

# COMMITTEE ON PUBLIC UNDERTAKINGS

(THIRD LOK SABHA)  
THIRTY EIGHTH REPORT

**PYRITES & CHEMICALS DEVELOPMENT CO. LTD.**

(MINISTRY OF PETROLEUM AND CHEMICALS)

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COMMITTEE ON PUBLIC UNDERTAKINGS  
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<u>Page</u>	<u>Para</u>	<u>Line</u>	<u>For</u>	<u>Read</u>
2	6	7	'would'	'could'
4	14	2	'pileed'	'piled'
9	34	11	'quide'	'guide'
13	49	2	'ANF'	'ANF'
39	-	14	<u>delete</u>	'sult'
41	Sl.No.6 Col.3	2	'1.27'	'1,27'
43	Sl.No.2 Last but one		'educing'	'reducing'
45	Sl.No.6	4	<u>delete</u> 'the'	occurring at the end
53	Sl.No.35	7	'undertak- ing'	'undertakings'

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# COMMITTEE ON PUBLIC UNDERTAKINGS

(THIRD LOK SABHA)

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15. Shri Awadheshwar Prasad Sinha@

SECRETARIAT

Shri A. L. Rai—*Deputy Secretary.*

Shri M. M. Mathur—*Under Secretary.*

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\*Appointed as Chairman w.e.f. 24-1-1966 vice Shri Panampilli Govinda Menon ceased to be a member of the Committee on his appointment as Minister.

†Elected with effect from 7-8-1966 in the vacancy caused by the demise of Shri S. V. Ramaswamy, Shri S. V. Ramaswamy was elected w.e.f. 23-2-1966 in the vacancy caused by the resignation of Shri Harish Chandra Mathur.

\*\*Elected w.e.f. 23-2-1966 in the vacancy caused by appointment of Shri Panampilli Govinda Menon as Minister.

††Elected w.e.f. 7-5-1966 on the retirement of Shri Lokanath Mishra from Rajya Sabha on 2-4-1966.

‡Elected w.e.f. 7-5-1966 on the retirement of Shri T. S. Pattabhiraman from Rajya Sabha on 3-4-1966.

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¶Elected w.e.f. 18-5-1966 in the vacancy caused on the resignation of Shri M. N. Govindan Nair on 6-5-1966.

@Elected w.e.f. 18-5-1966 in the vacancy caused on the resignation of Shri M. Govinda Reddy on 6-5-1966.

(ii)

## INTRODUCTION

I, the Chairman, Committee on Public Undertakings, having been authorised by the Committee to submit the Report on their behalf, present this Thirty Eighth Report on the Pyrites & Chemicals Development Co. Ltd., Dehri-on-Sone.

2. This Report is based on the examination of the working of the Pyrites & Chemicals Development Co. Ltd. upto the year ending 31st March, 1966. The Committee took the evidence of the representatives of the Pyrites & Chemicals Development Co. Ltd. on the 15th December, 1966 and the officials of the Ministry of Petroleum and Chemicals on the 19th December, 1966.

3. The Report was adopted by the Committee on the 3rd March, 1967.

4. The Committee wish to express their thanks to the officers of the Ministry of Petroleum and Chemicals and the Pyrites & Chemicals Development Co. Ltd. for placing before them the material and information that they wanted in connection with their examination. They also wish to express their thanks to the Indian Bureau of Mines, who, on request from the Committee, furnished information on certain points.

NEW DELHI;  
3rd, March, 1967

Phalgun 12, 1888 (S)

D. N. TIWARY,  
Chairman,  
Committee on Public Undertakings.

## INTRODUCTORY

Sulphur and sulphuric acid are some of the basic materials for chemical industry. With the huge expansion schemes for the manufacture of fertilizers etc., demand for these materials in the country has been increasing. So far, all the sulphur required in the country has to be imported involving considerable foreign exchange. In order to reduce dependence on imports, the idea of establishing a project for mining pyrites ore at Amjhore was conceived in 1955. A scheme for the manufacture of sulphur from pyrites ore was accordingly included in the programme of the National Industrial Development Corporation Ltd. Detailed exploration of the Amjhore area was taken up by the Indian Bureau of Mines in May 1957 and was completed in 1960. The investigations of the Bureau established proven reserves of pyrites at 8 million tonnes, and indicated further possibility of reserves at 384 million tonnes. These deposits were considered sufficient for launching all types of projects based on sulphur and sulphuric acid.

2. For the purpose of exploiting the reserves of pyrites ore, the National Industrial Development Corporation Ltd. formed a subsidiary company under the name and style of 'Pyrites & Chemicals Development Co. Ltd.', with effect from the 22nd March, 1960.

3. The Company assumed independent status with effect from the 16th September, 1963 and was transferred to the administrative control of the Ministry of Petroleum & Chemicals with effect from the 21st November, 1963.

4. The Company is at present concerned with the implementation of the following projects:—

- (i) Mining Project at Amjhore;
- (ii) Sulphuric Acid Plant at Sindri; and
- (iii) Plant for extraction of sulphur.

## II

### MINING PROJECT AT AMJHORE

#### A. Establishment of the Project

5. Approval of Government of India for establishing a project for mining pyrites ore at Amjnore was given in 1955, but the Indian Bureau of Mines commenced investigation work only in May, 1957. Asked about the reasons for Government taking so much time in asking the Indian Bureau of Mines to commence investigation work, the representative of the Ministry of Petroleum and Chemicals said that a lot of preliminaries like financial pattern, floatation of a company, sponsors etc. had to be worked out. He added that at one stage the idea was that the Bihar Government would share the cost of the project, but it did not materialise. Since the then Ministry of Mines was not in a position to undertake it itself, the project was entrusted to National Industrial Development Corporation Ltd., for sponsoring. Thus, at the first stage, the consideration of the question as to what should be the structure and agency for mining Amjnore Pyrites took three years.

6. *The Committee are not able to understand why factors like financial pattern, floatation of the company, etc., had to be considered and settled before establishing adequate reserves of pyrites ore in the area. The first step ought to have been to ask the Indian Bureau of Mines to carry out investigation work and if the preliminary work in that regard indicated that there would be adequate reserves, the Ministry concerned would have taken up the consideration of the factors referred to above. Thus till the nature and quantum of reserves were established the size and pattern of the company could not have been realistically determined. But nearly three years were wasted in contemplating the formation of a company before establishment of the reserves.*

#### B. Detailed Project Report

7. The detailed project report for production of 4.8 lakh tonnes of pyrites ore per year was prepared for the first time by the Indian Bureau of Mines at the instance of the company. The work was taken in hand by the Bureau in November, 1960 and the report was submitted to the Pyrites & Chemicals Development Co. Ltd., in May, 1961. It was considered by an Expert Committee set up by the Board



of Directors and was submitted to the National Industrial Development Corporation Ltd. (the holding company) for approval and onward transmission to Government for final approval. The National Industrial Development Corporation Ltd. (N.I.D.C.) approved the report in March, 1962 and forwarded it to Government for approval. While examining the report, Government decided in August 1962 to cut down the production capacity from 4.8 lakh tonnes to 2.4 lakh tonnes and called for a revision of the detailed project report.

8. The Committee enquired as to why production capacity was not determined before undertaking the preparation of the detailed project report. They were informed that originally the intention was to extract sulphur from pyrites ore with the help of a Norwegian process, called Orkla process. For extracting sulphur under that process, lump ore was required. The company had estimated the demand for lump ore at 3,00,000 tonnes per year and on this basis, the Indian Bureau of Mines had fixed the capacity for run-of-the-mine ore at 4.8 lakh tonnes per year. However, the tests regarding the suitability of the Orkla process conducted in November, 1960 proved unfruitful, and the process had to be abandoned.

9. During evidence the Managing Director stated that when the Orkla process was found unsuitable, it was decided to produce sulphuric acid directly from pyrites ore and lump ore was no longer a consideration. The production capacity was therefore reassessed in the light of the demand for pyrites ore which was in turn dependent on the demand for pyrite-based sulphuric acid. This indicated a demand for 2.4 lakh tonnes of run-of-the-mine (r.o.m.) ore per year and Government called for a revised project report for the reduced production capacity.

10. *The Committee consider that the preparation of the detailed project report has not proceeded with in a systematic manner. The quantity of ore required was not determined correctly because it depended on the suitability of a process which was yet to be tested. If the preparation of the detailed project report had been taken up after selecting the suitable process for the extraction of sulphur, the time lost in the revision of the detailed project report for reducing the production capacity could have been avoided.*

11. *The Committee feel that this was largely due to the fact that Government kept themselves out of the picture and left it to a nascent public undertaking to take decisions on vital matters which should have been determined by them before formation of the company. As stated earlier, the Indian Bureau of Mines took up the*

preparation of the project report in November, 1960 and in the same month the company knew of the unsuitability of the Orkla process. The company however, did not give thought to the need for revising its earlier demand for 3,00,000 tonnes of lump ore or apprise the Bureau of the new development. While the company was proceeding with the consideration of alternative proposals for the utilisation of pyrites ore and was reassessing the demand for ore on that basis, the Bureau was going ahead with the preparation of the detailed project report on the basis of the demand intimated to it. There was thus lack of coordination between the Bureau the company and government. It has been admitted by the company that "in the initial stages, there did not exist effective co-ordination between the company and the Indian Bureau of Mines". Government on their part also failed to guide the company on the right lines. The Committee hope that Government will not abjure their responsibilities in future to a nascent Undertaking.

12. Another reason which was advanced by the Managing Director for revising the first detailed project report was that it lacked in many technical details. This in his opinion, was possibly because it was the Bureau's first attempt to prepare a detailed project report and it did not have much experience. In support of his contention he gave details of certain technical improvements included in the second project report which were not indicated in the first report. He further expressed the opinion that it would have been better if they had associated some experts in the preparation of the report as they did in the case of the revision.

13. The Indian Bureau of Mines have, however, stated that the revised project report was for half the output and lump ore was not a consideration. Modifications were therefore made, which were necessary only as a consequence of the changed production capacity.

14. The Managing Director has himself stated that basic data compiled by the Indian Bureau of mines have been the basis of successive revisions of the project report. While the effort of the Bureau deserves every encouragement, the Committee feel that in order to avoid certain amendments later on in the detailed project report it would have been better if the Bureau had associated some outside experts in their maiden venture of preparation of a detailed project report.

15. The second detailed project report was submitted by the Bureau in December, 1963. This was examined by an Expert Committee set up by the company. That Committee came to the conclusion that

longwall method of mining, which had been the basis of the first and second detailed project reports would not be suitable for Amjhere pyrites. They favoured the Board & Pillar method and the company decided to revise the detailed project report once again to change the mining method from longwall to Board & Pillar method. Accordingly the third detailed project report was drawn up by the company in consultation with the members of the Expert Committee.

16. There were thus two revisions of the detailed project report—one, for reducing the production capacity and the other for changing the mining method. When enquired as to why piecemeal changes were made and why they could not be carried out in the same revision, the Managing Director replied that after the first detailed project report was prepared, it was examined by an Expert Committee convened by the author of the report and which included only two outside members. He added that out of the two, one disagreed with the recommendation in favour of the longwall method. The other person was associated in the Expert Committee which had been appointed to scrutinise the second detailed project report and at that time he also agreed to the change of the mining method.

17. It is understood that the company is likely to adopt the longwall method at a later stage and the Managing Director himself stated during evidence that a final decision regarding the longwall method or board & pillar method had not been taken. The lay-out of the mine is also such as would permit a switch-over to the longwall method as and when the requisite ore-cutting machine becomes available.

18. *The Committee feel that there have been too many revisions of the detailed project report which have consequently delayed the commissioning of the project. They are of the view that the mining method most suitable for the project should have been determined in the first instance and only then the preparation of the detailed project report should have been undertaken. If this had been done, at least one revision could have been avoided. In any case, the Expert Committee which examined the first detailed project report should have gone into this technical matter thoroughly and if any change in mining method was needed it should have been incorporated at that stage itself.*

### C. Mining Method

19. The Indian Bureau of Mines preferred the longwall method of mining and based its first and second detailed project reports on that method. When the second detailed project report was examined by an Expert Committee appointed by the Company, it was decided to change the mining method from longwall to board & pillar and the second detailed project report was accordingly revised.

20. The difference between the two methods was briefly stated to be as follows. In the board & pillar method, there would be a patchwork of cross tunnels unlike the longwall retreating method under which the panels were done length-wise and not divided into sections. In the longwall method, if fire broke out, the entire mine would be affected while in the case of the board & pillar method, it would be localised.

21. The Committee were also informed that in other mines in the country both methods were prevalent and some mines employed both methods simultaneously. The Indian Bureau of Mines has listed 17 factors (vide Appendix I) which have to be taken into consideration for selecting a suitable mining method. The Bureau has stated that except for one factor (viz. that shown against serial No. 12) all the others favour one of the longwall methods.

22. In the Annual Report of the company for the year 1963-64, it was stated that the mining method had been changed because great difficulty was likely to be experienced for want of experienced workmen in working the longwall retreating method. However, during evidence the Managing Director stated that if the bed of ore was thin, the longwall method was suited. Though the bed of pyrite ore at Amjhore was thin, the Company did not go in for longwall method because of the non-availability of equipment and machine which would cut into the ore. The Managing Director added that in the absence of the machine to cut into the ore, the entire longwall method would collapse. The company had therefore advised the Mining and Allied Machinery Corporation Ltd., of the specifications of the machinery needed for pyrites ore and contemplated trying the longwall method as and when the machinery became available.

23. When his attention was drawn to the opinion of the Bureau that overwhelming considerations were in favour of the longwall method, the Managing Director stated that it was a question where two Expert Committees differed with each other. He added that the Bureau did not offer any comments on the third detailed project report.

24. As stated in paras 15 and 16 above the first Expert Committee had been set up by the Indian Bureau of Mines and the Second Expert Committee was appointed by the company. It is not known as to what was the reason for reopening the question of the suitability of the mining method after the drawing up of the second detailed project report. The statement of the Managing Director that the first Expert Committee was convened by the author of the report and included only two outside members implied that the selection of the members of that Expert Committee was made in such a way as to get approval for the longwall method. At the same time, the constitution of an Expert Committee by the company and its reopening the issue of mining method at that late stage cannot but create the impression that the company was interested in the introduction of board & pillar method. Government approval was not taken for revising the second detailed project report but after revision, it was sent to Government and was duly approved. It is strange that Government did not make any inquiry into the need for reopening the issue of mining method at such a late stage and consequential revision of the second detailed project report. The Committee regret to observe that Government had failed to exercise effective supervision over the affairs of the project.

25. The Committee enquired as to why the Indian Bureau of Mines was not associated in the revision of the second detailed project report. The Managing Director replied that the Bureau was not associated because its consultancy had been terminated. On being pointed out that when a basic issue of the nature of a change in mining method was involved, the Bureau ought to have been associated, the Managing Director agreed that it would have been better if the Bureau also had been invited.

26. Since a final decision regarding the mining method is not stated to have been taken as yet, the Committee recommend that the Bureau should be consulted at the time of taking a final decision. This is a technical matter on which two Expert Committees have differed. When the question is therefore considered again, it should be by a body of persons who are experts having sound knowledge of both the methods. The considerations which weighed with both the Expert Committees should be made available to them. Their recommendations should be followed without further vacillation.

#### **D. Comments of Financial Adviser on Detailed Project Report**

27. The Financial Adviser of the Company examined the second and third detailed project reports and offered his comments and

suggestions for reducing the capital expenditure under various heads. His suggestions were considered by the Management and discussion was held between the then Chief Mining Engineer of the project and the Financial Adviser. In some cases, the Financial Adviser was convinced of the need for enhanced outlay as proposed in the detailed project reports and in others the Management accepted the point of view of the Financial Adviser and reduced the capital expenditure. The overall saving in capital cost as a result of accepting the Financial Adviser's suggestions was stated to be Rs. 81 lakhs.

28. A statement showing the gist of the comments of the Financial Adviser on various aspects is given at Appendix II. The statement also indicates whether the Financial Adviser's views were accepted by the Management or whether the Financial Adviser was convinced of the views of the management.

29. The Financial Adviser had stated that he had been given very short time to examine the third detailed project report. The Management has explained that the project report was prepared in May, 1964 and was considered in the Board meeting held on the 5th June, 1964. During this period the Financial Adviser was on leave from 20th May to 16th June, 1964. But a copy of the Agenda and a copy of the minutes of the Board meeting held on the 5th June, 1964 were supplied to his office. The Board was scheduled to reconsider the detailed project report on the 18th August, 1964 while the report was formally sent to the Financial Adviser 10 or 12 days before that date. However, he did not submit his comments in time. On being reminded he sent his comments on the 5th September, 1964, i.e. after the Board meeting.

30. The Financial Adviser had also remarked that his job of scrutinising the project report had been handicapped on account of the absence of the then Chief Mining Engineer from headquarters which had not made it possible for him to get clarification on certain doubtful points. When the Committee enquired of the position, the Managing Director stated that the Financial Adviser never made it known either informally or in writing that he would require the Chief Mining Engineer or other technical officers for discussion or clarification of doubtful points in the preparation of his comments.

31. *The Committee do not consider it necessary to go into the above complaints, but they regret to note that a spirit of co-operation and understanding was lacking between the Chief Mining Engineer*

*and the Financial Adviser. They hope that every effort will be made by the officers to work with a sense of oneness of purpose which is essential for the efficient and smooth working of the project.*

32. The Committee enquired about the action taken by Government on the comments of the Financial Adviser. The representative of the Ministry stated that Government did not receive a copy of the comments of the Financial Adviser nor did the company communicate to Government in this regard. He added that Government understood that the views of the Financial Adviser were taken into account by the Board while taking a decision and that the representative of the Ministry of Finance on the Board of Directors, who was known as the Finance Director, had close consultations with the officers and the Financial Adviser at Amjhore. The Committee also asked whether the representatives of the Ministry of Finance and the administrative Ministry (in charge of the undertaking) on the Board of Directors recorded a note to the effect that the Financial Adviser had made various comments on the detailed project report and that such and such action was taken by the concerned authorities thereon.

33. The Committee have been informed of the scrutiny made by the representative of the Ministry of Finance on the Board of Directors and as a result of that scrutiny the capital cost of the mining project was reduced by Rs. 126 lakhs. His note was submitted to the Board of Directors who considered it and agreed to a reduction of Rs. 120.47 lakhs. To the question of the Committee whether he recorded a note for the information of his Secretary, there was no specific reply. As regards the administrative Ministry concerned, the Committee were informed that there was no representative on the Board of Directors.

34. *In the circumstances, the Committee feel that Government have not been kept informed of an important development relating to the company, either by the company itself or by the officers of Government who were Directors of the company. The Committee understand that copies of quarterly reviews of the Financial Adviser are forwarded to the administrative Ministry and the Ministry of Finance. When such is the case it is all the more important that a document which contains suggestions for saving in capital expenditure to the tune of more than Rs. 1 crore should have been forwarded to Government. Such proposals would have educative value besides being guide lines for the future projects. The Committee recommend that suitable instructions should be issued to all the public undertakings for forwarding copies of such important documents to the administrative Ministry and the Ministry of Finance.*

## E. Plant and Machinery

35. The detailed project report provided for imported mining machinery and equipment of an aggregate value of Rs. 128 lakhs and indigenous machinery and equipment of the value of Rs. 60 lakhs. After obtaining Government's approval, the company requested Government to indicate the names of countries from which foreign exchange would be available for the import of machinery and equipment. The names of the countries were indicated by Government in February, 1965. After getting clearance from the Ministry of Finance, tenders for the supply of mining machinery and equipment were invited from Poland, Hungary, East Germany, Czechoslovakia, France and Sweden on the 29th March, 1965. The tenders were opened in June, 1965. Final decision on the tenders was taken in October, 1965, and clearance from the Technical Development Wing for the import was obtained in January, 1966. Foreign exchange of Rs. 74 lakhs was sanctioned by Government in the same month. The successful tenderers were informed of the acceptance of their tenders and orders placed in January, 1966. It has been stated that since the tendering firms had not been informed of the Suppliers' Credit Arrangement beforehand, they had to contact their Principals. It is understood that the French firm had agreed to such an agreement but not the Swedish firm which was the other successful tenderer.

36. Government are stated to have taken up the matter with the Swedish authorities and have in the meanwhile agreed for conditional release of foreign exchange from free resources. According to present expectation, imported key mining machinery is likely to be received by the middle of 1967.

37. It will be seen that the process of obtaining key mining machinery has entailed a considerably long time. The Committee were informed that though the detailed project report was finally approved by Government only in January, 1965, the company had taken steps as early as 1963 to call for global tenders for procurement of imported mining machinery and equipment. But Government had taken objection thereto and directed that prior approval should have been taken before initiating action to procure machinery.

38. The reasons for Government taking objection to calling of tenders was stated to be the difficulty in making available the necessary amount of foreign exchange. The trade plans with foreign



countries and other associated factors had to be considered by the Government before determining the countries from which foreign exchange would be available.

39. In view of the tight foreign exchange position, Government's action in restricting the tenders to firms in specified countries is quite understandable. But the Committee do not see any reason for postponing action to call for tenders until after the approval of the detailed project report. They feel that valuable time could have been saved if both these processes had been completed simultaneously.

*Gathering Arm Loaders and Shuttle cars*

40. Among the various types of key mining machinery for which tenders were invited by the company are two items known as (i) Gathering Arm Loaders and (ii) Shuttle cars. Five tenders were received and of these two quoted by M/s Balmer Lawrie & Co. and M/s Eastern Equipment & Sales Ltd. were found technically suitable. The former company had offered ANF Model 343 CE (French make) Loaders and the latter had offered Joy 14 HR 10 mobile Loaders (also French make). The price and the delivery time offered by the two companies were as given below:—

	<i>Price</i> (c-i-f value)	<i>Delivery time</i>
JOY Loader	Rs. 41.09 lakhs	Delivery commencing in 11 months and to be completed in 14 months.
ANF. Loader	Rs. 21.37 lakhs	Commencing 8 months to be completed in 13 months.

41. The tenders were examined by a Committee consisting of the Managing Director of the company, a representative of the Ministry of Finance, the Coal Mining Adviser to the Government of India—who was also a Director—and the Chief Mining Engineer of the company.

42. It was found that though the JOY Loaders offered by M/s Eastern Equipment & Sales Ltd. were sturdier and somewhat technically superior, it was considered that the ANF Loaders offered by M/s Balmer Lawrie & Co. were also capable of working on hard ores.

43. Secondly, the delivery period offered by the latter firm was found to be favourable. Moreover, the difference in the cost of the Loaders was nearly 100%. So the company decided to accept the tender of M/s Balmer Lawrie & Co. for the supply of ANF Loaders.

44. During their visit to the project in July, 1966, the Committee further enquired about the relative merits of both the equipment and were informed as follows:—

- (i) The ANF 343 CE Loaders are in use in iron ore mines in France.
- (ii) The principle is the same in the case of both JOY Loaders and ANF Loaders.
- (iii) JOY International Loaders are known to be widely used but the same is not known of JOY VILLGOZET (France) Loaders which were offered to P.C.D.C. Ltd.
- (iv) The company had adequate material before it to determine the suitability of JOY and ANF Loaders and there was no need to seek expert opinion.
- (v) Equipment offered by ANF is capable of with-standing the hardness and abrasiveness of pyrites ore.
- (vi) Manufacturers' guarantees are supported by bank guarantees and they are capable of realisation.
- (vii) After-sales service has been ensured.
- (viii) Supply of spare parts has been ensured.
- (ix) The tendering firm has arranged for imparting of training.
- (x) The technical members of the Tender Committee were competent to decide about the comparative merits of both the equipment.

45. During evidence, the Managing Director further reassured the Committee that the capacity of both the JOY and ANF Loaders was found satisfactory. The Tender Committee had desired to know whether one JOY Loader could be construed as equivalent to two ANF Loaders. Since the Loaders were to be used at different places, it could not be so construed and hence the Tender Committee came to the conclusion that there would not be any advantage in having a machine with a higher capacity and particularly when the cost was nearly double.

46. The Managing Director admitted that the Loaders would require some modifications and that it has been safeguarded that such modifications would be done by the supplying firm.

47. As the ANF Loaders have not been used in pyrites ore mines before, the Committee would recommend that early opportunity should be taken to test them at Amjhore mines and modifications, as might be necessary, got carried out by the supplier.

48. The Committee drew the attention of the Managing Director to the claim of M/s Eastern Equipment and Sales Ltd. that a saving of Rs. 4,000 per day and Rs. 12 lakhs per year would have resulted if JOY loaders were to be used instead of ANF Loaders. The Managing Director replied that these figures did not include depreciation; secondly, they were figures relating to foreign countries and could not be compared with Indian conditions. Thirdly, these machines had not been used in pyrite mines but only in iron ore mines. On account of these reasons, there was no way of comparing their maintenance cost.

49. The Committee feel that the company should take early steps to estimate the operating cost of ANE Loaders. Since the other firm claims that the use of JOY Loaders would result in a saving of Rs. 12 lakhs per year it merits close examination. The company is embarking on an expansion programme of the order of one million tonnes and will require more Loaders. It would be worthwhile buying one Joy Loader for experiment sake and for purposes of comparative study. After working both the Loaders side by side for sometime, their relative merits may be assessed, particularly with regard to operating cost, so that when the company goes in for purchase of more Loaders for its long-term needs it would be able to purchase the better of the two.

#### Shuttle cars

50. As in the case of Gathering Arm Loaders, the company received offers from M/s Balmer Lawrie & Co. and M/s Eastern Equipment & Sales Ltd. for the supply of ANF and JOY Shuttle cars respectively at the cost shown below:—

	Cost (Rs. in lakhs) (c.i.f. value)
JOY Shuttle cars (9)	22.15
ANF Shuttle cars (9)	17.22

51. The delivery time was also favourable in the case of ANF shuttle cars, being 10 months as compared to 10 to 13 months in the case of JOY Shuttle cars. Apart from the fact that JOY Shuttle cars were costlier than the ANF Shuttle cars, they did not have the certi-

ificate of approval issued by the Chief Inspector of Mines, which is stated to be obligatory. The company therefore decided to purchase ANF shuttle cars.

## F. Production

### (i) Commissioning of the Project

52. The detailed project report provided that production would commence 800 working days after the development of mine was initiated and a capacity of 800 tonnes per day would be reached 150 working days thereafter. The initial period of 800 days is stated to include 100 days in the beginning when key mining equipment would not be required.

53. The procurement of key mining machinery and equipment is behind schedule and in their absence, tunnel work and other mining operations had been carried out manually. According to present expectation, the key mining machinery is expected to be installed by the middle of 1967 and the production of 800 tonnes per day is expected to be achieved in the first quarter of 1969. Since the Sulphuric Acid Plant at Sindri, based on pyrites ore, is expected to be commissioned in the third quarter of 1968, the company is stated to be considering alternative proposals for commencing production by about that time.

54. Asked as to how this would be possible since key mining machinery was expected by middle of 1967 and the available time was roughly of the order of 400 working days only, the company has stated that the progress made till October, 1966 with the help of manual operations was equivalent to 250 working days referred to in the detailed project report and hence it was possible to commence production by the first quarter of 1969.

55. A brief recapitulation of the time taken at various stages will show that the Company has taken an inordinately long time in commissioning the project. The project was first conceived in 1955 and the Indian Bureau of Mines carried out investigation of the reserves from 1957 to 1960. The first detailed project report was prepared by May, 1961 and after two revisions thereof, it was finally approved by Government in January, 1965. The tenders for supply of key mining machinery and equipment were invited in March, 1965 and final orders were placed in January, 1966. As stated earlier, the machinery and equipment is likely to be received by the middle of 1967 and production is expected to commence by the third quarter of 1968 or first quarter of 1969.

56. Thus, from the time the project was conceived, i.e. 1955 to the time when production by mechanical means would commence would be nearly 14 years. The time taken for drawing up a detailed project report and getting it finally approved was over four years. Avoidable delays have taken place thereafter. The project is expected to save foreign exchange of the order of Rs. 1.2 crores per annum as a result of production of 400 tonnes of pyrite-based sulphuric acid per day and is closely linked with the fertilisers industry in the country. It is regrettable that even this aspect did not provide the necessary drive and a sense of urgency to the project authorities or Government in commissioning the project.

(ii) *Cost of Production*

57. The table given below shows the unit cost of mining pyrites as estimated in the first, second and third detailed project reports :—

Sl. No.	Item	First Project report by IBM for 4.8 lakh tonnes of R.O.M. ore (Longwall)	Revised Project report by IBM for 2.4 lakh tonnes of R.O.M. ore (Longwall)	Third Project report for 2.4 lakh tonnes of R.O.M. ore (B & P)
		Rupees/tonne	Rupees/tonne	Rupees/tonne
1.	Labour wages & salaries	6.120	12.51	12.37
2.	Material cost & power cost	8.294	11.38	18.95
3.	Depreciation	1.334	8.27	10.30
4.	Accident benefit, welfare and medical facilities	0.618	1.53	1.49
5.	Maintenance of plant & machinery etc.	0.358	1.46	1.65
6.	Essential services and miscellaneous expenses	0.031	0.62	0.29
7.	Interest on working capital	0.493	0.73	0.62
	total of 1 to 7 (as given in the Project reports.	17.457	36.27	45.69

58. Asked about the reasons for such a steep increase in the unit cost of mining from the first to the third detailed project report, the company has stated as follows:—

- (a) *Reasons for increase in unit cost between the 1st detailed and 2nd detailed project Reports:—*

“Both the Project Reports were prepared by the Indian Bureau of Mines, one in 1961 and the other in 1963. The increase in the Unit cost is about Rs. 18.81 per tonne. The Indian Bureau of Mines may perhaps be in a better position to explain the reasons for increase in cost to the extent of Rs. 18.81. In so far as the preparation of project report is concerned, this was the first venture of the Indian Bureau of Mines and perhaps all technical matters could not be fully considered due to lack of experience. When revising the project report for reduction in production capacity, technical matters were considered in greater detail.

It is estimated that due to reduction in production capacity of 4.8 lakh tonnes to 2.4 lakh tonnes the increase in the unit cost will be about 28 per cent —30 per cent.

- (b) *Reasons for increase in cost from the Revised Project Report of I.B.M. to the Project Report prepared departmentally.*

Certain provisions have not been made in the Revised Project Report of the I.B.M. which have been incorporated in the approved Project Report. It has been provided in the revised Project Report (by I.B.M. on longwall system) that it will be possible to work the stopes to a bare height of 26” to 30”.

The Technical Advisory Committee gave careful consideration to this question and came to the conclusion that for many many years—at least 10 years it will not be possible to find men to work in underground pyrites mines in such low height even on high wages or by offering other incentives. This in turn, will completely jeopardise regular production of the mine. While coming to this conclusion, the Technical Advisory Committee was influenced by the fact that even in underground coal mines, where cutting and loading operations can be fully mechanised, minimum working heights in the mines in the country is 48”. For hard ore deposits, such as pyrites, for which there are no machines

available in the world market to cut into it mechanically" there is no mine anywhere working to a height of 26" to 30" only. It was therefore considered unrealistic, for the present, that the extraction of ore could be done in stopes having effective working height of only 20"—25". It was felt that a realistic view would be that the working height in stopes should be 1.5 metres instead of 0.75 metre. Additional cost for the modification is estimated to be Rs. 6.00 per tonne."

59. *The argument that both the detailed project reports were prepared by the Indian Bureau of Mines and it will be in a better position to explain the increase in the cost of production is not a satisfactory explanation. The reason that the second detailed project report was for a production of 2.4 lakh tonnes per year as against a capacity of 4.8 lakh tonnes contemplated in the first report accounts for an increase of about 30 per cent. only, which works out to Rs. 5/- per tonne. Even then the difference is as high as Rs. 13.76 (approx.) and works out to 78 per cent of the original estimate. There has therefore been a gross under-estimate of the unit cost of mining in the first report and since it is one of the basic factors on which the decision to set up a project is taken, such disparity should have been avoided. This was, perhaps, due to the fact that it was the first attempt of the Bureau. This supports the observation of the Committee made in para 14 ante that it would have been better if outside experts had been associated with the Bureau in the preparation of the detailed project report.*

60. The estimated cost of mining of Rs. 45.69 per tonne given in para 57 ante is without taking into account the return of 6 per cent on investment. If this is added the unit cost would come to Rs. 55/- per tonne. During evidence, the Managing Director stated that according to the latest estimates, the unit cost of mining (excluding royalty) is Rs. 60/- per tonne. The third detailed project report was prepared in June, 1964 and in the intervening period of about two and a half years the unit cost of mining has gone up by Rs. 5/-.

61. *This is a disconcerting trend and the Committee would urge immediate steps to restrict the unit cost of production as the entire economics of the Sulphuric Acid Plant would be dependent on the price at which it gets pyrites ore for manufacture of sulphuric acid.*

#### G. Marketing

62. When the project was first conceived in 1955, it was with the intention of extracting sulphur from pyrites ore by the Orkla process of Norway and for utilising the sulphur so extracted in the production

of sulphuric acid. After the Orkla process was found to be unsuitable for Amjhore pyrites, it was decided to produce sulphuric acid directly from pyrites ore. The demand for sulphuric acid was then assessed at an inter-ministerial meeting held in the Planning Commission on 1-2-1963 and it was found that the Sindri Unit of Fertilizer Corporation of India would be needing 200 tons per day and the Superphosphate Factory of Bihar Government 100 tons per day. On the basis of this demand, it was decided to implement a mining programme of 2.4 lakh tonnes of ore per year.

63. In 1964-65 the Fertilizer Corporation of India informed the company that the requirement of pyrites ore for their sulphuric acid plants to be set up at Sindri and Durgapur would amount to about 630 and 900 tonnes per day respectively. The company therefore considered the possibility of raising the production again to 4.8 lakh tonnes of ore per annum.

64. The company has also prepared another scheme for increasing the production of pyrites by one million tonnes annually. The scheme was considered by the Planning Commission in June, 1965 and a Committee constituted for the purpose. On the recommendation of the Committee, the scheme was revised and submitted to Government for approval in November, 1965. The company prepared a project report on intensive exploration of the additional pyrite bearing areas and submitted it to an Expert Committee for examination. After approval by that Committee, the company submitted it to Government, for approval, which was given on the 20th August, 1966.

65. Asked whether the demand was sufficient to justify an expansion, the company stated that a demand of 3,300 tonnes per day was expected. The party-wise break up is given below:—

	<i>Tonnes/day</i>
(i) Fertilizer Corporation of India, Sindri Unit.	1,100
(ii) Proposed Sulphuric Acid Plant of Fertilizer Corporation of India at Durgapur.	1,000
(iii) Bihar Superphosphate Factory	200
(iv) Steel Plants	500
(v) Other industries in the region	500
<b>TOTAL :</b>	<b>3,300</b>



66. During evidence, the Managing Director stated that the proposed Sulphuric Acid Plant of the Fertilizer Corporation of India at Durgapur would not be needing pyrites ore as they were thinking of using naphtha instead of sulphuric acid. Asked whether this would not affect the demand for ore, he replied that though the contemplated capacity during the expansion stage was placed at 3,300 tonnes per day, the company would develop only limited number of mines taking into account the demand then existing. He added that it was necessary to have additional capacity because planning for additional capacity and producing that much took about five years.

67. *Thus, in the first instance, i.e. till February, 1963 there was apprehension about the off-take of pyrites ore and the first detailed project report was revised so as to reduce the production capacity from 4.8. to 2.4. lakh tonnes per annum. In 1963-64, the Fertilizer Corporation of India indicated a higher demand and the company again thought of increasing the production capacity. This shows that a correct estimate had not been made of the demand for pyrites ore in the initial stages.*

68. Subsequently, the company came to the conclusion that over a period of time, the demand was likely to increase to such an extent as to warrant intensive exploration of additional pyrite bearing areas for expanding production by one million tonnes. The present indication is that the Fertiliser Corporation of India Ltd. may not need pyrites ore as they are thinking of using naphtha instead of sulphuric acid.

69. *This shows that no accurate assessment of demand for pyrites exists with the company or government. The Committee suggest that a proper study should be made, by a Committee consisting of knowledgeable persons, of the existing demand and that which is likely to arise during the next five years/ten years. The demand should be assessed year-wise and the company's future production programme should be adjusted accordingly.*

70. *The Committee hope that learning from the experience of commissioning the project in the first phase, the company would avoid the pitfalls which were responsible for delays such as, repeated revisions of detailed project report, change of mining method, non-procurement of machinery in time etc. All basic data should be collected in the first instance and thereafter work of processing should be undertaken according to a time schedule drawn up for the purpose.*

## H. Transport of ore

71. For transporting the pyrites ore from mine head to railhead the company considered two alternatives, one installation of an aerial ropeway across the river Sone and the other laying of a broad gauge railway line connecting Amjhore with Dehri-on-Sone, a distance of about 22 miles. On the 25th March, 1964 the company approached the Ministry of Petroleum and Chemicals for requesting the Railway Board to consider establishment of a railway line between Amjhore and Dehri-on-Sone. Government recommended the proposal to the Railway Board on the 15th April, 1964. On the 19th May, 1965 the Railway Board informed the company that the Eastern Railway had been asked to examine the proposal. Since then the matter has been under examination of the Railway Board.

72. During evidence the Managing Director stated that the finding of the Eastern Railway study team was that the present traffic did not justify a line. He added that the company had, however, been trying to satisfy the railway authorities that ultimately the line would be economic because the area was rich in minerals. He added that the Railways were not prepared to take into account the potential load during the expansion stage because Government approval had not been accorded. The Committee were further informed that in August, 1966, the Deputy Minister of Petroleum and Chemicals had taken up the matter with the Minister of State in the Ministry of Railways but there had been no favourable response as yet.

73. In view of the uncertainty about the railway line, the company decided in April, 1965 to invite open tenders for carrying out detailed survey and investigation for setting up an aerial ropeway from Amjhore to Nabinagar railway station, a distance of about 14 km, including 3.2 km. across the river Sone. The work relating to engineering survey was entrusted to M/s. Gillanders Arbuthnot & Co., Calcutta. The immediate expenditure on carrying out a survey was estimated at Rs. 70,000 and the final capital cost of the ropeway was estimated at Rs. 83 lakhs as against a capital cost of Rs. 236.83 lakhs for laying a broadgauge railway line.

74. As regards the time element, the Managing Director informed the Committee during evidence that the installation of the ropeway would take about 2½ years and the railway line about four years. He however agreed that if taken up as a crash programme, the railway line could be laid in two years.

75. The Committee were further informed that though the initial survey work had been completed' the company was awaiting a final decision by the Railways before proceeding with the installation of ropeway. This was because ultimately there should be only one of the two, either the ropeway or the railway line. The Managing Director said that since the expenditure incurred on civil works on the river portion would have no re-sale value, the company had kept the matter pending.

76. As regards the comparative cost of transport of ore by rail and ropeway, the Committee were informed that ropeway would be cheaper.

*77. It will be seen from the foregoing that the question of laying a railway line has not been given the priority it deserves. The company knew as early as 1961 that a main gauge railway line would be necessary for transporting pyrite ore up to Dehri-on-Sone. There is therefore no justification for the company to have delayed the sending of the proposal to the Railway Board as late as March, 1964. Government also did not take any initiative in suggesting to the company to draw up a proposal for onward transmission to the Railway Board.*

78. The Railway Board on their part has been considering the proposal for long. Despite the matter having been dealt with at the level of the Minister in August, 1966, a final decision has not been taken. Because of this indecision, the company is unable to proceed with the installation of the ropeway. Since the production is scheduled to commence by the first quarter of 1969, no further time should be lost in arriving at a decision.

79. Though the capital and operational cost of the ropeway is stated to be cheaper for the company, the Committee consider that from the point of view of general development of the area, advantage in the long run would be in favour of having a broad gauge line. A railway line laid at an estimated cost of Rs. 236·83 lakhs would serve the entire area, whereas a ropeway installed at a high cost of Rs. 83 lakhs would serve the requirements of the company only. Keeping this in view and every possibility of increase in traffic since the area is rich in minerals, the Committee feel that the Railway Board should carefully consider the opening of a broadgauge line as early as possible.

80. The delay on the part of the Railway Board in taking a decision is stated to be partly due to the fact that Government have not given their final approval to the expansion scheme of the company.

*The Ministry of Petroleum & Chemicals should, therefore, take an early decision on the scheme for expansion and convey it to the Railway Board so that the latter could take into account the potential load factor.*

81. *The Committee are not happy about spending of Rs. 70,000 on a survey for establishment of an aerial ropeway on the river Sone. This appears to be an infructuous expenditure. A peculiar thing that was noticed by the Committee about it was that the tenders for conducting a survey for setting up of the ropeway were invited in April, 1965, even before the Railway Board in May, 1965 had asked the Eastern Railway to examine the proposal for laying a ' broad gauge railway line between Amjhore and Dehri-on-Sone.*

### III

#### PLANT FOR EXTRACTION OF SULPHUR

82. After establishing deposits of pyrites ore, efforts were made by Government and the National Industrial Development Corporation Ltd., (of which the Pyrites & Chemicals Development Co. Ltd., was at that time a subsidiary) to locate a suitable process for the extraction of elemental sulphur from the pyrites ore. The Ministry of Commerce & Industry contacted M/s. Orklas in Norway in regard to their process which was reported to be the only successful process in commercial operation at that time for the manufacture of sulphur from iron pyrites. The tests conducted by M/s. Orklas on sample pyrites ore were found encouraging and arrangements were made for the mining of 1000 tonnes of ore required for large scale tests which were carried out in November, 1960 and were observed by a team of two officers of the company. The final results of these tests, however, did not prove successful.

83. After the Orkla process was found unsuitable, further progress was not possible until another process was located. It was only in July, 1961 that a Finnish process, called Outokumpu process, was suggested for consideration. The Outokumpu authorities said that they would make definite recommendation at the end of 1962 when they expected their plant at Kokkola to go into production. They invited a technical expert of the company to study the technical and economic feasibility of the process. The company instead of sending a technical expert decided to send a delegation to Finland to study the process and, if found suitable, to settle the terms and conditions on which the know-how of the process would be available. The delegation was scheduled to visit Finland in November, 1962 as the large scale plant in Kokkola was to commence operation in August, 1962.

84. Since Emergency had been proclaimed, the visit of the delegation had to be postponed. Instead, samples of beneficiated ore from the Amjhore mines were sent to Finland in March, 1963 for carrying out laboratory tests and the reports received in June, 1963 indicated favourable results.

85. Subsequently, a delegation consisting of Chairman of P.C.D.C., Senior Industrial Adviser, Development Wing, and the Works Mana-

ger of P.C.D.C. visited Finland in March, 1964. Their preliminary study indicated that the Outokumpu process was technically feasible in relation to Amjhore pyrites ore. The technical and economic feasibility report prepared in March, 1964 estimated the capital cost of the project at Rs. 10.00 crores.

86. On the basis of the discussion with M/s. Outokumpu, an agreement was concluded on the 3rd December, 1964 for pilot plant tests being carried out in April, 1965 when one of the officers of the company was present as an observer. The report of the tests was received in October, 1965 and it was considered that extraction of elemental sulphur from Amjhore pyrites ore was technically and economically feasible. It was also felt that it would be an import substitution measure and the project would repay the foreign exchange spent on it within a short period. In April, 1966 the Board of Directors requested Government to accord their approval for preparing, in collaboration with M/s. Outokumpu, a detailed project report for the setting up of the Plant and to take further action. Government approval was given in September, 1966. It will thus be seen that a total time of more than 6 years (from 1960 to 1966) has been taken in determining the process to be adopted for the extraction of elemental sulphur from the ore.

87. During evidence, the Managing Director stated that the company had been negotiating with the Finnish firm for associating an Indian firm in the preparation of the detailed project report. The matter is stated to be still under negotiation. Asked about the time by which the plant could be expected to be set up, he said that preparation of the detailed project report would take about six months and after approval of that report by Government, it would take another three to four years for the plant to be set up.

88. *The plant for extraction of sulphur from pyrites ore is thus not likely to be set up before 1971. The Committee are disappointed at the poor progress made in setting it up. At present, sulphur is being imported and the capacity of the plant being estimated at 250 tons of sulphur per day, the setting up of the plant is likely to save foreign exchange of Rs. 1.5 crores per annum. Even this fact has not served to instil a sense of urgency which should have been attached from the beginning.*

89. *The Committee feel that there was an avoidable delay of seven months in sending the ore for laboratory tests. This was because the company decided to send a delegation to Finland first instead of sending the ore for laboratory tests. The postponement of the visit of the delegation due to Emergency delayed the*

progress. Thinking of sending a delegation before conducting even the preliminary laboratory tests was premature especially when Orkla process of Norway had earlier failed. As it ultimately happened, the sample ore was sent in March, 1963 and the delegation was sent in March, 1964. The Committee therefore feel that if the question of sending a delegation had not been raised prematurely and if the sample ore had been sent towards August, 1962 when the first plant of M/s. Outokumpu of Finland was expected to go into production, the tests could have been completed by the end of 1962 and valuable time could have been saved.

90. As stated in para 83 Outokumpu of Finland invited one technical expert of the company to watch the process and study its suitability for Amjhore pyrites. Actually, the delegation which went to Finland comprised of three persons; the Chairman, one Director and the Works Manager of the Company. The delegation was stated to have been sent to study the technical and economic feasibility of the process. The Committee are not convinced of the need for sending a delegation prior to laboratory tests. Secondly, there was no need to send a delegation consisting of three persons. The Works Manager who was a chemical engineer and competent to say whether the tests were successful or not, could have been sent and his report could have formed the basis for a decision.

91. The Committee were also informed that at the time of submitting for approval of Government the proposal for preparation of detailed project report, the company had proposed sending a delegation to Finland for negotiation of terms and conditions of collaboration and suggested that the Planning and Development Unit of the Fertiliser Corporation of India Ltd. could also be associated. Later in July, 1966, the Board of Directors decided that as the study of economic feasibility had already been made, any further study would result in delay and that Government should be requested to accord approval for the preparation of the detailed project report. The proposal was resubmitted to Government in August, 1966 and Government approval was accorded in September, 1966.

92. The Committee feel that avoidable delay has been caused by contemplating a reference to the Fertiliser Corporation of India Ltd. which was later considered unnecessary by the Board of Directors itself. The committee also do not see much justification for wanting to send another delegation to Finland for negotiating the terms of collaboration for the preparation of the detailed project report. Such matters could be settled by sending the requisite data and by correspondence.

93. The Board of Directors of the company considered it feasible to set up a combined plant for the extraction of sulphur and production of sulphuric acid at Durgapur. The Managing Director stated during evidence that it was economical to have a sulphuric acid plant integrated with the plant for extraction of sulphur. Asked whether the sulphuric acid plant already being set up at Sindri could be converted into an integrated plant, he said that it was not possible.

94. *Since an integrated plant is economic, the possibility of adding a sulphuric acid plant to the proposed plant for extraction of sulphur may be considered. The Committee would, however, suggest that this should not result in starting the work de novo with the drawing up of a scheme for an integrated plant in lieu of the plant proposed at present. The setting up of the plant has already been delayed and if at all a sulphuric acid plant is to be added, it should be ensured that the already prescribed schedule is more or less adhered.*



## IV

### SULPHURIC ACID PLANT

#### A. Establishment of the Plant

95. The proposal to set up a sulphuric acid plant has been part of the integrated project to exploit pyrites ore at Amjhore. When it was established that the Orkla process was unsuitable for adoption and no other alternative process was immediately in sight, the company considered the possibility of producing sulphuric acid direct from pyrites ore.

96. The setting up of the plant had also to await an assured off-take of sulphuric acid, because apart from other difficulties, transport of sulphuric acid beyond 250 miles was not economical as compared to plants based on imported sulphur.

97. In October, 1961 the company took a tentative decision to set up two sulphuric acid plants with a capacity of 400 tons per day each for the supply of acid to the Sindri Unit of the Fertiliser Corporation of India Ltd. and Durgapur Unit of West Bengal. The Ministry of Commerce and Industry accorded sanction in principle to the setting up of the Sindri plant with a capacity of 400 tons of acid, provided that there was assured off-take.

98. The first firm demand for sulphuric acid came in May, 1962 from the Bihar Government's Super-Phosphate factory for 100 tons of acid per day. The company made a proposal to Government in July, 1962 for the setting up of a plant with a capacity of 100 tons per day. While sanctioning the proposal, Government suggested that the plant should be so designed as to produce another 200 or 250 tons of acid.

99. A detailed project report was prepared and submitted to Government in January, 1963 together with a recommendation for accepting a tender out of the global tenders which had already been received by the Bihar Government for a 100 tons plant. While the tenders and the detailed project report were under consideration, the entire question of utilisation of pyrites ore was reviewed at an inter-ministerial meeting held on the 1st February, 1963. At that meeting the requirement of sulphuric acid of the Sindri Unit of the Fertilizer Corporation of India was indicated as 200 tons

per day. To meet the requirements of the Sindri Unit of Fertiliser Corporation of India Ltd. and the Bihar Superphosphate factory, it was decided that a plant with a capacity of 400 tons per day should be set up.

100. With a view to avoid delay, the company decided that a detailed project report need not be prepared as such and proceeded to invite tenders for the supply and erection of the plant. The Committee were further informed that in taking a decision to dispense with the preparation of the detailed project report, the company was influenced by the fact that the know-how of the process was available and the size of the equipment required for the project would not be very large.

101. During evidence the Committee enquired whether there were not other important factors, e.g., demand for the product, cost of production etc. which required to be carefully studied and incorporated in the detailed project report. The Managing Director replied that the demands for the sulphuric acid of the Sindri Unit of Fertilizer Corporation of India and the Superphosphate factory of Bihar Government were known and on that basis a rough estimate had been made of the cost of production also but that these data had not been put down in the form of a detailed project report. He, however, agreed that it was desirable to have a detailed project report. The representative of the Ministry also said during evidence that individual studies on various aspects were available and the need for drawing up a fresh report was not felt.

102. *The Committee are not convinced with the above arguments. Later, during his evidence, the Managing Director stated that since the proposed plant was the first to be based on pyrites, it was decided to award the contract on a turn-key basis (vide para 107 supra). The contention that the company did not prepare the detailed project Report as it had the know-how of the process is therefore not tenable. Moreover, preparation of a detailed project report is the accepted first step for the launching of any project. The studies claimed to have been made of the demand position and cost of production are rough ones and cannot substitute the detailed project report. In this case, as referred to in para 98, the company's assessment of the demand for sulphuric acid in July 1962 was for only 100 tons per day. The detailed project report prepared by the company in January, 1963 was therefore for a capacity of 100 tons only. Within a month i.e. on the 1st February, 1963 when the inter-ministerial meeting took place, it was found that there was a demand for 400 tons of sulphuric acid per day. This clearly shows that a systematic study was not made of the potential demand. In the absence*

of a detailed project report it is not possible to evaluate the performance of men, material and machinery. Nor is it possible to judge the time schedule or the cost of construction or later on the cost of production. The Committee therefore feel that it was a mistake to have dispensed with the preparation of the detailed project report.

103. The mining operations at Amjhore were behind schedule and in 1963 when the company decided to call for tenders for the sulphuric acid plant, it was known that tenders for the supply of mining machinery even had not been invited by that time and production of ore was expected to commence 700 days after the installation of key mining machinery. There was thus no justification or urgency to dispense with the preparation of the detailed project report and the plea that it was done "with a view to avoid delay," does not hold good since the mining project which had to supply the ore was behind schedule.

104. After deciding the capacity of the plant as 400 tonnes of sulphuric acid per day, the technical specifications of the plant were drawn up by an Expert Committee constituted by the Board. Global tenders were invited in June, 1963 and were opened in October, 1963. A decision on the tenders was taken in December, 1964 i.e. about one year and three months later. Asked about the reasons for taking so much time in selecting the tender, the Committee were informed as follows:—

"The Tender Committee had to go through several sittings because of the following reasons:—

- (i) They were global tenders and the technical competence of the tenderers had to be judged.
- (ii) The price calculations had to be made because the parties had quoted on different basis.
- (iii) Various firms had offered alternative technical systems to choose from.
- (iv) Some of the parties revised their prices both in respect of Indian component and the foreign component after carrying out actual investigation in the market.

The final acceptance of tender depended upon the availability of foreign credit. This was referred to the Government in June, 1964."

105. The company recommended to Government in September, 1964 the acceptance of Messrs Simon-Carves India Limited's tender because the U.K. credit was comparatively easier to obtain. The Government accorded sanction in January, 1965.

106. *The Committee consider that the time of fourteen months taken by the company in selecting the successful tender was unduly long. Judging the technical competence of the tendering firms, price calculations etc. are usual adjuncts to the tendering process and by themselves they do not justify so much time being taken in selecting a tender. The company should avoid such delays in future.*

107. The contract for setting up a sulphuric acid plant has been awarded to M/s. Simon Carves India Ltd. on a turn-key basis. Asked about the need for awarding the contract on a turn-key basis, the Managing Director stated as follows:—

“Turn-key plants are expensive as compared to plants which are set up only by supply of materials or equipment. There is no doubt about it. But, because this being the first plant, considering the performance guarantee and efficiency of the Plant, it would have led to a lot of complications and/or lot of litigations if the plant did not give the requisite performance, if the contract had been split into parts; there would have been allegations and counter-allegations—‘this is due to the fault of the other party’—and it would have been very difficult to fix the responsibility. In general, turn-key plants are costlier than others.”

108. *The Committee consider that the difficulties referred to above do not justify the awarding of a turn-key contract. In their opinion, these difficulties can be overcome by entering into clear and specific agreements with the parties instead of resorting to the practice of awarding the entire contract to one firm on a turn-key basis. Moreover, in this case there was no urgency to set up the plant as the mining operations themselves are not expected to commence before the first quarter of 1969. It should be ensured that turn-key contracts are awarded only in cases of urgency or when there are distinct advantages in doing so.*

109. The contract includes civil engineering works of the value of Rs. 11.78 lakhs. Asked whether the cost thereof had been examined by a competent engineer, the Committee were informed

that it had not been done but the comparative costs of civil engineering works quoted by the different parties had been compared. The Committee enquired whether any attempt was made to get the civil engineering works executed departmentally or through specialised public sector agencies in the field e.g. National Buildings Construction Corporation Ltd. The Managing Director stated that the firm concerned was not prepared to split up the contract and was saying that it would raise the offer quite substantially. He added that there was nothing in writing to show that the company wanted certain things to be done by it and the others by the firm supplying the equipment. The Board also had not considered this matter from this particular angle.

110. *The Committee are not happy at the manner in which the contract has been concluded. The decision to have a turn-key job appears to have been taken by the Board on the recommendation of the then Works Manager who obviously wanted the easy way of getting the whole job executed by the contractors. The Board and Government have only exercised a superficial scrutiny and do not seem to have satisfied themselves about the justification for awarding the contract on a turn-key basis. After securing the contract, it was understandable on the part of the supplying firm to show reluctance to have the contract split up. This could have been avoided if the tender notice itself had contained a clause that certain items of work like civil engineering works would be got done by the company itself. During evidence, the Managing Director also concurred with this view. It is surprising that this was not thought of at the time of inviting tenders or the awarding of the contract.*

111. It was subsequently decided to procure 96,000 litres of vanadium catalyst indigenously. The consequent reduction in the contract price was Rs. 8.48 lakhs of which the foreign exchange content was Rs. 8 lakhs. As against this reduction, the company now proposes to purchase indigenous catalyst at the rate of Rs. 15 per litre, which for the total requirement of 96,000 litres and including Rs. 20,000 as freight, works out to Rs. 14.60 lakhs. Import substitution on this account is thus going to cost the company an extra expenditure of Rs. 6.12 lakhs.

### **B. Cost of production**

112. According to the economic feasibility study, the cost of production of sulphuric acid was Rs. 139/- per tonne. Due to devaluation, the cost has gone up and the latest estimate is that it would

not be more than Rs. 200/-. The Committee have been informed that the prevailing market price of imported sulphur is Rs. 350/- per tonne and on this basis the estimated cost of production of sulphuric acid (based on imported sulphur) would be about Rs. 180/- per tonne.

113. The reasons for the difference in the cost of production as estimated in the economic feasibility study and as estimated at present are stated to be mainly the following:—

- (i) The increase in the unit cost of pyrites due to various factors such as expenditure to the extent of Rs. 20 lakhs incurred prior to the approval of the Detailed Project Report has to be treated as deferred revenue expenditure, increase in the cost of imported equipment, increase in the cost of indigenous equipment, increase in wage rate and salaries, increase in material and power cost etc.
- (ii) Increase in the cost of imported components of the acid plant due to devaluation and increase in the rupee expenditure for items of equipment shifted from imported to indigenous sources due to higher price of indigenous equivalent components.

114. As regards the increase in cost of pyrites ore being one of the reasons for the increase in cost of production of sulphuric acid, the Committee find that the cost estimate of Rs. 139/- per tonne of sulphuric acid was based on the cost of pyrites ore being Rs. 63/- per tonne. If increase in cost of pyrites ore is to be accepted as a reason for the increase in cost of production of sulphuric acid from Rs. 139 to Rs. 200 per tonne, it would mean that the cost of production of pyrites ore is likely to be more than Rs. 63/- per tonne. But in the course of discussion regarding the cost of production of pyrites ore (reference to which has been given in para 60 ante), the Committee were informed that the cost of production of pyrites ore is likely to be Rs. 60 only.

115. *Either the estimate of cost of production of ore is not correct or there is not sufficient justification for the increase in cost of production of sulphuric acid from Rs. 139 to Rs. 200 per tonne. Correct estimates of the unit cost of pyrites ore and sulphuric acid should be worked out by competent persons and every effort should be made to keep the costs as low as possible.*

## ORGANISATION

## A. Board of Directors

116. The Committee noticed that during the period from 1st June, 1963 to 28th June, 1966, 27 Directors held office. Seven meetings of the Board were held during the period from 31st May, 1963 to 5th June, 1964 and at five of those meetings, only 45% of the Directors attended. During the earlier period, the attendance of 14 Directors at the Board meetings was 50% or even less as shown in Appendix III.

117. The above position indicates lack of interest by the Directors in the affairs of the company. There have been frequent changes of Directors. During evidence, the representative of the Ministry agreed that this was not a desirable state of affairs.

118. *The Committee appreciate that due to various reasons full attendance at all the Board meetings may not be possible. Nevertheless they feel that Government should devise suitable procedure to ensure that attendance at Board meetings is fairly high not only in the case of this company but also in other public undertakings. Where a Director fails to attend Board meetings regularly he should be removed from office and should also be debarred from appointment upon Boards of other public undertakings.*

## B. Staff

119. The table given below shows the monthly-paid staff employed by the company in 1962 (when it was a subsidiary) in 1964 (when it became a full-fledged company) and in 1966 during the implementation of the project report:—

Year	No. of persons employed
1962	53
1964	111
1965	153

120. The establishment expenditure of the company during the years 1960-61 to 1965-66 has been as follows:—

year	Mining Project Amjhore	Sulphuric Acid Project, Sindri	Finance & Accounts Wing	Head Office	Total
	Rs.	Rs.	Rs.	Rs.	Rs.
1960-61	79,101.61	No separate accounts kept for Acid Project.	12,000.00	47,729.77	1,38,831.58
1961-62	1,37,047.18		26,000.00	61,386.14	2,24,433.32
1962-63	1,50,398.51		36,000.00	67,862.39	2,54,260.90
1963-64	2,16,871.36	44,946.95	41,000.00	63,670.01	3,66,488.32
1964-65	2,85,476.96	50,335.63	54,000.00	88,451.40	4,78,263.99

121. The first, second and third detailed project reports have estimated the establishment expenditure differently as given below:—

(Rs. in lakhs)

As estimated in	Labour wages	Salaries of monthly paid staff	Total
1st DPR	12.12	—	12.12
2nd DPR	21.34	8.22	29.56
3rd DPR	20.49	9.24	29.73

122. It will be seen that the estimate made in the 1st detailed project report is very much less than the later estimates. It is as yet too early for the Committee to offer comments on the staff position. They trust that utmost care and economy will be exercised in working out staff requirements for the construction period, for production during the first phase, and at the time of achieving rated capacity.



## VI

### MISCELLANEOUS

#### A. Investment

123. The authorised capital of the company is Rs. 5 crores. According to present expectation, the capital cost of the mining project and sulphuric acid plant is likely to come to Rs. 10 crores. In addition, provision has to be made for the plant for the extraction of sulphur and the expansion stage of the mining project, the capital costs of which are estimated at Rs. 10.00 crores and Rs. 18.6 crores respectively. The Committee enquired as to how it was proposed to finance the project. The Managing Director stated that it was for Government to decide whether the company should be financed in the form of equity or loan but that till the commencement of production, the company could not think of loan.

124. *So far the company has been financed by Government in the form of equity only. Since heavier investments are ahead, Government will have to decide the future method of financing the company. The Committee are in favour of the finances being made available in the form of equity and loan in the accepted ratio of 1 : 1.*

#### B. Township at Amjhore

125. The company has acquired 60 acres of vacant land at Amjhore for the mining colony and it is also proposed to acquire 266.85 acres more. This is in addition to the 2.5 sq. miles which the company has acquired on lease from the Government of Bihar. The capital cost estimate includes a provision of Rs. 1 crore for the township and buildings. Upto 31st March, 1965, a sum of Rs. 14 lakhs had been spent and 134 quarters of different types constructed. Due to non-existence of an approved Town Plan, the second phase of the building programme could not be finalised.

126. The estimated expenditure on Townships and Buildings (Rs. 100 lakhs) works out to 23% of the capital cost of the project (Rs. 439 lakhs estimated at pre-devaluation rates). Out of this Rs. 100 lakhs, about Rs. 60 lakhs is towards residential houses. It was stated during tour that the capital outlay on township in the case of a small project was likely to represent a higher percentage

of the total capital cost. It was added that after the expansion of the project so as to produce an additional million tonnes of pyrites ore, the percentage of outlay on township to total capital cost was likely to come down. During evidence the Managing Director stated that the average cost per house would be Rs. 7000.

127. The Financial Adviser & Chief Accounts Officer of the company has commented that the provision for township is on the high side. Two factors which account for this, according to him are:—

- (i) Total excess provision made for each type of quarter as compared to that which should have been provided as per Industrial Housing Standards fixed by the Government of India; and
- (ii) Excessive number of certain category of quarters provided as compared to the number of employees of the respective categories as contemplated for employment in the Project Report.

128. The Managing Director of the company has in this connection stated that the estimates of the capital cost of various categories of houses have been framed keeping in view the remoteness of the locality, non-availability of materials in the region, and expenditure incurred by other public undertakings in Bihar.

129. *In their 8th Report on Townships and Factory Buildings of Public Undertakings, the Committee have made several recommendations for economising in the cost of construction of townships etc. The estimated expenditure on townships and buildings at Amjhore as a percentage of the capital cost of the project is quite high. The Committee suggest that the expenditure on the township and the buildings should be in accordance with the recommendations contained in that Report.*

### C. Tours of Chief Mining Engineer

130. During the period from 15th December, 1963 to 10th March, 1966, the Chief Mining Engineer who has since been promoted as the Managing Director was on tour for 747 days and the expenditure incurred by the company on his t.a. and d.a. was Rs. 26,669.74. This worked out to nearly 20 days per month and Rs. 702 per month. The Committee enquired the reasons for such extensive touring. The Managing Director stated that there were various reasons such as revision of the detailed project report in association with the Indian Bureau of Mines etc. He added that at that time the

entire work was being done singlehanded by the Chief Mining Engineer and work like preparation of specifications, discussions with the Expert Committee, Chief Inspector of Mines, Bihar Government (in connection with the case regarding lease deed) had to be attended to and these involved lot of touring. During the period under question, the Head Office was located at Delhi and therefore a number of tours were undertaken to the Head Office.

131. *The Committee agree that the circumstances were such that some touring was unavoidable because the Chief Mining Engineer had himself to attend to various items of work. Nevertheless they feel that average of 20 days tour in a month for three continuous years is unsustainable. This must have inevitably affected efficient supervision and progress of mining operations at the project site.*

## VII

### CONCLUSION

132. The Amjhore pyrites project is a very important project because it will help in substitution of huge imports. In the first stage of production of 400 tonnes of sulphuric acid per day the saving in foreign exchange is expected to be of the order of Rs. 1.2 crores per annum. When the production of pyrites ore is expanded by one million tonnes and the plant for extraction of sulphur is set up, further substantial saving of Rs. 5 crores in foreign exchange will be possible. Despite such a saving, the Committee have found that a sense of urgency has been lacking in the implementation of the project. The project was conceived in 1955, the Indian Bureau of Mines was asked in 1957 to establish resources and the detailed project report was prepared in 1960-61. After two revisions it was finally approved by Government in January, 1965 and the production of ore is at present expected to commence by the first quarter of 1969. The Committee have found that there have been avoidable delays in the establishment of this project which have been referred to at the appropriate places in this report.

133. The overall impression gathered by the Committee as a result of their examination is that the project has suffered from lack of proper planning. The Directors have been frequently changed and the attendance at the Board meetings has been thin with the result that the management has also not put in the required effort. The Committee are unhappy to observe that Government have also not guided the project in its formative stages. They hope that Government and the company will now ensure that there is no further delay and production is commenced according to the schedules laid down at present.

NEW DELHI;

March 3, 1967.

Phalguna 12, 1888 (Saka).

D. N. TIWARY,

Chairman,

Committee on Public Undertakings.

## **APPENDIX I**

**(Vide Para 21)**

*Statement showing factors which have to be taken into consideration for selecting a suitable mining method.*

1. Thickness of the deposit.
2. Depth of the deposit.
3. Inclination of the deposit.
4. Output capacity and working concentration.
5. Deposit liable to oxidation and spontaneous combustion.
6. Percentage of extraction.
7. Cost & volume of development.
8. Time lag between development and stopping.
9. Gassy deposit.
10. Stability of the floor. sult
11. Contiguity of the deposit.
12. Surface stability.
13. Controlled caving.
14. Control in case of outbreak of fire.
15. Ventilation.
16. Maintenance of faulage & airways.
17. Nature of ore roof and floor.

## APPENDIX II

(Vide Para 28)

Statement showing the Financial Adviser's comments and action taken thereon,

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Sl. No.	Financial Adviser's Comments	Remarks
1.	A saving of Rs. 18 lakhs (representing the cost of driving one pair of adits) could have been saved if <del>two</del> pairs of adits had been designed instead of three pairs of adits as provided in the Third Detailed Project Report.  (Written Replies, p. 53)	The reasons for not being able to do so were pointed out to the F. A. and he agreed.  (Post-evidence inf. Note No. 10, p. 2)
2.	The F. A. had suggested a revised programme of adit roads, gate roads etc. which would result in a saving of Rs. 42 lakhs of capital expenditure.  (Written Replies, pp. 53-54)	Some reduction was effected and a saving of Rs. 18 lakhs was effected.  (Proc. 15.12.66, p. 13)
3.	The Third Detailed Project Report preferred trackless equipment costing Rs. 116.46 lakhs to locomotives costing Rs. 43 lakhs for transport and the consequent increase in the recurring expenditure would amount to Rs. 11.5 lakhs per year.  (Written Replies, p. 55)	The reasons for not using locos and track were explained to the F. A. and he agreed.  (Post-evidence inf. Note No. 10, p. 2)
4.	A saving of Rs. 12 lakhs could be effected if 10 conveyor belts had been provided instead of 12 belts.	This was agreed to.  (Post evidence inf. Note No. 10, p. 2)

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Sl. No.	Financial Adviser's Comments	Remarks
5. A saving of Rs. 8.78 lakhs could be effected if 7 compressors of a capacity of 1000-1100 cfm. each were purchased instead of 8 compressors (5 stationary and 3 semi-stationary).		A reduction in the number of Compressors was effected, but, the suggestion for one uniform size was not accepted.  As regards the excess cost of the Compressors provided in the Project Report, the estimate was revised from Rs. 12.5 lakhs to Rs. 7.5 lakhs.
6. A saving of Rs. 19.89 lakhs could be made in the cost of houses in township.	(Written Replies, pp. 58-59)	(Post evidence inf. Note No. 10, pp. 2-3)  Accepted. As against the original provision of Rs. 1.27 lakhs for Township, the revised provision was Rs. 1.00 lakhs.
7. There was an excess provision of Rs. 1.65 lakhs for purchase of rock-drills.	(Written Replies, p. 58)	(Post-evidence inf. Note No. 10, p. 3)  The provision was re-examined and a reduction of Rs. 0.45 lakh was made.  The total saving in respect of other items of machinery such as conveyors, loaders, shuttlecars etc. was Rs. 21.5 lakhs.
8. An excess provision of Rs 3.96 lakhs has been made for the purchase of explosives.	(Written Replies, p. 59)	(Post-evidence inf. Note No. 10, p. 3)  F.A. was convinced that there cannot be any reduction.
9. Only skeleton staff should have been employed in the initial stages.	(Written Replies, p. 52)	(Post-evidence inf. Note No. 10, p. 3)  F.A. was informed that provision for higher category staff made in the Project Report was necessary. The staff requirements in the case of school and hospital and number of trainees were agreed to be reviewed.
	(Written Replies, p. 52)	(Post-evidence inf. Note No. 10, pp. 3-4).

### APPENDIX III

(Vide para 116)

*Statement showing the attendance at Board meetings*

#### *I. Attendance of individual Directors*

Name	No. of meetings attended	Total No. of meetings held during his office within the period from 4-7-63 to 28-6-66	Per centage
Dr. A. Nagaraja Rao	1	7	14.3
Shri S. N. Sahgal	1	6	16.6
Shri B. N. Sinha	2	7	28.5
Shri P. C. Malhotra	2	7	28.5
Dr. M. D. Parekh	4	13	30.7
Shri K. B. Rao	5	13	38
Shri Bazle Karim	2	5	40
Shri V. G. Gopal	7	15	46.6
Shri S. K. Mukerjee	1	2	50
Shri M. R. Dewan	1	2	50
Shri R. T. Sinha	4	8	50
Shri R. S. Gupta	1	2	50
Shri M. Ramakishnayya	1	2	50
Shri Syed B. Rahman	1	2	50

#### *II. Attendance at meetings*

Date of Board meeting	No. of Directors present	Total No. of Directors in the Board	Percentage
31-5-63	5	11	45
4-7-63	7	11	64
16-9-63	5	11	45
23-11-63	5	11	45
25-1-64	5	11	45
31-3-64	8	11	73
5-6-64	5	11	45



## APPENDIX IV

### Summary of Conclusions Recommendations

Sl. No.	Ref. to para no. in the Report	Summary of Conclusions'/Recommendations.
I	2	3
I	6	The Committee are not able to understand why factors like financial pattern, floatation of the company, etc., had to be considered and settled before establishing adequate reserves of pyrites ore in the area. The first step ought to have been to ask the Indian Bureau of Mines to carry out investigation work and if the preliminary work in that regard indicated that there would be adequate reserves, the Ministry concerned could have taken up the consideration of the factors referred to above. Thus till the nature and quantum of reserves were established the size and pattern of the company could not have been realistically determined. But nearly three years were wasted in contemplating the formation of a company before establishment of the reserves.
2	10	The Committee consider that the preparation of the detailed project report has not proceeded with in a systematic manner. The quantity of ore required was not determined correctly because it depended on the suitability of a process which was yet to be tested. If the preparation of the detailed project report had been taken up after selecting the suitable process for the extraction of sulphur, the time lost in the revision of the detailed project report for educating the production capacity could have been avoided.
	11	The Committee feel that this was largely due to the fact that Government kept themselves out of the picture and left it to a nascent public undertaking to take decisions on vital matters which should have been determined by them before formation of the company. The

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Indian Bureau of Mines took up the preparation of the project report in November, 1960 and in the same month the company knew of the unsuitability of the Orkla process. The company however, did not give thought to the need for revising its earlier demand for 3,00,000 tonnes of lump ore or apprise the Bureau of the new development. While the company was proceeding with the consideration of alternative proposals for utilisation of pyrites ore and was reassessing the demand for ore on that basis, the Bureau was going ahead with the preparation of the detailed project report on the basis of the demand intimated to it. There was thus lack of co-ordination between the Bureau, the Company and government. It has been admitted by the company that "in the initial stages, there did not thus exist effective co-ordination between the company and the Indian Bureau of Mines". Government on their part also failed to guide the company on the right lines. The Committee hope that the Government will not abjure their responsibilities in future to a nascent undertaking.

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While the effort of the Indian Bureau of Mines in drawing up a detailed project report deserves every encouragement, the Committee feel that in order to avoid certain amendments later on in the detailed project report, it would have been better if the Bureau had associated some outside experts in their maiden venture of preparation of a detailed project report.

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The Committee feel that there have been too many revisions of the detailed project report which have consequently delayed the commissioning of the project. They are of the view that the mining method most suitable for the project should have been determined in the first instance and only then the preparation of the detailed project report should have been undertaken. If this had been done, at least one revision could have been avoided. In any case, the Expert Committee which examined the first detailed project report should have gone into this technical matter thoroughly and if any change in mining method was needed it should have been incorporated at that stage itself.

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The first Expert Committee had been set up by the Indian Bureau of Mines and the second Expert Committee was appointed by the company. It is not known as to what was the reason for the reopening the question of the suitability of the mining method after the drawing up of the second detailed project report. The statement of the Managing Director that the first Expert Committee was convened by the author of the report and included only two outside members implied that the selection of the members of that Expert Committee was made in such a way as to get approval for the longwall method. At the same time, the constitution of an Expert Committee by the company and its reopening the issue of mining method at that late stage cannot but create the impression that the company was interested in the introduction of board and pillar method. Government approval was not taken for revising the second detailed project report but after revision, it was sent to Government and was duly approved. It is strange that Government did not make any inquiry into the need for reopening the issue of mining method at such a late stage and consequential revision of the second detailed project report. The Committee regret to observe that Government had failed to exercise effective supervision over the affairs of the project.

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Since a final decision regarding the mining method is not stated to have been taken as yet, the Committee recommend that the Bureau should be consulted at the time of taking a final decision. This is a technical matter on which two Expert Committees have differed. When the question is therefore considered again, it should be by a body of persons who are experts having sound knowledge of both the methods. The considerations which weighed with both the Expert Committees should be made available to them. Their recommendations should be followed without further vacillation.

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The Committee do not consider it necessary to go into the complaints of the Financial Adviser against the Management and vice versa but they regret to note that a spirit of co-operation and

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- understanding was lacking between the Chief Mining Engineer and the Financial Adviser. They hope that every effort will be made by the officers to work with a sense of oneness of purpose which is essential for the efficient and smooth working of the project.
- 9            34            The Committee feel that Government have not been kept informed of an important development relating to the company, either by the company itself or by the officers of Government who were Directors of the company. The Committee understand that copies of quarterly reviews of the Financial Adviser are forwarded to the administrative Ministry and the Ministry of Finance. When such is the case it is all the more important that a document which contains suggestions for saving in capital expenditure to the tune of more than Rs. 1 crore should have been forwarded to Government. Such proposals would have educative value besides being guide lines for the future projects. The Committee recommend that suitable instructions should be issued to all the public undertakings for forwarding copies of such important documents to the administrative Ministry and the Ministry of Finance.
- 10           39            In view of the tight foreign exchange position, Government's action in restricting the tenders to firms in specified countries is quite understandable. But the Committee do not see any reason for postponing action to call for tenders until after the approval of the detailed project report. They feel that valuable time could have been saved if both these processes had been completed simultaneously.
- 11           47            As the ANF Loaders have not been used in pyrites ore mines before, the Committee would recommend that early opportunity should be taken to test them at Amjhore mines and modifications, as might be necessary, got carried out by the supplier.
- 12           49            The Committee feel that the company should take early steps to estimate the operating cost of

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ANF Loaders. Since the other firm claims that the use of JOY Loaders would result in a saving of Rs. 12 lakhs per year it merits close examination. The company is embarking on an expansion programme of the order of one million tonnes and will require more Loaders. It would be worthwhile buying one JOY Loader for experiment sake and for purposes of comparative study. After working both the Loaders side by side for sometime, their relative merits may be assessed, particularly with regard to operating cost, so that when the company goes in for purchase of more Loaders for its long-term needs, it would be able to purchase the better of the two.

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From the time the project was conceived, i.e. 1955 to the time when production by mechanical means would commence would be nearly 14 years. The time taken for drawing up a detailed project report and getting it finally approved was over four years. Avoidable delays have taken place thereafter. The project is expected to save foreign exchange of the order of Rs. 1.2 crores per annum as a result of production of 400 tonnes of pyrite-based sulphuric acid per day and is closely linked with the fertilisers industry in the country. It is regrettable that even this aspect did not provide the necessary drive and a sense of urgency to the project authorities or Government in commissioning the project.

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The argument that both the detailed project reports were prepared by the Indian Bureau of Mines and it will be in a better position to explain the increase in the cost of production is not a satisfactory explanation. The reason that the second detailed project report was for a production of 2.4 lakh tonnes per year as against a capacity of 4.8 lakh tonnes contemplated in the first report accounts for an increase of about 30 per cent only, which works out to Rs. 5 per tonne. Even then the difference is as high as Rs. 13.76 (approx.) and works out to 78 per cent of the original estimate. There has therefore been a gross under-estimate of the unit cost of mining in the first report and since it is one of the basic factors on which the decision to set up a project is taken, such disparity should have been avoided. This was, perhaps, due to the fact that

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- it was the first attempt of the Bureau. This supports the observation of the Committee that it would have been better if outside experts had been associated with the Bureau in the preparation of the detailed project report.
- 15      61      The increase in cost of production of pyrites ore shows a disconcerting trend and the Committee would urge immediate steps to restrict the unit cost of production as the entire economics of the Sulphuric Acid Plant would be dependent on the price at which it gets pyrites ore for manufacture of sulphuric acid.
- 16      67      In the first instance, i.e., till February, 1963 there was apprehension about the off-take of pyrites ore and the first detailed project report was revised so as to reduce the production capacity from 4.8 to 2.4 lakh tonnes per annum. In 1963-64, the Fertilizer Corporation of India indicated a higher demand and the company again thought of increasing the production capacity. This shows that a correct estimate had not been made of the demand for pyrites ore in the initial stages.
- 17      69      No accurate assessment of demand for pyrites exists with the company or government. The Committee suggest that a proper study should be made, by a Committee consisting of knowledgeable persons, of the existing demand and that which is likely to arise during the next five years/ten years. The demand should be assessed year-wise and the company's future production programme should be adjusted accordingly.
- 18      70      The Committee hope that learning from the experience of commissioning the project in the first phase, the company would avoid the pitfalls which were responsible for delays such as, repeated revisions of detailed project report, change of mining method, non-procurement of machinery in time etc. All basic data should be collected in the first instance and thereafter work of processing should be undertaken according to a time schedule drawn up for the purpose.
- 19      77      The question of laying a railway line has not been given the priority it deserves. The Com-

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pany knew as early as 1961 that a main gauge railway line would be necessary for transporting pyrite ore up to Dehri-on-Sone. There is therefore no justification for the company to have delayed the sending of the proposal to the Railway Board as late as March, 1964. Government also did not take any initiative in suggesting to the company to draw up a proposal for onward transmission to the Railway Board.

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The Railway Board on their part has been considering the proposal for long. Despite the matter having been dealt with at the level of the Minister in August, 1966, a final decision has not been taken. Because of this indecision, the company is unable to proceed with the installation of the ropeway. Since the production is scheduled to commence by the first quarter of 1969, no further time should be lost in arriving at a decision.

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Though the capital and operational cost of the ropeway is stated to be cheaper for the company, the Committee consider that from the point of view of general development of the area, advantage in the long run would be in favour of having a broad gauge line. A railway line laid at an estimated cost of Rs. 236.83 lakhs would serve the entire area, whereas a ropeway installed at a high cost of Rs. 83 lakhs would serve the requirements of the company only. Keeping this in view and every possibility of increase in traffic since the area is rich in minerals, the Committee feel that the Railway Board should carefully consider the opening of a broad gauge line as early as possible.

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The delay on the part of the Railway Board in taking a decision is stated to be partly due to the fact that Government have not given their final approval to the expansion scheme of the company. The Ministry of Petroleum and Chemicals should therefore take an early decision on the scheme for expansion and convey it to the Railway Board so that the latter could take into account the potential load factor.

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The Committee are not happy about spending of Rs. 70,000 on a survey for establishment of an aerial ropeway on the river Sone. This appears to be an infructuous expenditure. A peculiar thing that was noticed by the Committee about it

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was that the tenders for conducting a survey for setting up of the ropeway were invited in April, 1965, even before the Railway Board in May, 1965 had asked the Eastern Railway to examine the proposal for laying a broad gauge railway line between Amjhore and Dehri-on-Sone.

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The Plant for extraction of sulphur from pyrites ore is thus not likely to be set up before 1971. The Committee are disappointed at the poor progress made in setting it up. At present sulphur is being imported and the capacity of the plant being estimated at 250 tons of sulphur per day, the setting up of the plant is likely to save foreign exchange of Rs. 1.5 crores per annum. Even this fact has not served to instil a sense of urgency which should have been attached from the beginning.

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The Committee feel that there was an avoidable delay of seven months in sending the ore for laboratory tests. This was because the company decided to send a delegation to Finland first instead of sending the ore for laboratory tests. The postponement of the visit of the delegation due to Emergency delayed the progress. Thinking of sending a delegation before conducting even the preliminary laboratory tests was premature especially when Orkla process of Norway had earlier failed. As it ultimately happened, the sample ore was sent in March, 1963 and the delegation was sent in March, 1964. The Committee therefore feel that if the question of sending a delegation had not been raised prematurely and if the sample ore had been sent towards August, 1962 when the first plant of M/s. Outakumpu of Finland was expected to go into production, the tests could have been completed by the end of 1962 and valuable time could have been saved.

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The Committee are not convinced of the need for sending a delegation prior to laboratory tests. Secondly, there was no need to send a delegation consisting of three persons. The Works Manager who was a chemical engineer and competent to say whether the tests were successful or not, could have been sent and his report could have formed the basis for a decision.



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| 27 | 92  | The Committee feel that avoidable delay has been caused by contemplating a reference to the Fertiliser Corporation of India Ltd. which was later considered unnecessary by the Board of Directors itself. The Committee also do not see much justification for wanting to send another delegation to Finland for negotiating the terms of collaboration for the preparation of the detailed project report. Such matters could be settled by sending the requisite data and by correspondence.  |
| 28 | 94  | Since an integrated plant is economic, the possibility of adding a sulphuric acid plant to the proposed plant for extraction of sulphur may be considered. The Committee would, however, suggest that this should not result in starting the work <i>de novo</i> with the drawing up of a scheme for an integrated plant in lieu of the plant proposed at present. The setting up of the plant has already been delayed and if at all a sulphuric acid plant is to be added, it should be ensured that the already prescribed schedule is more or less adhered.   |
| 29 | 102 | The Committee are not convinced with the arguments regarding the non-preparation of detailed project report. Later, during his evidence, the Managing Director stated that since the proposed Sulphuric Acid Plant was the first to be based on pyrites, it was decided to award the contract on a turn-key basis. The contention that the company did not prepare the detailed project report as it had the know-how of the process is therefore not tenable. Moreover, preparation of a Detailed Project Report is the accepted first step for the launching of any project. The studies claimed to have been made of the demand position and cost of production are rough ones and cannot substitute the detailed project report. In this case, the company's assessment of the demand for sulphuric acid in July 1962 was for only 100 tons per day. The Detailed Project Report prepared by the company in January, 1963 was therefore for a capacity of 100 tons only. Within a month i.e. on the 1st February, 1963 when the inter-ministerial meeting took place, it was found that there was a demand for 400 tons of sulphuric acid per day. This clearly shows that a systematic study was not made of the potential demand. |

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In the absence of a detailed project report it is not possible to evaluate the performance of men, material and machinery. Nor is it possible to judge the time schedule or the cost of construction or later on the cost of production. The Committee therefore feel that it was a mistake to have dispensed with the preparation of the detailed project report.

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The mining operations at Amjhore were behind schedule and in 1963 when the company decided to call for tenders for the sulphuric acid plant, it was known that tenders for the supply of mining machinery even had not been invited by that time and production of ore was expected to commence 700 days after the installation of key mining machinery. There was thus no justification or urgency to dispense with the preparation of the detailed project report and the plea that it was done "with a view to avoid delay," does not hold good since the mining project which had to supply the ore was behind schedule.

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The Committee consider that the time of fourteen months taken by the company in selecting the successful tender for Sulphuric Acid Plant erection was unduly long. Judging the technical competence of the tendering firms, price calculations etc. are usual adjuncts to the tendering process and by themselves they do not justify so much time being taken in selecting a tender. The company should avoid such delays in future.

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The Committee consider that the difficulties regarding the enforcement of performance guarantee etc. do not justify the awarding of a turn-key contract. In their opinion, these difficulties can be overcome by entering into clear and specific agreements with the parties instead of resorting to the practice of awarding the entire contract to one firm on a turn-key basis. Moreover, in this case there was no urgency to set up the plant as the mining operations themselves are not expected to commence before the first quarter of 1969. It should be ensured that turn-key contracts are awarded only in cases of urgency or when there are distinct advantages in doing so.

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33	110	<p>The Committee are not happy at the manner in which the contract for setting up the sulphuric Acid Plant has been concluded. The decision to have a turn-key job appears to have been taken by the Board on the recommendation of the then Works Manager who obviously wanted the easy way of getting the whole job executed by the contractors. The Board and Government have only exercised a superficial scrutiny and do not seem to have satisfied themselves about the justification for awarding the contract, on a turn-key basis. After securing the contract, it was understandable on the part of the supplying firm to show reluctance to have the contract split up. This could have been avoided if the tender notice itself had contained a clause that certain items of work like civil engineering works would be got done by the company itself. During evidence, the Managing Director also concurred with this view. It is surprising that this was not thought of at the time of inviting tenders or the awarding of the contract.</p>
34	115	<p>Either the estimate of cost of production of ore is not correct or there is not sufficient justification for the increase in cost of production of sulphuric acid from Rs. 139 to Rs. 200 per tonne. Correct estimates of the unit cost of pyrites ore and sulphuric acid should be worked out by competent persons and every effort should be made to keep the costs as low as possible.</p>
35	118	<p>The Committee appreciate that due to various reasons full attendance at all the Board meetings may not be possible. Nevertheless they feel that Government should devise suitable procedure to ensure that attendance at Board meetings is fairly high not only in the case of this company but also in other public undertaking. Where a Director fails to attend Board meetings regularly he should be removed from office and should also be debarred from appointment upon Boards of other public undertakings.</p>
36	122	<p>The estimate of establishment expenditure made in the 1st detailed project report is very much less than the later estimates. It is as yet too early for the Committee to offer comments on the staff position. They trust that utmost care</p>

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		and economy will be exercised in working out staff requirements for the construction period, for production during the first phase, and at the time of achieving rated capacity.
37	124	So far the company has been financed by Government in the form of equity only. Since heavier investments are ahead, Government will have to decide the future method of financing the company. The Committee are in favour of the finances being made available in the form of equity and loan in the accepted ratio of 1 : 1.
38	129	In their 8th Report on Townships and Factory Buildings of Public Undertakings, the Committee have made several recommendations for economising in the cost of construction of townships etc. The estimated expenditure on townships and buildings at Amjhore as a percentage of the capital cost of the project is quite high. The Committee suggest that the expenditure on the township and the buildings should be in accordance with the recommendations contained in that Report.
39	131	The Committee agree that the circumstances were such that some touring was unavoidable because the Chief Mining Engineer had himself to attend to various items of work. Nevertheless they feel that average of 20 days tour in a month for three continuous years is unsustainable. This must have inevitably affected efficient supervision and progress of mining operations at the project site.
40	132-33	Despite a possible saving of foreign exchange to a substantial extent, the Committee have found that a sense of urgency has been lacking in the implementation of the project. The project was conceived in 1955, the Indian Bureau of Mines was asked in 1957 to establish resources and the detailed project report was prepared in 1960-61. After two revisions it was finally approved by Government in January, 1965 and the production of ore is at present expected to commence by the first quarter of 1969. The Committee have found that there have been avoidable delays in the establishment of this project which have been referred to at the appropriate places in this report.

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The overall impression gathered by the Committee as a result of their examination is that the project has suffered from lack of proper planning. The Directors have been frequently changed and the attendance at the Board meetings has been thin with the result that the management has also not put in the required effort. The Committee are unhappy to observe that Government have also not guided the project in its formative stages. They hope that Government and the company will now ensure that there is no further delay and production is commenced according to the schedules laid down at present.

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