

**AIRGRAM**

**DEPARTMENT OF STATE**

44

388-016

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3880016(3)

PD-AAD-142-A1

1979 MAR 2

DATE SENT

March 8, 1979

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FROM - USAID/Dacca

EO:12065: N/A

SUBJECT - Evaluation Summary of Ashuganj Fertilizer Plant (388-0016)

REFERENCE -

**AIDAC**

Attached for your reproduction and distribution is the PES on Ashuganj Fertilizer Plant (Project No. 388-0016).

**SCHNEIDER**

Attachment: a/s to be run w/airgram

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DRAFTED BY <b>PRO:ASayed:as</b>	OFFICE <b>PRO</b>	PHONE NO. <b>240</b>	DATE <b>3/6/79</b>	APPROVED BY: <b>A/DD:WT Oliver</b>
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A. I. D. AND OTHER CLEARANCES  
**PRO:MSullivan** \_\_\_\_\_ **UNCLASSIFIED** **A/DD:WT Oliver** \_\_\_\_\_  
CLASSIFICATION

att. TOAID-A-010

CLASSIFICATION  
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE <b>Ashuganj Fertilizer Plant</b>			2. PROJECT NUMBER <b>388-0016</b>	3. MISSION/AID/W OFFICE <b>Dacca</b>
6. KEY PROJECT IMPLEMENTATION DATES			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit only. Use only an AID/W Administrative Code, Fiscal Year, Serial Number, and ending with No. 1 each FY) <b>79-6</b>	
A. First PRO AG or Equivalent FY <b>75</b>	B. Final Obligation Expected FY <b>78</b>	C. Final Input Delivery FY <b>81</b>	5. REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION <input checked="" type="checkbox"/>	
b. ESTIMATED PROJECT FUNDING			7. PERIOD COVERED BY EVALUATION	
A. Total <b>\$416,000,000</b>			From <b>2/12/75</b>	
B. U.S. <b>\$53,000,000</b>			To <b>2/22/79</b>	
			Date of Evaluation <b>2/22/79</b>	

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues, cite those items needing further study (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airmgram, SPAR, PIO, which will present detailed request.)

A. ACTION DECISIONS	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. USAID should continue to evidence strong interest in Foster Wheeler cos estimates, through contact with project principles.	Mr. Groceman	Continuing
2. WBS should closely monitor the FWL training program with respect to FWL needs and make appropriate recommendations to FWL.	Mr. Groceman	Continuing
3. There should be a combined donor effort led by the Bank in its role as donor representative to impress upon AFCC the importance of retaining the participants after training.	Mr. Toner	ASAP
4. AFCC should be contacted and requested to provide a full status report as to the availability of natural gas for the Ashuganj plant.	Mr. Groceman	March 31, 1976
5. Incentives, penalties, bonus arrangements etc. for FWL should be explored with IBRD and as appropriate, with other donors.	Mr. Groceman	March 31, 1976
6. The FWL prepared CPM should be carefully monitored by WBS and USAID.	Mr. Groceman	Continuing
7. Encourage AFCC to expedite its contracting with a management assistance firm.	Mr. Groceman	ASAP
8. Constraints facing other donor financing should be determined by the Bank. Appropriate attempts should then be made to overcome the identified constraints.	Mr. Toner	ASAP
9. After consultation with the appropriate parties on the major issues, consideration should be given to a revised completion date. Any funding implications inherent in a revised completion date should be thoroughly discussed at the earliest possible date with all donors.	Mr. Groceman	ASAP

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input checked="" type="checkbox"/> Other (Specify) <b>NONE</b>
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A. <input checked="" type="checkbox"/> Continue Project Without Change
B. <input type="checkbox"/> Change Project Design and/or
<input type="checkbox"/> Change Implementation Plan
C. <input type="checkbox"/> Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Name and Title)

Clarence Groceman, Deputy Chief, RDE  
 Edwin Callahan, Chief, RDE  
 Larry Crandall, Deputy Program Officer  
 G. McCoy, CONT

12. Mission/AID/W Office Director Approval

Signature *Richard Podol*  
 Typed Name **Richard Podol, A/DIR**  
 Date **1 24 79**

## ASHUGANJ FERTILIZER PROJECT

### EVALUATION ISSUES PAPER

#### Introduction

The attached Callahan/Toner memorandum dated 2/12/79 outlines in detail, the major issues of this project. This listing restates the major problems with recommended approaches for managing them. Reference is also made to the attached Groceman evaluation report dated 2/1/79.

#### 1. Cost Overruns

There are significant differences between Foster Wheeler (FWL) and AFCC/Williams Brothers (WBS) in determination of estimates concerned with total foreign exchange and local cost financing required to complete the project. In addition, the \$ 2.5 million Iranian pledge may not become available.

#### Recommendation:

WBS should continue to monitor carefully FWL project cost estimates. USAID should continue to evidence strong interest in these estimates, through contact with project principles and written comments if necessary. See Issue 6 for Completion Date viz cost overruns.

#### 2. Construction Progress

A. Current indications suggest that both the Korean Development Corporation and Vinnell will complete their respective sub-contracts on schedule. However, FWL's capability to complete other work on schedule is dependent upon the availability to FWL of skilled local labor, a majority of which must be trained on-site by FWL. If the FWL training program is not successful from the dual standpoint of: (1) training effectiveness (skills imparted); and (2) retention (keeping trained personnel on the job), then FWL may have to import considerable numbers of skilled TCNs.

Recommendation:

WBS should closely monitor the FWL training program with respect to FWL needs and as appropriate make actionable recommendations to FWL.

B. Related to A, is the question of AFCCs ability to retain personnel being trained to run the plant after completion. The Fenchuganj and Ghorasal plants have already lost people to the Middle East. These plants were to have provided some personnel to Ashuganj, but now they are barely able to meet their own needs.

Recommendation:

There should be a combined donor effort led by the Bank to impress upon AFCC the importance of retaining the participants after training. Consideration should be given to areas concerned with wage rates, fringe benefits, job incentives, etc. AID should ask the Bank (in its role as principal donor representative) to determine what wage rates/fringe benefit packages are necessary to keep people on the job.

3. Natural Gas

It is not firmly known if the natural gas required for prilled urea production will be supplied from the Titas Gas Field as originally planned. It is known that additional gas will be needed for plant operation.

Recommendation:

Recommend that USAID contact AFCC and request AFCC to provide a full status report as to the availability of natural gas for the Ashuganj plant.

4. Project Management

The quality of project management will largely determine project completion and related costs.

A. Working relationships between WBS and AFCC appear to be professional.

Recommendation:

None

B. Working relationships between FWL and WBS and FWL and AFCC appear, at times, somewhat strained, notably when WBS in accordance with contractual responsibilities has had to question FWL in such areas as cost estimates and project scheduling.

Recommendation:

Monitor site relationships closely. WBS is a new project entity and as problems are solved, working relationships should improve.

C. Since the FWL fixed fee<sup>\*</sup> is 99.8% disbursed, one could assume FWL has little incentive for keeping its most highly qualified personnel at Ashuganj.

Recommendation:

Incentives and or penalty/bonus arrangements should be re-explored with AFCC and as appropriate with other donors.

D. Critical Path Method (CPM)

FWL is preparing a revised CPM.

Recommendation:

When finished WBS should ascertain that the CPM is properly prepared.

Schedules and related bar charts should be similarly reviewed and at owners insistence the CPM should be kept up-dated. WBS input will be a key factor in initially determining and maintaining the quality of this management tool. AID should monitor related activities closely. Bank organized on-site periodic meetings should be arranged to review progress. Meetings should include gas discussions.

\* includes design, purchasing, inspection/procurement, subcontract arrangements, profit.

E. Plant Operation and Maintenance Contract

As a requirement to certain donor financing (e.g. IDA), AFCC is required to procure the services of a management assistance firm qualified to provide plant operation/maintenance assistance to AFCC for three years after plant start-up.

Recommendation:

Strongly encourage AFCC to expeditiously contract for these services, in accordance with IDA recommendations. Emphasize certain donor funding is directly dependent on AFCC obtaining qualified management services.

5. Consortium Funding

Related to issue 4E, is the question of the timeliness of the provision of all promised donor financing. The AFCC/WBS December report states serious fiscal problems could occur if supplementary donor financing is not available within two months. On January 31, 1979, AID released an additional \$ 10 million which has somewhat relieved the pressure. As noted in issue one, the Iran pledge of \$ 2.5 million may fall out.

Recommendation:

Suggest to the Bank that they determine the constraints facing each donor. Appropriate attempts should then be made by each donor to overcome the identified constraints. (Note: the major constraint at this time is the lack of a management assistance contract).

6. Completion Date

Due to the major issues listed above, the September, 1980 project completion date does not appear feasible.

Recommendation:

After consultation with the appropriate parties on the major issues listed above, if merited, consideration should be given to a revised project completion date. This does not mean that we and the other donors

should not continue to insist upon completion by September, 1980. A revised completion date simply recognizes the forward planning and commitment imperatives of the several donors. Any funding implications inherent in a revised completion date should be thoroughly discussed at the earliest possible date with all parties.

Drafter: Larry Crandall, PRO

Attachments: as stated

Mr Crandall, PRO

February 12, 1979

Edwia D. Callahan, RDE

Ashuganj Fertilizer Project

Mr. Joseph S. Toner, Director

The following comments are concerned with three critical subject project areas, specifically cost estimates, status of construction progress and overall management.

Cost Estimates

Recent Foster Wheeler cost estimates have caused concern as to the magnitude of total cost. However, the credibility of these estimates appears questionable. e.g., a 10/31/78 FWL estimate for local costs of \$203,050,000 (dol. equivalent) was followed on 11/15/78 by a subsequent estimate of \$227,663,650. The difference of \$24,613,650 reflects a 12% increase within a two week period. An AFCC/WBS letter dated 1/22/79 cites the above estimates and refers to them as a demonstration of irresponsible cost forecasting - the result of either poor cost control information or inadequate budgeting. In view of the above, one has to question the credibility of recent FWL estimates concerned with total project cost and the respective FX and LC components.

On the other hand, project cost estimates provided by WBS via the AFCC monthly reports appear knowledgeably prepared - an opinion of my part strengthened by related discussions with the WBS Program Manager. Thus, the AFCC monthly cost estimates noted below are based on WBS input and are, I believe, reasonably accurate.

( U.S. \$ Million)

	<u>FX</u>	<u>LC</u>	<u>Total</u>
AID Project Paper, July 1978			
Table I, Page 43 (WBS estimate)	\$ 233.9	\$ 182.1	\$ 416
August 1978 AFCC monthly report	246.116	172.196	425.000 <sup>1/</sup>
September " " "	250.053	175.000	425.053 <sup>1/</sup>
October " " "	252.444	160.325	412.769 <sup>1/</sup>
November " " "	249.393	168.777	418.171 <sup>1/</sup>
December " " "	249.393	174.285	423.678 <sup>1/</sup>

<sup>1/</sup> Includes a schedule contingency of \$6.688 million (\$3,884 FX and \$2,804 LC).

As background information related to interpretation of the above, the initial estimated cost of this project was \$249.4 million\*, i.e., \$142.3 million FX and \$107.1 million LC (dol. equivalent). Reasons for the subsequent cost increase from \$249.4 million to \$416 million\*\* are well documented in the AID Project Paper of July 1978 concerned with Supplementary Project Financing.

Interestingly, if the schedule contingency of \$6.688 million were removed, the December 1978 total estimate is about one million more than the April 1978, \$416 million estimate provided by WBS for our Project Paper. This schedule contingency was not included in the Project Paper estimate but first appeared in the AFCC August monthly report and then in all subsequent monthly reports. Further, if one considers recent currency rate changes and the related problems encountered in preparing accurate budgetary estimates concerned with the procurement of services and commodities from those foreign sources where donor financing was denominated in dollars equivalents, the FX range of about 3% reflected above in the above AFCC/WBS monthly cost estimates is surprisingly small.

The above is not to say that there will not be any sizeable monetary increases on this project. This may very well happen - especially when we consider the numerous pitfalls inherent in a seven donor financed project of this magnitude and complexity being implemented in a land as barren of project related resources - both human and material - as Bangladesh.

Rather, the purpose for citing the above estimates is to put current project cost estimates - based on the best information available - into proper perspective. At a February 6, 1979 meeting with Mr. Yusuf, AFCC Managing Director, he stated WBS will continue to evaluate FWL cost estimates and also noted responsibility for FWL cost estimates would now be vested in their on-site personnel, rather than in the Reading Office. With future cost estimates being prepared at the project site and subject to the appraisal of AFCC/WBS coupled with a recently improved FWL fiscal reporting format, I suggest we have reason to be optimistic as to the quality of future FWL cost estimates.

### Construction Progress

This project will be considered completed when the General Contractor, BWL, certifies that the plant has met the performance tests specified in the FWL and AFCC contract. These tests require that plant production of prilled

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\* IDA Appraisal Report No. 598 BD, December 18, 1974.

\*\* WBS Estimate, April 1978.

urea shall equal or exceed 80% of rated capacity for sixty (60) consecutive days. The current project schedule anticipates project completion - as defined above - by September 30, 1980. Related aspects of the project schedule call for completion of civil work/mechanical by June 26, 1980 and subsequently completion of performance tests by September 30, 1980. I have gone into some detail here as I believe reference to a September 1980 project completion date without defining same can be somewhat misleading .

After completion of dynamic compaction work, (repeated drops of a heavy weight in a grid pattern across the site), the project was turned over to the General Contractor, FWL, in March 1978. At this point the project had suffered a past delay of some twenty months. FWL then began civil works construction in March, 1978 and the most recent AFCC/WBS report evaluated total construction progress as of December 31, 1978 at 13%. This is in accordance with a planned progress of 13% and puts the project on schedule.

A review of expatriate sub-contractor performance notes the Korean Development Corporation is close to maintaining their schedule whereas Vinnell arrived on site in December, 1978, about three months behind schedule. Construction by Vinnell of the compressor house and ammonia substation in accordance with the schedule completion date of August, 1978 is critical. I am optimistic on this one and believe if Vinnell is able to obtain needed materials on time, the August, 1978 date remains feasible. In brief, I feel both KDC and Vinnell will complete their respective subcontracts within the schedule time allocated. However, there remains considerable and critical construction work to be done by the General Contractor, FWL. FWL capability to effectively do this work will largely depend on the availability of Bengali skilled labor that for the most part will have to be trained. This training began during January 1979 and will embrace in total nearly one thousand personnel in such skills as welding, pipe fitting, carpentry, electrical wiring, etc. The FWL Project Director informed me as of early February, 1979 some 450 personnel had been trained. There are two factors to be considered here (1) the effectiveness of the training and (2) the possibility of losing the trained/skilled labor to the Middle East as the result of high wage rates and import incentives. The successful completion of the training program and then keeping the trained personnel at work on the job is essential to FWL construction efforts concerned with effectively meeting the project schedule. If this is not accomplished, FWL will either have to (a) bring in considerable expatriate labor which will significantly increase project cost or (b) struggle with inadequate skilled labor resources which will result in both lengthy project delay and again a sizeable project cost increase. Our July 1978 Project Paper, Annex F, page 6 estimates delays

to "..... add \$3.5 million per month to project costs ....." . Frankly, I am somewhat surprised that FWL found themselves in a position where their contractual performance largely depends on the availability of skilled Bangali labor as described above.

The present project schedule allows ~~twentyone~~ more months for project completion i. e., from January 1, 1979 thru September 1980. This period will include two monsoon seasons. Discussions with individuals who are familiar with construction activities in Bangladesh indicate monsoon seasons retard normal construction progress by some 30% - largely the result of extremely heavy rains/flooding occurring during June, July and August. Needless to say any soil foundation work or ground utility installation would not be feasible during these months. If we adjust for five month monsoon seasons based on the 30% retard factor applicable to the three heavy rain months, past construction progress would relate to 13% within 8.5 good weather months (10 months - 30% x 5) with 87% remaining to be done within 18 good weather months (21 months - 30% x 2 x 5).

In addition to the above, other critical factors directly influencing project completion include overall project management, obtaining from foreign sources necessary commodities/material on time, availability of sufficient FX and LC, availability of certain locally manufactured material, labor strikes, properly preparing and following up on letters of credit required for procurement of both goods and services, preventing delays in issuance of import licenses/permits, problems with Government of Bangladesh controlled prices compared to actual market place prices, source origin requirements of different lenders, etc.

In just about all of the above factors one could cite current examples adversely effecting construction progress. In addition to construction progress plant performance tests merit comment. In this respect I understand there is some question if the natural gas required for prilled urea production will be supplied from the Titus gas field as originally planned. This conflicts with a statement in the AFCC/WBS December report which indicates another gas field would be drilled in the Titus field which would assure ample supply for AFCC. However, if gas comes from another source there is the question of chemical composition. The FWL and AFCC contract notes the Titus field as the source and provides related specifications as to the chemical composition of the gas. Any deviation from these specifications, e.g., as the result of another gas source, could delay completion of the performance tests and fuel lengthy contractual disputes between FWL and AFCC.

In sum I do not feel the September 1980 completion date for project completion is feasible. There are simply too many potentially adverse variables inherent in this project I anticipate a minimum delay of about six months due largely to civil works construction. On this basis our Project Paper estimate for completion by March, 1981 is more realistic. Completion of the mechanical work should go on schedule - particularly where related equipment has been ordered or is now on site. It is too early to express an opinion on the three month period provided for implementation of the performance tests. The matter of the natural gas supply is potentially serious and will be brought to the attention of AFCC.

As a final comment, a six month delay would schedule project completion for March 31, 1981. This is in accordance with the expected project completion date noted in Annex 1, page 2 of our July 1976 Project Paper.

#### Project Management

The quality of project management will be the prime factor in determining time of project completion and related costs. In this respect, AFCC, FWL and WBS are principal entities. AFCC is a new semi-autonomous government organization brought into existence for this project and charged with responsibility for construction and operation. Past evaluation of AFCC by the donors recognized that AFCC had limited resources that were not adequate for effective project implementation. Recognition of this deficiency lead to the procurement of a firm qualified in project management and supervision of construction - WBS was selected for this role and is now under contract to the owner (AFCC). The working relationships between AFCC and WBS appear excellent. All signs indicate the comparatively recent procurement of WBS services will prove to be a strong asset to effective project implementation.

My observation of relationships between FWL and WBS indicate they are at times somewhat strained. This is similarly true for AFCC and FWL. I would like to see this condition improve. From a management viewpoint it is important that WBS have the full confidence of FWL. The current condition is understandable - particularly where WBS in accordance with contractual responsibilities has had to evaluate and question certain FWL activities e.g., project cost estimates, construction scheduling, etc. As these matters are straightened out relationships should improve.

FWL, as the General Contractor, is responsible for project completion including plant performance tests. Previous comment had noted their

dependency on obtaining skilled Bengali labor. Further, as the FWL fixed fee is 99.8% disbursed, one could argue this leaves FWL with little incentive to assign their best people to the Ashuganj Project. Rather, the project could be used as a catch all for mediocre talent. I don't feel this has happened; however, I would prefer to see an incentive built into the project that would encourage expeditious completion. In this respect perhaps we should consider some type of penalty/bonus arrangement.

It was surprising to find a Critical Path Method (CPM) for this project had not been prepared. Fortunately, the AFCC November 1978 report notes FWL is now preparing a CPM. CPM is a valued management tool and with proper emphasis given to critical items subsequent project work schedules should be realistic. Hopefully, schedules/related bar charts based on the CPM will be available for the January 1979 AFCC monthly report. It is important that the CPM be kept current, otherwise its value will decrease. I would look to WBS input in this regard.

As previously indicated, project related construction resources are almost non-existent in Bangladesh. In this sense both ISEC and Vinnell represent on site valued resources. The project management and construction expertise vested in these two expatriate firms may well be an asset in areas not currently foreseen.

As a final point it is most important that consortium funds be expeditiously provided on a pro-rated basis in accordance with past agreement. The AFCC/WBS December report states serious fiscal problems could occur if supplementary financing funds are not in place within two months. Our January 31, 1978 release of an additional \$10 million from loan 003A to some degree relieved the immediate need. However, it is still most important that AFCC expeditiously procure the contractual services of a management assistance firm qualified to provide plant operation and maintenance assistance to AFCC for a period of some 3 years. Evidence that these services have been procured is essential to certain lender financing, notably the IDA.

As a final comment, it should be noted that the IPRD functions as principal donor representative and thus plays an important role essential to overall project management.

cc: Mr. Podol, DD  
Mr. Groceman, RDE  
~~UM~~: Crandall, PRO  
Mr. Brennan, ASIA/PD, AID/W

February 1, 1979

## EVALUATION OF ASHUGANI FERTILIZER PROJECT

### Summary:

The Ashugani Fertilizer Plant is designed to produce 925 MT of Ammonia and 1600 MT of Urea per day.

The original estimated cost of the plant was \$249.4 million (\$142.3 million FX and \$107.1 million equivalent L.C.). AID provided \$30 million in loan funds to cover a portion of the cost of the FX. Other lenders provided the remainder of the funds. The BDG provided all of the L.C.

On November 29, 1975 a contract was signed between Foster Wheeler Limited and the AFCC for design, construction and start up of the plant. The contract completion date was 38 months after signing of the contract (January 1979).

Due to bad soil conditions, design changes, management deficiencies, and the decline in the value of the U.S. dollar the estimated cost has increased to \$418.2 million (\$249.4 FX and \$168.8 million equivalent LC). AID provided an additional \$23 million in supplementary funding to help finance the cost overrun. Other lenders are in the process of providing the remaining \$84.1 million FX. The BDG will continue to provide the L.C. costs.

Dynamic compaction was performed in the critical foundation areas of the site to reduce the possibilities of sub-soil liquifaction. The compaction started in October 1977 and was completed in late February 1978. On March 1, 1978 the site was handed over to FWL for commencement of construction. The project completion date was extended to September 1980.

### 1. Conditions that Indicate Mechanical Completion of the Plant

- A. All performance tests on the component parts of the plant have been satisfactorily completed in accordance with the terms of the contract.
- B. After completion of the performance tests in A. above the plant shall, under supervision by FWL, produce, in a seven consecutive calendar day period, 11,200 MT of prilled urea having a 46.1 % minimum, by weight, ammonia and 6,510 MT of 99.5% ammonia using minimum standards of raw material and utility consumption.

2. Project Inputs

- A. AID has provided \$53 million in loan funds to finance a portion of the FX costs of construction of the plant.
- B. The lenders consortium requested AID to fund a management study to determine how management deficiencies could be corrected. In January 1978, Williams Bros. Process Services Inc. (WBS) began this study under an AID requirement contract. The study was completed and a final report submitted in July 1978. The AFCC then requested WBS, through AID funding, to provide implementation management expertise for the project until October 1978. AID grant funded \$643,000 to finance the WBS services. (In October 1978 WBS entered into a contract with the AFCC to provide project implementation services. This contract was financed by project funding).
- C. The BDG is providing \$160.8 million equivalent of taka.
- D. Other donors; IDA, ADB, ODM, KFW, Swiss and Iran, will provide \$196.4 million FX financing.

3. Project Outputs

- A. Under proper management the plant should produce 528,000 MT of bagged Urea per year.
- B. The AFCC will send 53 participants to the factories of the major equipment manufacturers for in-depth maintenance training.
- C. The Project will fund the costs of an operations assistance firm to provide top management supervision for plant start-up and operation for three years beyond the project completion date.

4. Assumptions for Achieving Outputs

- A. Local construction workers, especially the mechanical tradesman, will be sufficient in both quantity and productivity to meet the September 1980, construction completion date.
- B. The AFCC will be able to attract and retain an adequate number of skilled managers and operators to operate the plant after completion of construction.
- C. The BDG will provide 50,000,000 standard cubic feet of natural gas per day as feed stock for plant operations.

- D. That FWL will schedule, in a timely manner, the delivery of all equipment and materials needed to construct the plant.
- E. That sufficient funds, both FX and I.C., are available to procure the necessary equipment, materials and services to complete the project.

5. Goal

- A. To increase and stabilize fertilizer supplies in Bangladesh.
- B. By 1982, 750,000 MT of Urea will be required by the Bangladesh.

The Ashuganj plant will provide approximately two-thirds of this and significantly reduce FX expenditures (at \$190/MT the savings would be about \$90 million per year).

6. Anticipated Problems

- A. Under the present AFCC pay scale it is questionable whether qualified personnel can be retained to efficiently operate the plant after completion of construction.
- B. The 53 participants are under bond to stay at Ashuganj after completion of their training. The bond is so low that a qualified worker could easily forfeit the bond and make up its costs with less than month's pay in the mid-East.
- C. If a sufficient quantity of qualified tradesmen cannot be found locally it may be necessary to import TCN's. This would increase the FX requirement or delay completion of construction beyond September 1980. (The cost of a months delay is estimated to be \$3.5 million. This cost covers contractors personnel, overhead storage charges and interest on loans. It does not allow for any loss in fertilizer production).

7. Lenders

Each of the seven lenders has restrictions on the use of their funds. The AFCC, WBS and FWL are now preparing a plan to allocate the uncommitted funds to purchases that will conform to these restrictions and commit the lenders funds to the fullest extent possible.

CHGroceman:src.

2/1/79