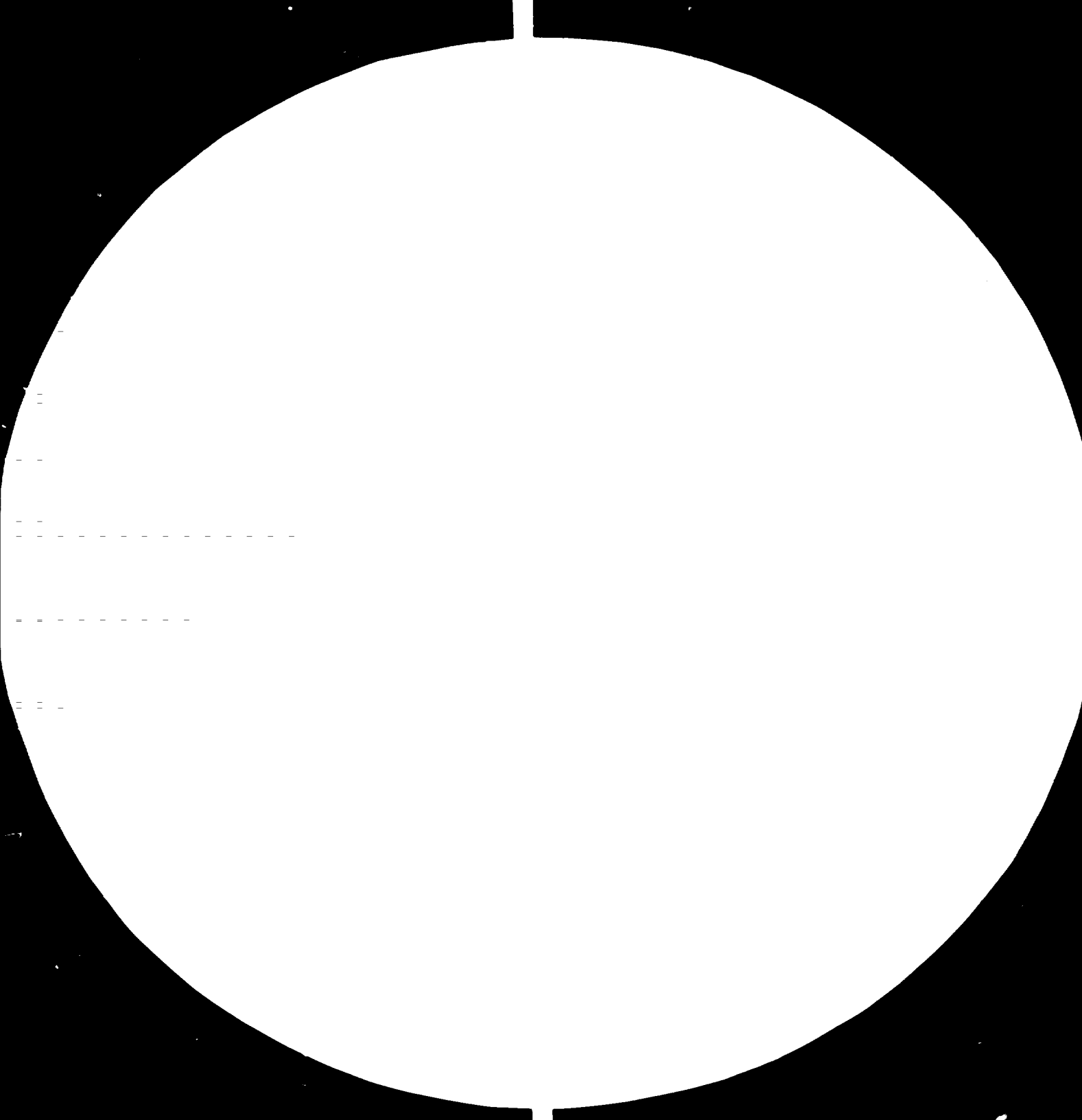
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MIKROCOPY-RESOLUTION-TEST-CHART

Resolution test chart for microcopy resolution testing

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DP/ID/SER.B/275
26 November 1980
English

OPERATION AND MANAGEMENT
OF FERTILIZER PLANTS

DP/BGD/78/002

BANGLADESH

Terminal report *

Prepared for the Government of Bangladesh
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of K.S. Rastogi, curriculum development adviser

United Nations Industrial Development Organization
Vienna

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I - SUMMARY

1. Bangladesh Chemical Industries Corporation should formulate its training policy and issue it as a policy statement incorporating the following :

- a. That there would be a Training Institute at Urea Fertilizer Factory, Ghorasal, under the charge of Chief (Manpower and Training) which will not only cater to needs of Ghorasal Plant but all Chemical/Fertilizer plants under Bangladesh Chemical Industries Corporation for apprenticeship Training and Employees Development Programmes.
- b. That there would be a Training Cell in each project having Training Head of appropriate status to be assisted by another officer. These Officers will look after the in-plant training of apprentices in their respective projects and employees development programmes at the plant level. They would also assess the training needs of the employees and evaluate the training efforts for apprising the Training Committee at Head Office for appropriate action.
- c. That there would be a Training Committee at the Head Office comprising of General Managers of all projects, General Manager (Manpower Planning and Development), Chief (Manpower and Training), headed by Director (Engineering) to review overall progress and formulate the training policies based on the feed back from projects about recruitment, training and development.
- d. That the process of manpower planning and development would be reviewed half yearly/yearly by the above committee.
- e. That there would be separate provision of funds for training in overall budget of the Corporation both under revenue and capital under the head "Training and Development", which would be reviewed and operated including allocation of funds to different projects under Bangladesh Chemical Industries Corporation, by the Training Committee at Head Office.

II - Introduction

2. The undersigned joined on 23rd of February, 1980 as Curriculum Development Adviser at UNIDO, Vienna under the project "Operation and Management of Fertilizer Plants" - Bangladesh Chemical Industries Corporation for their Urca Fertilizer Factory, Ghorasal. I was briefed at Vienna by Mr. S. R. Panfil and was handed over the briefing note and the project documents.

3. I arrived in Dacca on 29th February, 1980 and reported to UNDF on 1st of March, 1980. After due briefing, I was asked to meet Deputy General Manager (Implementation), Bangladesh Chemical Industries Corporation on 6th March, 1980. I met him, and he advised me to meet General Manager (Manpower Planning & Development), Bangladesh Chemical Industries Corporation, who told me to go to Ghorasal. I came to Ghorasal on 7th March, 1980 and reported to Mr. M.S. Rahman, General Manager, to carry out my assignment. I was cordially received and promised all co-operation in carrying out my task. General Manager introduced me to my counterpart Mr. Moinul Islam, Additional Chief (Manpower Planning & Training). I was also introduced formally in a meeting with the following officers who are Heads of the Departments :

- a. Mr. B. K. Mazumdar - Chief Operation Manager,
- b. Mr. S. H. Chowdhury - Chief Accountant,
- c. Mr. Sk. Aminul Islam - Acting Chief Engineer,
- d. Mr. M. F. Rahman - Additional Chief (Materials Planning and Control)
- e. Mr. M. S. Akhand - Additional Chief Operation Manager (Quality Control),
- f. Mr. Md. Sayed - Additional Chief Operation Manager (Ammonia),
- g. Mr. M. A. Razaque - Additional Chief Engineer (Electrical),
- h. Mr. F. ... Chowdhury - Additional Chief Engineer (Machinery & Maintenance)

- i. Mr. K. H. Zahirul Islam - Additional Chief Operation Manager (Urca),
- j. Mr. Rafique Uddin Ahmed - Deputy Chief Engineer (Plant Workshop)
- k. Mr. Mofizzal Hoque - Operation Manager (Utilities),
- l. Mr. M. R. Chowdhury - Manager (Administration).

4. This gave me the opportunity to explain them the purpose of my stay at Ghorasal and the process to be followed in bringing out the curricula. I sought their co-operation in carrying out my job. The co-operation came forth without any reservation which really helped me a lot in completing my task successfully.

5. I need to say a word about the Job description. For this project two experts were appointed, one myself as Curriculum Development Adviser and the other Mr. A. S. Shoukry, Training Adviser. Job descriptions for both Advisers were made by UNIDO, Vienna. There were overlapping functions specified in both Job descriptions, i.e. mine and Mr. Shoukry, Training Adviser. I pointed about this during my briefing at Vienna, but it was advised that both of us should solve all the Organizational problems which may hamper our efficiency. Since Mr. Shoukry could not join earlier than 15th August, 1980, it became necessary to take action so that I may be able to proceed further with the work. The local management adjusted the assignments of both mine and Mr. Shoukry which were subsequently concurred by UNIDO. Copies of the original and adjusted ones are attached as annex- 1.

Annex-1

III - Training Plan and Curricula Development .

6. Curriculum development is a fundamental element of the training plan of the organization. Bangladesh Chemical Industries Corporation and the local management advised to draw up a training plan. Correspondence in this connection may please be seen at annex-2. In drawing up an appropriate

Annex-2

training plan of the enterprise and curriculum thereof, lot of spade work was to be done. Educational background of employees, syllabi of the various qualifications like Secondary School Certificates/Higher Secondary Certificates/Technical Training Certificates/Diploma in Engineering/Degree in Engineering/Applied (Chemistry and Physics) B.Sc. etc., job requirements, skills involved, actual output of the personnel, exodus of personnel to Middle-east, their qualifications and experience, organization chart of each plant/workshop and factory as a whole and apprentices recruited during the last 2 years. I studied all the above quite in detail. Besides, more than a month was taken in detailed discussions with Heads of the Departments and Sectional Heads of Engineering and Operation. I discussed with them both in a group and individually. Informal discussions also took place with shop floor people in the plants and off the plants. I had provoked few officers including General Manager on some occasions in the process of getting information which I regret.

IV -Background Education and Job Requirements.

7. Background education is very much related with the job requirements. In today's Chemical and Fertilizer plants having sophisticated technology, highly automation, large size and single stream, it is difficult to ignore the educational background. Even for a plant like Urea Fertilizer Factory, Ghorasal, education plays an important role. While going through the above details, it was felt education deserved more consideration. The position of incumbents from Sub-Assistant Engineer to General Manager, qualification-wise is given in annex-3.

annex-3

8. From the table it will be observed that the ratio of engineers is about 17%. It would be appreciated that at a certain stage it is necessary that we should have perfect blend of engineer (Degree holders) and B.Sc./Diploma. The

ratio may be maintained as 30% engineering (Degree holders). 30% is inclusive of B.Sc. and M.Sc. Applied Chemistry/Applied Physics and 70% others. Bangladesh Chemical Industries Corporation is conscious of the fact and they are taking necessary action in this direction. Probably this situation is due to shortage of Engineers/ M.Sc. (Applied Chemistry/Applied Physics) in the country.

V - Deficiencies in Background Education

9. I shall confine to the qualifications of bulk of the technical people who are Secondary School Certificate/Higher Secondary Certificate/Technical Training Certificate/B.Sc. and Diploma in Engineering. I am not taking into account a minority who are quite upto the standard. The deficiencies are given below :

- a. The people who generally join industry are mostly average in their schools and colleges as the above average boys go in for higher studies or for administrative services in the government. Those who join industry their basic concepts are poor. They pass their examinations by cramming without understanding as to what they are learning. So their foundation is weak. The diploma/Technical Training Certificate holders coming out lack basic knowledge and skill. This can be imagined by giving an example of FOXBORO Seminar on Instrumentation which was conducted in my presence at Fertilizer Factory, Ghorasal. There were 21 participants from Bangladesh Chemical Industries Corporation projects including about 8 from Ghorasal Factory. Their break up was - B. Sc. (Engineering) - 2, M.Sc. (Electronics) - 2, Diploma holders - 10, Secondary School Certificate - 6, and read upto X - 1.

The Instructor from FOX BORO was Mr. Albert T. Wang. I had an informal discussion with him regarding the performance and receptivity of the participants. He told that most of participants were unable to grasp the lectures given to them due to poor back ground knowledge.

- b. I had also discussed with Mr. Jindai who is the team leader of H/S UNICO. He is in the best position to give the assessment of the personnel working in the plants. According to him some employees are quite good but on an average most of the employees lack fundamentals of what they have studied. The same opinion was expressed by all Heads/Sectional Heads of the plants in the factory during discussions with me.

VI - Job Features, Recruitment and Training.

10. In the context of Curriculum making it is essential to evaluate the existing system that has developed in course of time in respect of staff pattern, policy of recruitment and training :

- a. Bulk of recruitment is in the cadre of Highly Skilled Technician/ Operator trainees who are either B.Sc.or Diploma in Engineering. This is virtually the working force of the factory. The recruitment is done through press-advertisement. The eligible candidates are interviewed. The selection is done on the basis of interview.
- b. Apprentices so selected are supposed to undergo one year's training. But no systematic training is followed. They undergo lectures on various plants in the fertilizer factory at Ghoresal for maximum one month in the Manpower and Training Department. After that they are posted in the plants where they learn

by natural process - "Work and Learn". In each plant one shift In-Charge has been allocated the duty of following up the training of these apprentices. This is over and above his own normal duties. After the completion of 1 year's training the plant Heads hold the interview and test and if found suitable appointed otherwise apprenticeship period is extended. In this process the apprentice learns only the job which he is supposed to attend after completion of training period. There is no development of the apprentice as such. The foundation is already weak and over it he could not be trained in the real sense, as such he will not prove potential to the organisation in the long run. During the apprenticeship period the role of Manpower and Training is minimum.

- c. The lower categories in operation are Semi-Skilled and Skilled Operators. They do not perform the job of operation but work as helpers. Actually the old helpers have been upgraded to Semi-Skilled and Skilled operators who continue to perform their original job. They are not trained for any operational skill. There is no recruitment from outside for this category.
- d. In Maintenance side too there are Semi-Skilled and Skilled technicians who are welders, turners, electricians etc. They have learnt the skill through their own efforts. The expertisation came through passage of time and personal devotion. No apprenticeship existed for imparting them the skill. From time to time few persons had been sent to Technical Institutes for upgrading their skill. Present incumbents mostly come from helpers.
- e. The position of the entire skilled/unskilled staff, qualification-wise, is that most of helpers/semi-skilled/skilled operators and technicians are

under-matric - their number being 151, 45 are Matric and 6 are Higher Secondary.

- f. The local management is now going to recruit 50 apprentices Grade I and 50 Apprentices Grade II, who are Matric or Higher Secondary Certificate boys for the first time. They will undergo 1 year's training and then appointed as Semi-Skilled and Skilled technicians in engineering discipline.

VII - Details of Existing Training System

11. Apprenticeship Training.

- a. It exists for only one cadre, i.e., Highly Skilled Technicians/Operators. As already explained earlier that no systematic training takes place except giving them preliminary theoretical input regarding the plants at Ghorasal.
- b. Apprenticeship does not exist for lower categories of apprentices.
- c. There is no apprenticeship scheme or training schedule for the Engineers and Chemists. They are directly appointed as Assistant Engineer/Assistant Chemist.

12. Technical Training Outside

From time to time, according to requirement, Technicians are sent to the following Institutes :

- a. Bangladesh Industrial Technical Assistance Centre.
- b. Bangladesh German Technical Training Centre.
- c. Bangladesh Oxygen.

The number of such employees' nominations are not many.

13. Supervisory and Management Development

From time to time the Enterprise sends the participants from factory and administration to the following Institutes:

- a. Bangladesh Management Development Centre.

- b. Institute of Business administration (Dacca University).
- c. Industrial Relation Institute, Tejgaon.

- mostly short term courses on Personnel Management, accountancy, Production Management, Maintenance Store Management etc. -

14. Foreign Training

Engineers and Chemists are sent abroad for training in plant operation and maintenance under foreign assistance programme like UNDP, Colombo Plan, USAID etc. Few officers have been nominated - 11 numbers during the last 2 years. Nominations to outside courses whether in country or abroad are done on adhoc basis. There can be a system which may be conveniently followed and persons according to that plan may be sponsored to outside programmes. I am expressing the views of many of the officers whom I met in some connection or the other.

15. Training Organisation of the Enterprise.

There is a Manpower Training Department in the factory which carries out the training programmes which I have mentioned earlier. It is understaff possibly due to the nature of their present activities.

16. Training Aids and Equipments.

Presently there are no equipments in training department, however, few training aids are available.

17. Training Library

There is library attached to Manpower and Training which contains only drawings and specifications of the various equipments in the factory. There are no books which are required by apprentices.

18. Training Premises

Present facilities are improvised comprising of 3 offices, a class room and a library room as stated above, however, formal premises are under construction.

19. Seminar/Group Discussions/Employees Development Programme.

During my stay of 8 months at Ghorasal, I witnessed only one Seminar on "Instrumentation" conducted by FOX BORO Instructor. Besides that, no employee's development programme/seminar was conducted during this period.

20. Safety Training

During my stay I did not come across any training programme on safety, although there is a Safety department headed by a Safety officer under administration department. This department is being strengthened at present. There is a "Safety Committee" and "Good House Keeping" Committee - but these do not seem to be active.

VIII - Strategy of Curriculum Development

21. In the previous pages I have tried to give in brief the background with which I proceeded with my work. Now it will be seen that the curricula have to be made which will encounter the present situation and past practices with the idea to improve the indigenous methods. It is a saying that an organisation is known by its employees. If we go deeper into this, it will be evident that the most important resource is human resource. If employees grow with the growth of organisation it is considered a good organisation. Growth of individual has to be looked after. Potential elements have to be identified and patted. All this process comes through an organised training system. I need not elaborate more and press on this issue as Bangladesh Chemical Industries Corporation itself is very much keen to have a systematic training function.

IX - Basic Logic Behind the Curricula

22. a. All the syllabi are need-based according to the job descriptions explained to me.
- b. Curricula have been worked out within the framework of existing set up.
- c. All the curricula are "Process" oriented.
- d. Due emphasis has been given on "Safety and Industrial hazards" in the syllabi.
- e. For Junior Category of apprentices, theory subjects like physics, chemistry and mathematics to the extent required to enable them to understand the technical subjects have been incorporated.
- f. Drawing is the language of engineering, hence contents what are necessary for them to perform their jobs after completion of their training have been included.
- g. Workshop practice during Institutional Training has been suggested to form a base to learn the skill while undergoing "On the Job " training.
- h. For B. Sc. and Diploma holders - theoretical inputs like Chemical Technology, Applied Mechanics, Unit operations, Unit Process , Chemistry etc. are given to the extent required.
- i. Besides the above, they will also study Drawing which is in 2 portions - Part I, is common to all and Part II, according to discipline.
- j. Workshop practice in their respective area/ disciplines has also been suggested to diploma holders in Electrical/Mechanical/Instruments with the idea to refresh their skill.
- k. For Engineers/Chemist (Probationers) and laboratory chemist the objective is to utilise their probation-ary period of 6 months fruitfully through training.

Sufficient inputs have been proposed to make them good Assistant Engineers/Assistant Chemists and Laboratory Chemists to perform their duties effectively

X- Curricul Drawn

23. Apprentice Grade I

Qualification : Secondary School Certificate/Tech Training Certificate.

Period of Training: 1 year = 52 weeks.

The training has been in 2 phases - Institutional 31 weeks and Inplant 21 weeks. During Institutional Training 1 week is meant for Induction and Pre-plant study, 2 weeks lectures on "Unit Process" and 28 weeks for workshop practice which is in two stages - (1) Basic Training of 14 weeks and (2) Intensive training of 14 weeks. Inplant training is in 3 stages - (1) General training in plants 8 weeks (2) Special lectures 1 week & (3) on theJob training 12 weeks. For details please see annex-4.

annex-4

24. Apprentice Grade II.

Qualification : Higher Secondary Certificate/Secondary School Certificate plus Technical Training Certificate.

Period of Training: 1 year = 52 weeks.

The training scheme for apprentice Gr. II is also in 2 phases - Institutional 25 weeks and Inplant training 27 weeks. During Institutional training 1 week is for Induction and Pre-plant study, 3 weeks for lectures on "Unit Process" and 21 weeks for workshop practice. The course contents remain almost the same as in case of apprentice Gr. I except some additions in theoretical subjects. This is due to the fact that basic skills of Gr. I & II are the same. The differentiation is of qualifications only. At apprentice Gr. II operation group has also been included which was previously omitted. For details please see annex 5.

annex-5

25. Apprentice Grade III

Qualification - B.Sc/Diploma in Chem/Elec/Mech/Electr/Instrument.

Period of Training : 52 weeks.

This is the back bone of the working force in the factory. The training of Apprentice Grade III has been suggested in

2 phases - (1) Institutional training 14 weeks and (2) In-plant training 38 weeks. In Institutional training one week is for Induction and Pre-plant study, 2 weeks for lecture on "Unit Process" and remaining 11 weeks for workshop practice. During workshop practice the apprentices of all disciplines shall undergo training in the shops mentioned against each discipline. Simultaneously they will also study the theoretical subjects like Related Trade Theory, Chemical Technology, Applied Mechanics and Drawing. After the completion of workshop practice, apprentices will attend lectures for 2 weeks on "Unit Process" and Pre-plant study of 3 days and then they will be posted to plants for in plant training. The In-plant training is in 3 stages - (1) General training of 5 weeks in which the Apprentice shall go to the plants for the period noted against each plant. On completion of general inplant training they will undergo 8 weeks course of "Special Lectures" where they will be taught about various types of equipments with special reference to design, types, construction, drawing and code numbers etc. (2) Auxiliaries like valves, bearings, conveyors, pipes and pipe fittings, their constructional features, materials of construction, merits and demerits, drawing and code numbers (3) Units Operations - related to fertilizer plants (4) physical Chemistry - revision and related to the fertilizer plants. On completion of special lectures the apprentices will be posted in the plant/section where they are going to be absorbed for "On the Job Training", as per their discipline. The allocation

to the plant and section is to be done by Manpower and Training in consultation with Plant In-charge, based on the aptitude and performance of the apprentice during 27 weeks of training. For details please see annex-6.

annex-6

26. Engineer/Chemist (Probationers) and Laboratory Chemist
Qualification : B. Sc. (Engineering) in
Electrical/Mechanical/Chemical/
Electronics/Instruments or
M.Sc. (Applied Chemistry/
Applied Physics) and
M.Sc. (Chemistry).

It was desired by Director (Engineering), Bangladesh Chemical Industries Corporation that these Assistant Engineers/Assistant Chemists and Laboratory Chemists should undergo some sort of training during their probationary period. On this basis the training programme of 26 weeks for them has been chalked out. Their training will be in 5 stages:

- a. Induction : 1 week
b. General : 8 weeks
c. Special lectures : 3 weeks
d. Process Simulator : 1 week
e. Intensive (On the : 13 weeks
Job)

annex-7

For objectives, various assignments during 26 weeks and methodology, please see annex 7.

27. Safety Training

Curriculum for "Safety Training" has been drawn giving the importance of safety in industry in general and fertilizer industry in particular. For various topics to be covered, methodology and other details, please see annex 8.

annex-8

20. Employees Development Programme

The basis of suggesting the Employees Development Courses is :

- a. Discussions with the Instructor of M/S FOX BORO
- b. Discussions with Mr. Jindai of M/S UNICO.
- c. Feed back received during discussions of curriculula for Apprentices Grade I, Grade II, Grade III, Engineers (Probationers) and Safety training with Heads/Sectional Heads of the departments of this factory.
- d. Informal discussions with shop floor personnel.

Based on the above assessment I have proposed programmes for:

- a. Additional Chief /Chief
- b. Middle Managers (Technical)
- c. Junior Managers (Technical)
- d. Master Operators/Technicians/Highly Skilled Technicians/Operators.
- e. Employees upto Master Operator/Technicians who are Matric/Higher Secondary with science.
- f. Employees upto Master Operator/Technicians who are Matric/Higher Secondary without science and VIII & IX class pass.
- g. Helpers/Semi-skilled/Skilled Operators
- h. Helpers/Semi-skilled/Skilled Technician (Mechanical)
- i. Helpers/Semi-skilled/Skilled Technicians (Electrical & Instruments).

I have tried to cover almost every category of employees in technical discipline and suggested programmes for them. All these courses are of immediate need to the Organization. The

annex 9

programmes for Additional Chief / Chief and partially for middle managers I have suggested to be conducted on Corporation basis. For details and methodology please see annex 9.

29. Associated Works

a. TRAINING MANUALS (Training Literature)

Training manuals are the important tool in the training system. Lot of literature is to be prepared for the apprentices as well as employees. Some manuals have been got prepared like Process Description of water treatment plant, Urea plant, Ammonia plant and about the organisation. These are to be improved further. Mr. Shoukry may improve these manuals and prepare the additional ones. I could obtain few copies of the training literature prepared by the Hindustan Fertilizer Corporation Ltd, India and the same were sent to Additional Chief (MFT) for his reference and future guidance. The literature can be developed on the same lines. Please see annex-10.

annex-10

b. Training Plan and Scope drawing of Training Institute.

While submitting the curriculum for Apprentice Grade I, I forwarded the scope drawing of Training Workshop and Institute as annex XIV and XV. I also submitted a forwarding note explaining all details. The Institute and Training workshop suggested by me can meet the needs of 150 apprentices including Engineers/Chemists (Probationers). For employees Development Programmes no extra facilities are necessary, the same Institute and workshop will meet requirements. For details please see annex-4.

annex-4

c. Equipments, Tools, Instruments and Machinery etc.

List of tools, equipments, machinery, instruments, training/audiovisual aids and stationery for apprentices have been made looking into the needs of the workshop. Tool/equipment and machinery have been given shopwise, i.e. Fittings, Machinshop, Welding etc. I have also suggested the raw materials for the different shops for making various jobs by the apprentices to start with. These have to be replenished as and when necessary. In the above list the Drawing equipments like Instrument box, Drawing board, T-Squares, scales and other accessories have also been mentioned. It should serve as an comprehensive and complete list. Due to shortage of time, detailed estimates could not be worked out. It may be followed up. For details please see annex 11.

annex 11

d. Staff Requirements

Staff requirements for the proposed Training Institute have been worked out giving full justifications. The staff has been broken into two sections - (1) Institution and office (2) Workshop. Qualifications, experience and job responsibilities of each staff (instructional) have been indicated. The requirements of the Employees Development Programmes have been taken into consideration. However, lectures from plants/professional institute/university etc. have also to be drawn according to necessity. For details please see annex 12.

annex-12

c. List of Books

Names of about 200 books for the proposed Training Institute have been sent to UNIDO, Vienna for

procurement. These books will serve as a base and will be of great help to the trainees and plant personnel as well. There was a provision of US\$ 5000 for the purchase of books/journals in the project document, but that had been exhausted in purchasing the books for Bangladesh Chemical Industries Corporation. So I have asked for additional funds with UNDP, Dacca. UNIDO, Vienna has informed me the cost involved as US\$ 7000/-. List of books is attached as annex 13.

annex-13

- f. I have also made a list of books for the Training Institute to be purchased by Urea Fertilizer Factory, Ghorasal/Bangladesh Chemical Industries Corporation and sent to the Additional Chief (Manpower Planning and Training). For details please see annex 14.

annex-14

31. UNDP Fellowships

There was a broad outline in the project of fellowship component for training abroad of local counterparts covering operation, engineering and training discipline. This assignment was to be performed by Mr. Shoukry, Training Adviser. UNIDO, Vienna desired me to proceed with the nominations for the above fellowship since Mr. Shoukry is delayed in coming to the field. Accordingly, I wrote to the General Manager to suggest names. The local management referred the matter to their Head Office, i.e., Bangladesh Chemical Industries Corporation with their recommendations vide their letters No. UFFG/MPT/15-B/448 dated 25th June 80 and UFFG/14.5/1674 dated 27th July 80. Please see annex 15, 16 & 16A.

annex-15
16 & 16A

32. Recommendations for the audiovisual aids (Overhead Projector) have been sent to UNIDO, Vienna vide letter No. BGD/78/002-41/004 dated 6th August 80. I have been informed by UNIDO that the order as per my recommendation has been placed.

33. The following training aids and books have been received from UNIDO, Vienna. They are meant both for Urea Fertilizer Factory, Ghorasal and TSP, Chittagong :

- a. Slide projector : 2 (two) in 2 cases
- b. Slide trays : 10 (ten) in 1 case
- c. Slide trays plus spare bulbs : 2 (two) in 1 case
- d. Cine projector : 2 (two) in 2 cases
- e. Projection lamp : - in 1 case
- f. Instructor Projector : 2 (two) in 2 cases
(table model)
- g. Day Light Screens : 2 (two) in 2 cases
- h. Eiseal (dual purpose). - in 4 cases
- i. Chalkboard(with one stand) : 1 in 1 case
- k. Book - An Introduction to Corrossion and Protection of metals by Gosta Wranglen
-one
- l. Book - UNIDO Guides to Information Sources
No. 21 - Information Sources on Fertilizer Industry - one
- m. Book - Industrial Water Pollution Control by W.H.Eckenfelder - one
- n. Book - Water Conditioning for Industry by S. F. Powell - one

The books have been sent to Additional Chief (MPT) Urea Fertilizer Factory, Ghorasal, Dacca, who has acknowledged the receipt of the same vide his letter No. UFFG/MPT/14.7/1740 dated 16th September, 1980.

The training aids are lying in my custody. Their disposal is to be settled by Mr. Shoukry, in consultation with Bangladesh Chemical Industries Corporation, who has since joined. These have been handed over by me to him since I am leaving on completion of my assignment.

XI - Resources for Implementation

34. UNDF Funds

There is a provision in the project document for the following as UNDP Inputs for both Ghorasal and TSP Chittagong:

- | | | |
|-----------------------|---|----------------|
| a. Audiovisual aids | : | US\$ 10,000/00 |
| b. Simulators | : | US\$ 90,000/00 |
| c. Typewriters | : | US\$ 800/00 |
| d. Airconditioners | : | US\$ 3,500/00 |
| e. Books and Journals | : | US\$ 5,000/00 |

One typewriter (Olivetti 98 18") and three airconditioners (Westinghouse A.H.- 155, 14,500 BTU two and Westinghouse A.H - 185, 18000 BTU one) have been received by me. The typewriter is in use and the airconditioners are fixed in the office rooms (1, 2 & 3) at C-7 flat 1st floor, Urea fertilizer Factory, Ghorasal. The above materials have been handed over to Mr. A. P. Shoukry, Training Adviser. Recommendations for the procurement of Simulator have been sent to UNIDO, Vienna vide our letter No. BGD/78/002-43/128 dated 24th September, 1980.

35. I D A Credit

I understand that Bangladesh Chemical Industries Corporation have been given US\$ one million for the establishment of Staff Training facilities at Ghorasal which will not only meet the needs of Ghorasal Factory, but all the fertilizer factories under Bangladesh Chemical Industries Corporation. Materialization is a time consuming process.

36. Indigenous Resources

The Bangladesh Government have allocated Takas 25 Lakhs in local currency for Bangladesh Chemical Industries Corporation training scheme under crash programme for "Apprenticeship Training". Most of the funds out of this will be utilised for the civil construction which is in the process of starting. Bangladesh Chemical Industries Corporation may not be left with any money to buy the equipments etc. locally. Resources have to be arranged for the implementation of this scheme from UNDP/UNIDO. The financial implications have been worked out by Mr. Shoukry.

XII - Guidance for the Task

37. It is quite obvious that such advisory job of making syllabi including training plan is very much dependent on the guidance and help from the local management as well as Head Office. I have already explained this in details under heading Training Plan and Curriculum Development (para 3). The main guidance was taken through group discussions with local management and subsequently from BCIC Head Office. After preparation each curriculum/scheme was discussed with my counterpart, with Divisional Heads and finally was discussed in the meeting of the Heads/Sectional Heads and General Manager. There used to be active participation and lot of suggestions came forth. After incorporating these I made the syllabi final and then were forwarded to Bangladesh Chemical Industries Corporation. Modifications suggested by Bangladesh Chemical Industries Corporation were finally incorporated.

Subsequent Development.

38. The syllabi drawn so far and explained in previous pages were discussed on 7th August 80 in a review meeting with Bangladesh Chemical Industries Corporation which was attended by Director (Planning, Implementation and Research), Director (Engineering), General Manager (Manpower Planning & Development), Deputy General Manager (Manpower Planning & Development) of Bangladesh Chemical Industries Corporation and Additional Chief (Manpower Planning and Training) of Urea Fertilizer Factory, Ghorasal, Senior Assistant Resident Representative, Programme Officer, UNDP and myself. I had an opportunity to explain the background of making the syllabi for the various courses and apprentices' schemes. My proposals were accepted in principle. They advised that some changes in the curricula are to be made in Head Office. The syllabi were modified in consultation with General Manager (Manpower Planning & Development), Bangladesh Chemical Industries Corporation. The curricula have been made process oriented. Curriculum for Laboratory Chemists and Apprentice Grade II (Operation) have been added. Correspondence in this connection may be seen at annex 17.

annex-17

39. Joining of the Training Adviser

Mr. A. R. Shoukry joined as Training Adviser lately on 15th August 80. Immediately after his joining I handed the copies of curricula prepared by me and my draft final report. I had preliminary discussions with him on the above and apprised him on the various aspects to be followed after my departure. I had also handed all the files to him for his information. Mr. Shoukry informed that he will be holding his office both at Ghorasal and Dacca. He has already informed UNDP, Dacca, UNIDO, Vienna and BCIC in this connection. His future plan of action is yet to be finalised with BCIC.

XIII - Recommendations

40. In order to implement the curriculum suggested above there should be a well equipped Training Institute as proposed.

41. There should be a regular intake of trainees. Generally, the wastage/casualties are 1-2%, but in Bangladesh it is more due to exodus to Middle-east countries, we can safely put 3%. Besides, the plants at Chittagong, Fenchuganj and so also at Ghorasal are in operation for the last several years. Quite a lot of employees may be retiring in seven years time. Bangladesh Chemical Industries Corporation will be installing fertilizer plants at Polash and Chittagong, where about 400 operators/technicians will be required. 35 Assistant Engineers/Assistant Chemists may also be necessary - since I do not know the schedule of both Polash and Chittagong, I may not be able to tell the number of trainees to be recruited every year but this gives the idea about the volume of work. Mr. Shoukry, Training Adviser, will calculate the number of apprentices to be inducted every year.

42. The proportion of engineers/M.Sc (Applied Physics and Applied Chemistry) should be increased at Ghorasal. Presently there are 22 Engineers in the total of 145 from Sub-Assistant Engineers to General Manager. The % comes to about 17. I understand that the set up has been revised and this number increased to 204. If it is a fact then Engineers/M. Sc (Applied Chemistry/Physics) may be inducted as the increase is of 59. One may not be able to increase % of engineers in one or two lots due to administrative reasons - but slowly and slowly 15 engineers/M.Scs. should be inducted through training regularly every year. In this way shortfall at Ghorasal may be made up and so also in other plants. For new plants at Polash and Chittagong the management had to be careful since the very beginning, while manning.

43. Intensive efforts are to be put in to develop the existing employees to be effective on their jobs. An annual calendar should be made in advance both for in-company and outside programmes. Employees should be deputed to the development courses according to that plan. The plan is to be made by the Training Committee at Head Office on the recommendation of the General Managers/Training Heads of various projects under Bangladesh Chemical Industries Corporation.

44. According to my past experience I have found that there is a general apathy or reluctance in employees towards the development courses specially in-company ones although it is in their own interest to learn to shoulder higher responsibilities. Some motivation by way of tea and snacks during break of sessions and lunch during lunchbreak proved to be quite fruitful. Besides the motivational factor, the participants get an opportunity to interact freely with their faculty and fellow participants during these breaks. Some time even financial motivation may have to be given in the interest of the organization.

45. Due emphasis is to be paid towards the development of managers. Managerial skill development is all the more necessary in view of the commitments of Bangladesh Chemical Industries Corporation in Second Five Year Plan, where it is expected an investment of Tk. 932.41 crores for the projects conceived/taken up by the Corporation. Managers are to be prepared to take up this challenge by exposing them to programmes on "General Management Development", "Project Planning and Implementation" and such other courses. Managers need to grow for the growth of the organisation.

46. There should be rotation within the plant, from plant to plant and so on. There are instances where persons are working at the same place since the inception- i.e. since the time Gherasal Plant went into production. This leads to job monotony. Mind is closed and ultimately leads to frustration. If the employees are rotated - upto Assistant Engineer/ Assistant Chemist/Assistant Superintendent within the plant and Engineer/Chemist/Superintendent from plant to plant, their minds will be open because they are imbibing knowledge and improving themselves all the time. Similarly at higher level - by the time the manager becomes Chief Engineer, he should have the knowledge of all the plants/departments. Job rotation is by far the best way of motivating the employees to learn and grow.

47. To implement the above recommendations and curricula it is essential that policy statement on training and development should be issued by the Corporation. Training is through involvement of each and every body working in the organization. Hence for active participation of all in this process it should have blessings of the top. The details of the policy statement have been given in para 1 under the heading "Summary".

XIV - Conclusion

48. Drawing out the curricula for various courses and apprentices is by no means an easy task. One has to pass through rigours. However, I have tried my level best to give as much as possible within the limited time. After implementation whatever shortcomings come to light, those can be made up.

I shall be too happy to clarify any point or provide any assistance that may be necessary even though I may not be in Bangladesh. It can be done through correspondence . My services will always be available.

49. In the end, I express my heart-felt thanks to Bangladesh Chemical Industries Corporation, Specially Dr. Shamsul Hoque, Director (FIR) and Mr. Giasuddin, Director (Engineering), who gave invaluable and practical guidelines to improve the curricula. My thanks to Mr. G. A. Matin , General Manager (Manpower Planning & Development) with whom I discussed the modifications several times. His suggestions were very practical and constructive. My special thanks to Mr. H.S. Rahman, General Manager, Urea Fertilizer Factory, Ghorasal, for his patronage, assistance and guidance all the time. My grateful thanks to Chief Operation Manager, Chief Engineer, all the heads/sectional heads and others for their time to time advice/guid-ance and their full fledged co-operation both professional and otherwise without which I would not have been able to complete the job satisfactorily. I am grateful to Mr. Jindai and his team of UNICO who had been giving all co-operation that I needed to fulfil my task. My special thanks to Mrs. N. Haque, Mr. Kocer, Resident Representative and all other officials of UNDP/PSP, Dacca, who had always been encouraging me in discharging my duties. My thanks are also due to M/S Hindustan Fertilizer Corporation Ltd, and Fertilizer Corporation of India Ltd. for their valuable materials and literature support. I shall be failing in my duty if I do not mention, specially, my counterpart Mr. Moinul Islam, Additional Chief (Manpower Planning & Training), who had been a source of inspiration to me all through officially, professionally and personally although at times we had quite a lot of differences nevertheless he did not lose his professional balance. Due to him I had been able to accomplish my task inspite of initial difficulties.

