

**COMMITTEE ON PUBLIC
UNDERTAKINGS
(1982-83)**

(SEVENTH LOK SABHA)

SIXTIETH REPORT

Action taken by Government on the recommendations contained in the Eighteenth Report of the Committee on Public Undertakings (Seventh Lok Sabha)

ON

**KHETRI COPPER COMPLEX OF HINDUSTAN
COPPER LTD.**

**MINISTRY OF STEEL AND MINES
(DEPARTMENT OF MINES)**

Presented to Lok Sabha on 18. April 1983

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**LOK SABHA SECRETARIAT
NEW DELHI**

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CORRIGENDA TO SIXTIETH REPORT OF COMMITTEE
ON PUBLIC UNDERTAKINGS (SEVENTH LOK SABHA)

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**COMMITTEE ON PUBLIC UNDERTAKINGS
(1982-83)**

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INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to submit the Report on their behalf, present this 60th Report on Action Taken by Government on the recommendations contained in the 18th Report of the Committee on Public Undertakings (Seventh Lok Sabha) on Khetri Copper Complex of Hindustan Copper Ltd.

2. The 18th Report of the Committee on Public Undertakings was presented to Lok Sabha on 24 April, 1981. Replies of Government to all the recommendations contained in the Report were received on 30 December, 1981. Further information called for from the Ministry in respect of certain recommendations was received by 3 March, 1983. The replies of Government were considered by the Action Taken Sub-Committee of the Committee on Public Undertakings on 17 March, 1983. The Report was finally adopted by the Committee on Public Undertakings on 23 March, 1983.

3. An analysis of the action taken by Government on the recommendations contained in the 18th Report (1980-81) of the Committee is given in Appendix II.

NEW DELHI ;

April 2, 1983.

Chaitra 12, 1905 (Saka)

MADHUSUDAN VAIRALE,

Chairman,

Committee on Public Undertakings.

CHAPTER I

REPORT

The Report of the Committee deals with the action taken by Government on the recommendations contained in the Eighteenth Report (Seventh Lok Sabha) of the Committee on Public Undertakings on Khetri Copper Complex of Hindustan Copper Ltd. which was presented to Lok Sabha on 24 April, 1981.

2. Action Taken notes have been received from Government in respect of all the 25 recommendations contained in the Report. These have been categorised as follows :—

(i) Recommendations|observations that have been accepted by Government.

Sl. Nos. 4, 5, 7—9, 11—15, and 18—25.

(ii) Recommendations|observations which the Committee do not desire to pursue in view of Government's replies.

Sl. Nos. 1—3 and 6.

(iii) Recommendations|observations in respect of which final replies of Government are still awaited.

Sl. Nos. 10, 16 and 17.

The Committee will now deal with the action taken by Government on some of their recommendations.

A. Penalty for no-performance of guarantee tests

Recommendation Serial No. 9(Para 2.31)

3. The Committee had observed that the concentrator plant had been accepted without performance guarantee tests. The decision to waive the guarantee tests and to accept a lump sum payment of Rs. 8.95 lakhs as against claims, amounting to Rs. 24.86 lakhs for the design defects was taken by the then Works Manager and Manager Finance in March, 1975 without prior approval of Chairman and the Board of Directors. The decision was ratified by the Chairman subsequently and the matter came up before the Board of Directors only in 1978. The Committee had felt that the reasons advanced for waiving the guarantee tests and not fully enforcing the claims were hardly convincing. Considering the fact that the plant could still treat ore only upto 60 per cent of its capacity and

further major modifications were warranted to improve its performance, the Committee had desired the matter to be investigated and responsibility fixed for the waiver and settlement arrived at with the consultants. The Committee were also surprised to learn that the penalty for failure to demonstrate the guaranteed performance under the contract entered into with the consultants was only Rs. 79,258. They had suggested that the matter should be referred to the Ministry of Law and if their examination revealed any lacuna there should be no such lacuna in the contracts in future.

4. In their reply the Government have stated that the reasons for waiver of the guarantee test were investigated by the Adviser (S&T) and Deputy Financial Adviser, Department of Mines. After examination of the relevant records available and orally examining the persons concerned, the two members study team has submitted a report concluding that the question of fixing responsibility need not be pursued further since there was no malafide intention on the part of anyone concerned, which has been accepted by Government.

On the question of fixing suitable penalty for failure to demonstrate the guaranteed performance, it has been stated that a reference was made to the Ministry of Law to know whether there had been any lacuna in the contract due to which Hindustan Copper could not obtain a higher payment for the failure on the part of the consultants. The Law Ministry, has, however, just stated that if HCL had made an appropriate provision in the contract they would have been entitled to claim more. A study of contracts entered by other public sector organisations also did not indicate any clear pattern regarding penalty on Performance Guarantee Clause and the matter was therefore, referred to the BPE. They had reported that detailed instructions had been given by them *vide* their O.M. No. GL/012/BPE/MM dated 9th May, 1977. These instructions had been issued only in 1977 whereas the contract with the French consultants was entered in 1967. The instructions of the BPE are being followed now and the recommendations of the Committee have been noted for future guidance.

5. The Committee find from the Report of the Study team that the contract with the consultants provided that if the guaranteed performance could not be obtained during the period of 24 months following the starting of the plant . . . the consultants could make on their own expense other alterations which would be necessary to reach guaranteed performance. The suggestions of the consultants to overcome the defects were, however, not acceptable to the Company in several respects and it undertook several modifications on its own, then preferred a claim of Rs. 24.86 lakhs on the consultants on this account and finally accepted a sum of Rs. 8.95 lakhs only waiving the performance guarantee tests. The Committee take a serious note of the way in which the settlement was arrived at. As pointed out by the Study

team there was no explicit basis leading to the figure of Rs. 8.95 lakhs as an amount that would have been acceptable not only to H.C.L. but also to an independent party reviewing the transaction and it was difficult to state that the compensation finally accepted by HCL was in fact the most reasonable. The Company had neither taken any legal opinion nor was the issue referred to arbitration which could have indicated the basis on which reasonable terms could have been reached.

It is also seen that although approval of the Board was required in such cases, the Chairman not only did not obtain prior approval or authorisation from the Board of Directors, but also failed to bring up the matter before the Board at the earliest next opportunity. A report to the Board was made only in December, 1978 i.e. after 45 months of the settlement and that also at the instance of one of the Board Members who raised this point in an earlier meeting of the Board in August, 1978. According to the study team this is a clear case of lapse in the procedure for dealing with contractual issues with major administrative and financial consequences. The study team has, however, concluded that 'the matter need not be pursued further in consideration of the fact that the case does not show any malafide intent on the part of anyone'.

6. The Committee would like to point out that apart from the procedural lapses, it is difficult to say that the settlement arrived at with the consultants was in the best interest of the Company. They, however, feel that no useful purpose would be served by pursuing the matter further at this late stage.

7. The Committee also find that there were deficiencies in the contract entered into with the consultants in regard to penalty clause and the Law Ministry, to whom the reference was made by the Ministry, has stated that if HCL had made appropriate provision in the contract, they would have been entitled to claim more. The Committee note that detailed guidelines have been issued by the BPE in 1977 in regard to entering into foreign collaboration agreements by public enterprises. These guidelines inter-alia provide that the liquidated damages should have a relationship to the loss in terms of value to which the undertaking may be put to on account of delays in the discharge of the responsibility envisaged in the agreement in regard to the supplies and other aspects like delay in commissioning of the plant, commencement of production etc. The Committee need hardly emphasise that the guidelines issued by BPE should be followed by all public undertakings while entering into foreign collaboration agreements to ensure that the interest of the Government into public enterprises is adequately safeguarded.

B. Award of toll smelting the reverts

Recommendations Serial Nos. 16-17 (Paras 3.56 and 3.57)

8. Commenting upon the toll smelting of reverts which had accumulated at the plant of the company, the Committee had observed that the Swiss firm selected for toll smelting the reverts did not themselves undertake the smelting. It was also noticed that in the final settlement arrived at with the firm the percentage of copper and gold content in the reverts as agreed to was in all cases lower than the result of analysis of samples by HCL. Neither did the agreement provide for the return of copper based on actual recovery, nor did the company receive any information in regard to copper actually recovered. There was thus no means of assessing the correctness of copper and gold contents in the reverts, as agreed to. In spite of the huge loss involved and many pertinent questions remaining unanswered, the matter was not examined thoroughly by an independent body but was at one stage referred back to the Board for an indepth study by a Committee of the Board. The Committee desired that the whole matter be examined expeditiously by an independent body associating the C.B.I. and responsibility fixed.

9. From the reply furnished by the Ministry it is seen that instead of instituting an enquiry associating CBI as suggested by the Committee, the Ministry had the matter examined by a group constituted in March, 1981 under Chairmanship of Additional Secretary and Financial Adviser of the Ministry of Industry. The Group was required to submit the report as early as possible within a period of three months. It, however, submitted its report in February, 1982.

10. The Report of the Study Group has brought out lack of several basic safeguards in the contract. Changes were also made in the terms of the contract for the last shipment which according to the Study Group were not in the interest of H.C.L. The revised terms were settled without working out financial implications and obtaining legal opinion. Board's approval for the revised terms was also not taken and no formal revision agreement was drawn up. Another deviation pointed out in the 4th shipment was that no determination of gold content in the reverts were made with the result, the settlement grade was much lower than HCL analysis. The grades arrived at the Japanese port were applied to the reverts sent to North Korea which were only much richer in copper content and HCL's interests were adversely affected since the Company did not insist on sampling at the Korean site. The Group has concluded that negotiations for revising the terms of the last shipment were conducted and the settlement arrived at rather precipitatively. Government had accepted the findings of the Expert Group. A copy of the report was also sent to the CBI who felt that there were sufficient grounds

for registration of a regular case of conspiracy against officers of M/s. Hindustan Copper Ltd. who negotiated and concluded the deal and partners of M/s. Amrit Steel Ltd. who represented the foreign firm in this contract. The CBI, however, requested for a formal complaint from the Department for registration of a regular case. The Department informed the CBI that they themselves could take further action in the matter without a formal complaint from the Department. The CBI had, however, since reported that they had registered a preliminary enquiry for an indepth probe in the matter.

11. The Committee regret to note that as informed by the Study Group there was lack of several basic safeguards in the contract entered with the Swiss firm for toll smelting of reverts and the terms of the contract especially in regard to last shipment which were settled without working out financial implications and for which neither the legal opinion nor the approval of the Board was obtained, adversely affected the interests of the Company. The Committee also take serious note of the inordinate delay in having the matter examined by CBI. Not only was there no association of CBI in the enquiry conducted by the Study Group, as suggested by the Committee but there was also inordinate delay in initiating the enquiry by the CBI even after the submission of the Report by the Study Group because of the procedural wrangling between the Department of Mines and the CBI. The Committee would like to know why the CBI was not associated with the enquiry ab-initio. Now that the CBI have registered the case for preliminary enquiry the Committee hope that the matter would be examined indepth by them expeditiously. They would like to be informed of the final outcome.

C. Exodus of skilled personnel from public undertaking

Recommendation Serial No. 22 (Para 3.88)

12. The Committee expressed concern over the fact that a large number of engineering personnel after gaining experience by trial and error at the cost of the public exchequer were steadily leaving the company for their good. The Committee recommended a uniform policy in this regard to be followed by all the public enterprises and suggested that the problem of brain-drain should be gone into by the BPE and suitable guidelines issued covering *inter-alia* the wage policy for highly skilled personnel, their service conditions and motivation, terms of deputation training within and outside the country etc.

13. In their reply the Government have stated that the Bureau of Public Enterprises to whom the matter was referred have reported that the observations of the Committee have been noted. The problems faced by the public enterprises due to flight of technical and skilled personnel particularly to the Gulf and African countries are

being reviewed by the Government from time to time. The conditions of living and facilities available to highly skilled persons and the environment in which they have to work are being reviewed at periodical intervals. Government is contemplating to withhold the terminal benefits in the event of resignation from the enterprise with the intention to join private sector undertakings. Certain motivating factors are also under consideration of the Government such as framing of crash programmes for housing and schools for the children of employees, inculcating a sense of participation in management among the top scientists, engineers, professional persons, reducing the incidence of governmental interference in the day-to-day working of the enterprises, streamlining the selection and appointment procedures, providing suitable training facilities in India and abroad liberalising retirement benefits, introduction of pension schemes, reviewing the salary structure for the top echelons of the public enterprises etc.

14. The Committee desire that the various measures under consideration of the Government to check the flight of technical and skilled personnel should be expedited to ensure that the talent developed within the country largely becomes available for the country's economic development.

CHAPTER II

RECOMMENDATIONS THAT HAVE BEEN ACCEPTED BY GOVERNMENT

Recommendation (Serial No. 4)

Another distressing feature of this project planning episode is that the production capacity of the mines which was earlier estimated at 10,000 tonnes per day is now expected to go up to only 8,000 tonnes per day. This has resulted in serious imbalance in the capacity of the mines and that of the process plants. The process plants have been designed to produce 31,000 tonnes of copper per annum. But owing to reduced production capacity of mines and lower grade of ore, the annual copper production capacity is now estimated to be only about 20,000 tonnes. It came to the notice of the Committee in this connection that a working group on non-ferrous metals constituted by the Cabinet Secretariat in December 1967 recommended in one of their reports that the capacity of Khetri smelter be reduced to 20,000 tonnes per annum. It is amazing that this was not brought to the notice of the Cabinet Sub-Committee while seeking their approval to the revised cost estimates of the project in July 1969 for the production of 31,000 tonnes of copper per annum. Reasons for this information gap need investigation.

(Paragraph No. 1.25)

Reply of Government

The imbalance in the capacity of the mines and the process plants at Khetri is expected to be removed when additional copper concentrates are available from the Malanjkhand Copper Mine Project of Hindustan Copper Limited, under development. The first phase of this project is expected to be commissioned in 1982. The availability of concentrates from Malanjkhand Project would enable full utilisation of the smelting capacity at Khetri.

The reasons for the information gap referred to by the Committee has been looked into carefully. It is seen that a number of working Groups, including one on Non-Ferrous Metals, was constituted by the Cabinet Secretariat in December 1967. The Working Group on Non-Ferrous Metals functioned under COST (Committee on Science and Technology) and submitted two interim reports. One of these

(interim report II) reports covered mainly copper including Khetri Copper Project and covered the period 1-9-1968 to 31-12-1968. This interim report was discussed by COST at its meeting held on 7-4-1969, when it decided to remit certain issues, including the question of reduction in the capacity of the Khetri Smelter, to a Sub-Committee. The Sub-Committee came to the conclusion (June-July 1971) that since orders had been placed for the capital equipment for the concentrator plant, it was too late to scale down the operation and that steps be taken immediately to produce 31,000 tonnes of copper per year at Khetri. In order to achieve this, the Sub-Committee felt that it was necessary to take up exploitation of the smaller deposits in and around Khetri on a crash basis.

The point of reduction in the mine|smelter capacity of Khetri was gone into, in detail by the then Cabinet Secretary during his visit to Khetri early in January 1970, accompanied by Secretary (Department of Mines and Metals). A note recorded by the Cabinet Secretary after his visit to Khetri brought out clearly that we had to import a lot of copper and if we could produce our own copper, there would be foreign exchange savings. If we could produce 31,000 tonnes of copper at Khetri on long term basis, economically, in the interest of the country that should be done. Cabinet Secretary also noted the possibility of feeding the Khetri smelter by copper concentrates from new mines as in Rakha in Bihar.

It will be seen from the above that the initial observation of the Committee on Science and Technology regarding reduction in the Khetri Mine|Smelter Capacity was modified by the same Committee in its final recommendations. The question of incorporating the apprehensions of COST Committee in its Interim Report, in the Cabinet paper submitted in April, 1969, in connection with approval of the cost estimates of Khetri Copper Project, it is felt did not arise as the Sub-Committee constituted by COST was asked to go into the matter fully. The final report of the Sub-Committee of COST was available only by July, 1971 i.e., more than 2 years after the submission of the Cabinet Paper in April, 1969. The points raised by the Committee were gone into, in detail, early in 1970, at Secretary's level and it was decided to go ahead with the setting up of a 31,000 tonnes per annum copper smelter at Khetri.

[Ministry of Steel & Mines, Department of Mines O.M. No. 211|81-Met. III, dated 24-12-1981]

Recommendation (Serial No. 5)

The foregoing observations of the Committee would show clearly that the planning of Khetri Copper Complex typifies the way that projects should not be planned. The Committee have dealt with the

equally unsatisfactory implementation and performance of the projects in the succeeding sections of the Report.

(Paragraph No. 1.26)

Reply of Government

The observations of the Committee in Recommendations (1) to (4) have already been replied to. The lessons learnt during the planning and implementation of the Khetri Project have been fully made use of in improving the planning and implementation of other projects under the Department of Mines.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/1/81-Met. III, dated 24-12-1981]

Recommendation (Serial No. 7)

A number of foreign consultants were engaged for various purposes and the experience with them has not been a happy one. No one seems to have been engaged to coordinate the entire project implementation and take the responsibility for the totality of results. This was necessary as the country lacked the necessary expertise at the time when the project was taken up. However, the Committee find that an American concern, Western Knapp Engineering Ltd. were appointed as engineering experts and advisers to commission the integrated plant at Khetri and achieve the rated output. The Committee would like to have an assessment by the Government of the role played by this concern and the extent of their responsibility in view of various deficiencies in the implementation and performance of the project.

(Paragraph No. 2.29)

Reply of Government

As explained in the written reply to Question No. 3 after the oral evidence of the Ministry initially efforts were made in 1960 to select a consultant for the Khetri Copper Complex as a whole. After examining the offers received in response to the invitation of offers those of three firms, viz. M/s. Western Knapp Engineering, M/s. Dorr Oliver and M/s. Singhmaster & Breyer, were considered suitable and the offer of M/s. Western Knapp Engineering, being the lowest, was accepted. The agreement originally entered into with Western Knapp Engineering envisaged that this party will act as consulting engineers and advisers in respect of the Khetri Project for the mining of ore and for the various processes leading to the production of electrolytic copper.

Subsequently, as US-Aid financing was not forthcoming, M/s. Venot-Pic and Ensa of France were engaged as consultants for the Khetri Copper Complex, following the decision to utilise French Credit

for foreign exchange financing for the project. Consequently, with the signing of a preliminary agreement with the French Group, in June, 1965, the agreement with Western Knapp Engineering was reviewed and a fresh agreement signed in March, 1966 whereby Western Knapp Engineering were to act as engineer experts and advisers to commission the integrated plant at Khetri and achieve the rated output. Western Knapp Engineering were required to review and evaluate the designs, specifications, processes, material balances, estimates of capital and operating costs and profitability, quotations etc. furnished by the French consultants and/or M/s. Outokumpu Oy and advise the National Mineral Development Corporation on the suitability of designs, specifications etc. as well as the reasonableness of the costs. In consideration, Western Knapp Engineering was to receive payment of a lump sum amount of US \$ 1,000 p.m. for work performed in the normal course including investigations etc. and a lump sum payment, to be agreed upon, for items of work costing more than \$ 5,000. For provision of specialist staff outside, USA, the consultants were to be paid separately. Details of payments actually made to Western Knapp Engineering have been furnished to Committee on Public Undertakings in reply to Question No. 4 after the oral evidence of the Ministry.

Following the decision to adopt the flash smelting technology for the Khetri Copper Complex so as to recover the sulphur values, a separate agreement was entered into with M/s. Outokumpu Oy of Finland for the 'process' for the flash smelter.

Thus originally a foreign consultant was appointed for the Khetri Copper Complex, as a whole. However, this had to be modified later in the light of subsequent developments, *i.e.* availability of French credit for the imported equipment and appointment of French Consultants and the decision to adopt the flash smelter technology to utilise the sulphur values.

As desired by the Committee, the role played by WKE in the planning and implementation of the Khetri Copper Complex has been assessed. Three separate agreements were entered into with WKE in connection with the Khetri Copper Complex :—

- (i) Agreement dated 23-5-61 for estimation of ore reserves, preparation of feasibility report, and for acting as consulting engineers and designers for the mines and the various process plant leading to the production of electrolytic copper ;
- (ii) Agreement dated 1-9-1965 for supply of engineering designs for the production and service shafts, equipment specification for these shafts and related installation and supply of supervisory staff for sinking these shafts ; and

- (iii) Agreement dated 1-3-1966 to act as engineer experts and advisers to commission the integrated plant and achieve the rated output. WKE were required to review and evaluate the designs, specifications etc. furnished by the French Consultant and/or M/s. Outokumpu etc.

With reference to (i) above, WKE estimated the ore reserves as follows, based on the Indian Bureau of Mines data :—

	Million tonnes
Proved ore reserves from surface upto 0 metre level	29.4
Probable ore reserves below 0 metre level over a strike length of about 3.5 Km	52.09

General grade of ore estimated at 1.0% copper subsequent exploration and mine development operations revealed that the ore body at Khetri is lensoid and not a continuous one as assumed by Indian Bureau of Mines and Western Knapp Engineering. The quantity of drill proved reserves upto the zero metre level has now been estimated at about 33 million tonnes against WKE estimates of 40 million tonnes. No firm estimate has so far been made in regard to the 'probable' ore reserves below the 0 metre level. The position regarding ore reserves at Khetri has been explained, in detail, in the reply to recommendation No. 3. In the circumstances, it is felt that the ore reserves estimate of WKE considering the limited exploratory data base then available cannot be regarded as unreasonable.

In terms of the same contract WKE established certain parameters in regard to the optimum concentrate grade to maximise recovery of sulphur, gold and silver values, which are in the use today. The flow sheet developed by WKE was, by and large, adopted by M/s. Venot-Pic and Ensa for designing the concentrator. The feasibility report prepared by WKE under the first agreement was accepted by Government.

Coming to the second agreement, it may be stated that the design of the service|production shafts provided by WKE are modern and have proved to be efficient during actual operations. The capacities in terms of hoisting ore and waste have conformed to the original design. The supervisory staff provided by WKE in assisting the shaft sinking operations were quite competent. The slow progress of shaft sinking is attributable to lack of expertise on the part of Indian personnel and the difficult ground conditions encountered. Although, initially it appeared that the location of the shafts was not the best, subsequent geological information collected from this area revealed that such type of fractured ground would be encountered almost anywhere in this area.

Regarding the third contract, HCL has informed that WKE's experts were present at all the meetings and discussions held between National Mineral Development Corporation|Hindustan Copper Ltd.

engineers and the French|Finnish consultants, and to the extent possible, WKE engineers had satisfactorily assisted Indian engineers in terms of the scope of the agreement. In fact, the entire basic concept, right from the beginning was developed by WKE and this formed the basis for the design of the mine, concentrator, smelter, refinery etc.

WKE's contribution in certain specific areas has been quite significant. For example, when Venot-Pic suggested three streams in the grinding circuit in the concentrator to handle 9,000 tonnes of ore per day, WKE insisted on 2 streams in the first instance and suggested that the decisions on necessity of a third stream can be taken later based on the actual hardness and grindability of the ore. If the third stream was also constructed in the beginning as suggested by M|s. Venot-Pic this would have resulted in gross under utilisation of the established capacity in the concentrator for a long time and would have also added to the capital cost.

WKE have also been responsible for determining the economic concentrate grade for Khetri as 12% and based on this the flash smelter was designed for a capacity of 700 tonnes of concentrates per day. The economic concentrate grade was established taking into account maximum recovery of sulphur, gold and silver at various concentrate grades. WKE was also responsible for the concept and design of the recovery of the gases from converters for increasing acid production. WKE have been associated at all discussions during the finalisation of the lay outs and designs and choice of equipment.

Every effort was made to reduce the foreign exchange expenditure in the construction of Khetri Copper Project by adopting indigenous equipment which, in almost all cases, were also being manufactured for the first time. Design parameters assumed by WKE and also by Venot-Pic were based on certain accepted international norms for the quality of construction and performance of equipment. The indigenous equipments which were manufactured for the first time in the country did not come up to the international norms and required certain modifications from time to time.

The total responsibility for construction and commissioning of the plants was that of M|s. Venot-Pic and role of WKE was mainly to assist NMDC|HCL in technical discussions with other foreign agencies like M|s. Venot-Pic, Outokumpu Oy, etc. Wherever deficiencies were observed suitable compensation was claimed from Venot-Pic and the corresponding suppliers.

On the whole, the performance of WKE was satisfactory.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|181-Met. III, dated 24 December, 1981]

Recommendation (Serial No. 8)

The French consultants engaged on a fee of Rs. 511.72 lakhs for designing and supplying equipments worth Rs. 450 lakhs for the majority of the process plants did not have the requisite knowledge and experience of the designing. It is intriguing how they were selected. Easy availability of credit cannot be the main consideration. Strangely, no competitive tenders were called even restricting it to the French territory. Evidently there was no care exercised in selection of the consultants. They subcontracted the job to other foreign concerns. Various defects were noticed in the concentrator and smelter which needed modifications, adjustments and delayed the commissioning.

(Paragraph No. 2.30)

Reply of Government

The circumstances leading to the appointment of M/s. Venot-Pic Ensa of France as consultants for the Khetri Copper Complex have been explained in the written reply (to Question No. 3) after the oral evidence of the Ministry. It is, however, submitted here that the payment of Rs. 511.72 lakhs made to M/s. Venot-Pic (upto 31-3-80) was for services rendered since 1967. The services were partly rendered in India and partly in France. The former included:—

- (i) co-ordination of the work at site ;
- (ii) inspection of equipment manufactured in Indian workshops ;
and
- (iii) supervision of the erection and start-up of the plants.

These were performed by deputing Venot-Pic's experts to India for about 563 man-months. The cost of these services in India (i.e. for provision of experts) amounting to FF 109.33 lakhs or Rs. 195.27 lakhs, forming part of the total payment of Rs. 511.72 lakhs, can hardly be classified as fees.

The services rendered in France included apart from General Engineering, Civil Engineering Design and Process for the Refinery, scope drawings for :—

- (a) The winding equipment
- (b) Concentrator
- (c) Smelter (excluding designs for the flash furnace and its fittings but including designs for Pyrite roasting plant).
- (d) Refinery
- (e) Slag Treatment.
- (f) Laboratory.

Part of these drawings were for equipment fabricated in India. It is, therefore, not appropriate to compare even the payment for services in France accounting for a sum of FF 185.54 lakhs or Rs. 316.45 lakhs (out of the amount of Rs. 511.72 lakhs), with the value of the equipment procured from France.

Further, at the time of selecting the French consultants in 1965, the value of the equipment expected to be imported for the project was substantial. In fact, in April 1967, while considering the terms of payment of M/s. Venot-Pic, it was found :—

“... indigenous supplies would now be nearly three times as much as the originally envisaged quantum with the result that the French Group will now be called upon to render larger services involved in the supply of scope drawings, technical data etc. which would enable the Indian manufacturers|contractors to comply with the requirements of the project design.”

All the same, in retrospect, the Department agree that before appointing M/s. Venot-Pic, tenders restricting it to France could have been issued. Available records, however, show clearly that protracted negotiations were held with the French party to get the terms improved.

The fact that M/s. Venot-Pic would be sub-contracting the job was known while concluding the contract inasmuch as the Memorandum of Agreement dated 16-5-67 between National Mineral Development Corporation and Venot-Pic, *inter-alia*, says:—

“... in the event of NMDC pays directly the price of the process of the Refinery to Yugoslavia, Venot-Pic and Ensa agree to change the set of promissory notes relating to the principal and interest to the extent of the price for the process of refinery paid to Yugoslavia”

Despite this, the National Mineral Development Corporation did not apparently opt to pay directly the price of the process of the Refinery to Yugoslavia; presumably because payments through Venot-Pic would be covered by the French Credit.

As already stated in the reply to Recommendation No. 5, the experience gained in the implementation of the Khetri Copper Project is being kept in view in respect of other projects.

[Ministry of Steels & Mines, Department of Mines O.M. No. 21/1/81-Met. III, dated 24 December, 1981]

Recommendation (Serial No. 9)

The concentrator plant was accepted without performance guarantee tests. The decision to waive guarantee tests and to accept a lump sum payment of Rs. 8.95 lakhs as against claims amounting to Rs. 24.86

lakhs for the design defects appears to have been taken in March 1975 by the then Works Manager and Manager Finance without prior approval of the Chairman and the Board of Directors. The decision was stated to have been ratified by the Chairman subsequently and the matter came up before the Board of Directors only in August 1978. The reasons advanced for waiving the guarantee tests and not fully enforcing the claims are hardly convincing to the Committee. Considering the fact that the plant could still treat ore only upto 60 per cent of its capacity and further major modifications would be warranted to improve the performance the Committee desire that the matter should be investigated and responsibility fixed for the waiver and the settlement arrived at with the consultants. The Committee are surprised to learn that the penalty for the failure to demonstrate the guaranteed performance would be only Rs. 79,258 under the contract entered into with the consultants. The matter should be referred to the Ministry of Law. If their examination reveals any lacuna there should be no such lacuna in the contract in future.

(Paragraph No. 2.31)

Reply of Government

The matter regarding waiver of the guarantee tests and not fully enforcing the claims under the relevant contract in respect of the concentrator plant is being investigated. The outcome, thereof, will be intimated to the Committee separately as soon as possible. The matter regarding penalty under the contract is being referred to the Ministry of Law for examination as desired by the Committee.

(Ministry of Steel & Mines, Department of Mines O.M. No. 21/181-Met. III, dated 24 December, 1981)

Further information called for by the Committee

What is the result of investigation regarding waiver of the guarantee tests and not fully enforcing the claims under the relevant contract? Please also state the opinion of the Ministry of Law regarding penalty under the contract and the action taken on the basis thereof.

[L.S.S. O.M. No. 75/2/1-PU/81, dated 10th February, 1982]

Further reply of Government

A reference to Ministry of Law for giving their opinion on the issue of penalty under the contract has been made. The comments of that Ministry are awaited. The investigation regarding waiver of guarantee tests and not enforcing fully the claims under the contract etc. will be taken up shortly.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/181-Met. III, dated 18 February 1982]

Further reply of Government

The reasons for waiver of the guarantee test were investigated by the Adviser (S&T) and Deputy Financial Adviser, Department of Mines. After examination of the relevant records available and orally examining the persons concerned, this two members study team has submitted a report. The position that has emerged from the report is as follows :—

In 1967 National Mineral Development Corporation who were then in charge of Khetri Copper Complex signed an agreement with a French consultant M/s. Venot-Pic Ensa for technical assistance for the Khetri Copper Complex. According to this agreement if any installation of the concentrator plant or part there failed to reach the contractual guarantees, the penalty as stipulated in the supply contract will be applied. This supply contract was earlier entered into on 23-2-1967. According to this contract, if the guaranteed performance could not be obtained during a period of 24 months following the starting of the plant, subject to the starting of the plant within 24 months from the last shipment, the Consultants would make at their own expense every alteration which would be necessary to reach guaranteed performance. If, however, after these alternations the performance was below the guaranteed stipulation the consultants will pay penalty as provided in the contract. The maximum penalty provided in the agreement was limited to 5 per cent of the FOB price of the equipment.

The first stream of the concentrator plant was ready for commissioning in April, 1973. However, due to power cut regular operation could be started only from July, 1973. A 72 hour performance test was organised under the supervision of the French consultants in November, 1973. It revealed that the plant could not attain the optimum feed rate. There were prolonged discussions between HCL and the consultants on this question. The suggestions of the consultants to overcome the defects were not acceptable to Hindustan Copper Ltd. in several respects. The contention of the French Group and the Consultants in this regard made may be seen in paragraphs 2.6 and 2.7 of the report. As the suggestions of the Consultants were found to be not acceptable, HCL under-took several modifications on their own and preferred to claim Rs. 24.86 lakhs on the consultants with regard to the modifications carried out by them. This claim was contested by the Consultants who accepted a claim of only Rs. 1.486 lakhs. After prolonged discussions finally it was proposed to accept a sum of Rs. 8.59 lakhs as claim and waive the performance guarantee tests.

(1) Waiver of Performance Guarantee :

The modifications introduced by Hindustan Copper Ltd. in the plant had resulted in some improvement in the performance of the concentrator and if a second performance test was insisted, not only the modifica-

tions so far made would have to be dismantled but there would also have been production loss. In the event of failure of performance test, the combined effect of these two, in monetary terms, would have been much more than the penalty leviable. Viewed in this context it stands to reason that HCL should have felt reluctant to insist on the second performance test with the attendant risk of a second failure. With the additionality of cost to HCL being certainty.

(2) The acceptance of Rs. 8.59 lakhs against the claim of Rs. 24.86 lakhs :

It is difficult to state that the compensation to the extent of Rs. 8.59 lakhs finally accepted by HCL was in fact the most reasonable. As the company had neither taken any legal opinion nor allowed the issue to escalate to one of arbitration which could have indicated the basis on which reasonable terms could have been reached. At the same time it may be pointed out that the amount released namely Rs. 8.59 lakhs was much higher than the penalty recoverable from the consultants at a maximum level of 5 per cent FOB namely Rs. 79,258.

(3) Level on which the decision was taken :

Chairman, HCL was present at Khetri during the meeting with the French Group which was held from 4th to 9th March, 1975. The Chairman had been present at Khetri upto 8-3-1975 and also attended one of the meetings with the French Group on that date. However, he was not present on 9-3-1975 when the agreement was finalised but it is seen that a number of briefings were held between the Negotiating Committee of HCL and Chairman, HCL. No doubt, the decision to waive the performance guarantee test was taken by the Works Manager and Finance Manager and subsequently ratified by Chairman. But this does not mean that the Works Manager and the Finance Manager acted on their own and the subsequent modification was in a nature of regularising an unauthorised decision. The Negotiating Team of the Works Manager and Finance Manager were constantly in touch with the Chairman and the decision taken for waiver of the second performance test and accepting the settlement was with the concurrence of the Chairman.

(4) Fixing Responsibility :

In view of paucity of time and the exigencies of circumstances the only way-out left open to the Chairman, HCL was to accept the final claim of Rs. 8.59 lakhs immediately. Hence the matter could not get the prior approval of the Board. Although the matter was subsequently referred to the Board in December 1978, it is true that the matter should have been placed before the Board of Directors immediately for obtaining the ex-post-facto approval. However, it is felt that this point

need not be pursued further since there was no mala fide intention on the part of anyone concerned. The findings of the two member team has been accepted.

To avoid any lacuna in the contract entered into by Public Sector Undertakings with foreign contractors in future, the matter has been referred to the Bureau of Public Enterprises for deciding upon a suitable penalty clause to be incorporated in the contracts with foreign parties. A copy of the O.M. No. 21|10|81-Met. III, dated 22nd December, 1982 sent to BPE is enclosed.*

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|10|81-Met. III, dated 23 December, 1982]

Further information called for by the Committee

It had been stated that a reference to the Ministry of Law for giving their opinion on the issue of penalty under the contract had been made and their comments were awaited. It is requested that the reply of Government on this point and the action taken by BPE in pursuance of the reference made to them in December, 1982 may please be furnished to this Secretariat.

(L.S.S. O.M. No. 75|2(1)-PU|82, dated 14th February, 1983)

Further reply of Government

A reference was made to the Ministry of Law to know whether there had been any lacuna in the contract with the French firm M/s. Venot-Pic and Ensa due to which Hindustan Copper could not obtain a higher payment for the failure on the part of the consultants. The Law Ministry, however, just stated that if HCL had made an appropriate provision in the contract they would have been entitled to claim more. A study of contracts entered by other public sector organisations also did not indicate any clear pattern regarding penalty on Performance Guarantee clause and the matter was therefore referred to the BPE. They had reported that detailed instructions had been given by them vide their O.M. No. GL|012|BPE|MM dated 9th May, 1977. The relevant guidelines relating to guarantee performance and maintenance of quality and penalty are enclosed herewith (*not printed*). These instructions had been issued only in 1977 whereas the contract with the French consultants was entered in 1967. The instructions of the BPE are being followed now and the recommendations of the Committee have been noted for future guidance.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III (Vol. II), dated 1st March, 1983]

* Not reproduced.

(Comments of the Committee)

Please see Paragraphs 5 to 7 of Chapter I of the Report.

Recommendation (Serial No. 11)

The delay in implementation of the project was also partly due to delay in construction|supply of material by other public undertakings such as MAMC, NPCC AND FACT. Civil and structural construction of concentrator plant delayed by 20 months due to lack of practical experience of the NPCC. There was delay in the execution of the turnkey contract by the FACT for the acid-cum-fertilizer plant, whereas MAMC delayed certain supplies. Although the question of delay on the part of the undertakings is stated to have been taken up at various levels both by the company and the Ministry, the Special Secretary, Department of Mines, informed the Committee that "the effect wa not as expected". Frankly, the Committee did not expect an expression of helplessness from Government. At least in future when a major project of this kind is undertaken, the inter-departmental and inter-enterprise linkages at the time of implementation should be identified and coordination committees at a fairly high level organised to see that various items of work are properly synchronised. Such a coordination ought to be the responsibility of the Government and it should be ensured that the projects are completed under the time bound programme in order to avoid cost escalation and loss of production.

(Paragraph No. 2.33)

Reply of Government

The detailed chronology of events connected with the action taken by Hindustan Copper Ltd.|Department of Mines to follow up with MAMC, NPCC etc. on account of delays on their part was furnished to the Committee during oral evidence. It is submitted in this connection that association of public sector companies for construction|equipment supply for the Khetri Copper Complex was in line with the General guidelines of the Government on the subject of utilisation of indigenous technical skills.

Gaining from the experience learnt at Khetri, for implementing its Malanjkhand Copper Mine Project, Hindustan Copper Ltd. has drawn up a detailed scheme for monitoring implementation. In this scheme of monitoring, agencies like the Bureau of Public Enterprises, Planning Commission etc., are actively associated.

In respect of implementation of the recently sanctioned large aluminium complex in Orissa in the public sector, the Prime Indian Engineering Consultant has also been assigned the role of overall project monitoring. It is also proposed to have a high level co-ordination

committee consisting of the representatives of the concerned Departments|Ministries to ensure optimum synchronisation of all related activities.

As the recommendation of the Committee would concern all public sector undertakings, the Bureau of Public Enterprises have been addressed to consider the question of issue of suitable guidelines to all Ministries|Departments|Undertakings vide O.M. No. 21|12|81-Met. III, dated 9-12-1981.

[Ministry of Steel & Mines, Department of Mines O. M. No. 21|1|81-Met. II, dated 24 December, 1981].

Further Reply of Government

In the reply of the Government to the above recommendation, it was stated that the recommendation of the Committee would concern, all public sector undertakings, the Bureau of Public Enterprises have been addressed to consider the question of issue of suitable guidelines to all Ministries|Departments|Undertakings. The BPE has accordingly issued suitable instructions to all concerned vide their O. M. No. BPE|GL. 001|82|CON|15|6|82|157, dated 31st March, 1982. Text of this O. M. is reproduced below :—

Ministry of Finance (Bureau of Public Enterprises—Construction Division) O.M. No. BPE|GL. 001|82|CON|15|6|82|157 dt. 31-3-1982 to All Administrative Ministries|Departments of Govt. of India regarding Issue of guidelines on identification of inter-departmental and inter-enterprise linkage and setting up of Coordination Committee at a fairly high level to see that at the time of implementation, various items of work are properly synchronised.

Recommendation No. 11 (para 2.33) of the 18th Report of Committee on Public Undertakings (7th Lok Sabha) on Khetri Copper Complex of Hindustan Copper Ltd. is reproduced below :

“11 2.33 The delay in implementation of the project was also partly due to delay in construction|supply of material by other public undertakings such as MAMC, NPCC and FACT. Civil and structural construction of concentrator plant delayed by 20 months due to lack of practical experience of the NPCC. There was delay in the execution of the turnkey contract by the FACT for the acid-cum-fertilizer plant, whereas MAMC deyaled certain supplies. Although the question of delay on the part of the public undertakings is stated to have been taken up at

various levels both by the company and the Ministry, the Special Secretary, Department of Mines, informed the Committee that "the effect was not as expected". Frankly, the Committee did not expect an expression of helplessness from Government. At least in future when a major project of this kind is undertaken, the inter-departmental and inter-enterprise linkages at the time of implementation should be identified and coordination committees at a fairly high level organised to see that various items of work are properly synchronised. Such a coordination ought to be the responsibility of the Government and it should be ensured that the projects are completed under time bound programme in order to avoid cost escalation and loss of production".

2. In communicating the above recommendation of the Committee on Public Undertakings, attention of various administrative Ministries concerned with management of public sector enterprises under their control is invited to their crucial role in effective monitoring and coordinating the progress of projects under construction with those of inter-related agencies as outlined in paras 3(A) (b) (v), 3(A) (b) (vi) and 3(A) (b) (vii) of the detailed guidelines on "Management Information System—Reporting by Public Enterprises to Government" forwarded to all Ministries/Departments of the Govt of India vide O.M. No. BPE/CL-03/75-I&R 16(4)/72 dated 11th March, 1975. These paras are reproduced in the Annexure for ready reference. It is felt that such effective coordinated action inter-linked activities with the concerned agencies as a result of performance review meetings held by various administrative Ministries in respect of projects under construction would greatly prevent avoidable delays in project implementation.

3. Ministry of Industry etc. are requested kindly to take note of the recommendations made by the COPU and the facts stated above for taking appropriate action in the matter.

ANNEXURE

Extracts from O.M. No. BPE/GL-003/75 I&R [16 (4)/72], dated 11th March, 1975.

* * *

3A(b) :—

(v) Particular attention should be paid to reports C-2 and C-4 which indicate the problem areas, the action taken by the project authorities and the action required at the Ministry level. The problem areas and action should be grouped by organisations (e.g. State Governments, Central Ministries, Public Undertakings etc.) and by resources (finance, foreign exchange, scarce materials, manpower, equip-

ment and machinery). Where the problem areas have not been properly identified, the projects should be asked to do so carefully. When the action areas have been indicated, these should be examined and action should be promptly initiated at the required levels in the Ministry.

(vi) In regard to report C-4, action would be required for coordinating the progress of the project under review with those of inter-related agencies such as other projects, Ministries, State Governments etc. which may not be under the purview of the administrative Ministries responsible for specific projects. Where necessary, the Ministry should collect information on these inter-related activities/projects from the concerned agencies and develop a total coordinated picture of not only the project under review but of all related projects so that the total position becomes clear. To illustrate, the Department of Chemicals may from an analysis of the reports received from fertilizer units/projects, identify the bottlenecks as due to delays in the supplies of equipment by the Heavy Industry units. On the basis of such information they may take up the matter with the Department of Heavy Industries with a view to assisting the fertilizer units to overcome the difficulties.

(vii) After the above-mentioned analysis, an action report should be prepared within the Ministry which would be submitted to Secretary and Minister for their information. This should be a brief one to two pages report indicating the overall performance so far, outlook for the future (particularly the likely completion date of the project and its cost), problem areas and action. Where a number of projects in the same sector are involved this action report should preferably summarise the latest position of all the projects in one sheet and indicate the prospect of achieving the targets for creation of additional capacity and production build-up in the respective sector.

[Ministry of Steel & Mines, Deptt. of Mines O.M. No. 211/81-Met. III, dated 23-4-82)

Recommendation (Serial No. 12)

The production of ore from Khetri and Kolihan mines was only about 9-10 lakh tonnes per annum during the last three years as against the capacity initially estimated as 30 lakh tonnes and derated as 24 lakh tonnes. It has been estimated that the financial implication of the gross under utilisation of capacity was a loss of copper production to the extent of Rs. 10 crores per annum. The production of ore was lower than even the modest targets fixed by the company year after year. There has been also gross under utilisation of capacity of process plants as well as the acid-cum-fertilizer plant. Owing to low production of concentrates, large quantities of concentrates valued at Rs. 14.83 crores

had to be imported during the years 1975-76, 1976-77 and 1980-81 (upto November, 1980). Still smelter and the refinery plants could be utilised only to the extent of about a third of their capacity. The Committee had earlier pointed out that the appraisal of final cost estimates of the project revealed that the project, besides being economically disappointing was financially unprofitable. It would be of interest to work out the economic rate of return on the basis of actual working results. The Committee would await the outcome of an exercise in this regard.

(Paragraph No. 3.31)

Reply of Government

The reasons for the shortfall in production during 1978-79 to 1980-81 have been stated in paras 3.11 of the report of the Committee.

As desired by the Committee, Hindustan Copper Ltd. worked out the economic rate of return in respect of the working of the Khetri Copper Project, following the method of calculations adopted by the Project Appraisal Division of the Planning Commission.

The calculations reveal that with 1980-81 as the base year and assuming actual working results for the period upto 1980-81 and projections for the period upto 1989-90 and with 12 per cent rate for both compounding as well as discounting, the present value of the project is negative.

[Ministry of Steel & Mines, Department of Mines, O.M. No. 21/1/81-Met. III, dated 30 December, 1981]

Further information called for by the Committee

Please furnish details of the net present value of the project as now worked out by the HCL.

[L.S.S.O.M. No. 75/2/1-PU/81, dated 10th February, 1982]

Further reply of Government

The Net Present Value has been calculated under three different alternatives (reproduced in Appendix I) which are :—

(i) *Alternative I*

Calculation of Net Present Value at 12 per cent Discount Rate (Base Year 1980-81).

(ii) *Alternative II*

Calculation of Net Present Value at 12 per cent Discount Rate with Foreign Exchange Premium at 25 per cent.

(iii) Alternative III

Calculation of Net Present Value at 12 per cent Discount Rate (Base Year 1980-81) with sale price of copper at Rs. 28,000 MT.

[Ministry of Steel & Mines, Department of Mines, O.M. No. 21/13/81/ Met. III, dated 8th March, 1982]

Recommendation (Serial No. 13)

The Committee note that owing to persisting design defects in the concentrator plant, it operates below capacity and in order to improve it and to treat the ultimate ore production from Khetri, Kolihan and Chandmari mines investment of about Rs. 5 crores would be required. The matter is stated to have been entrusted to Engineers India Limited for detailed technical review. Further, the Committee observe that the HCL is unable to tackle the mine development entirely on its own and needs the services of MEC. There seems to be opposition from the workers unions to the induction of the latter. The Committee feel that it should be possible to carry conviction with the workers keeping the matter in the perspective of large national interest. There is also a need to augment power supply to ensure uninterrupted production. The Committee desire that expeditious steps should be taken to ensure coordinated development of the mine and the capacity of the concentrator-smelter to avoid serious problems in future.

(Paragraph No. 3.32)

Reply of Government

Engineers (India) Ltd. has already completed its study of the Khetri Concentrator and submitted a proposal on 18th December, 1980. This will be taken up for consideration after studying the feasibility of application of ore sorting techniques. The concept of ore sorting of minerals is a new one and it aims at increasing the efficiency and economics of concentrator plants by eliminating the barren wastes, taking advantage of the difference in the property of the ore and waste rock like reflective characteristics, response to conductive and/or magnetic field etc. The later, it is claimed, can be used to separated sulphide ore from waste rock. Hindustan Copper Ltd. had sent samples of its ore for tests in Australia in 1979. The results obtained are encouraging and indicate that ore sorting may turn out to be better than modification/addition to the capacity of the Khetri concentrator. This alternative is being studied further so as to employ the same at Khetri to increase the concentrate production.

The Mineral Exploration Corporation has since been inducted at Khetri to augment the developmental work at lower levels with effect from 21st May, 1980. But because of industrial relation problem Mineral Exploration Corporation work on underground development could be started only from the 3rd week of April, 1981.

In regard to augmentation of power supply, Hindustan Copper Limited has taken steps to instal additional diesel generating sets so that the power from the same could be utilised, among others, for mine development purposes. The State Government and the Rajasthan State Electricity Board have also been approached often in the past and currently also, at appropriate levels, for releasing adequate and uninterrupted power supply to the Khetri Copper Complex.

[Ministry of Steel & Mines, Department of Mines, O.M. No. 21|1|81-Met. III, dated 9th August, 1982]

Recommendation (Serial No. 14)

A serious problem that arose in the processing of ore for copper production has been the incredibly excessive generation of reverts at the stage of smelting on account of the Smelter Plant deficiencies, which were later rectified. As a result 41,907 tonnes of reverts had to be sent out of the country for toll smelting. In this connection, certain facts that cause grave concern have emerged on examination by the Committee.

(Paragraph No. 3.54)

Reply of Government

As agreed during the oral evidence of the Ministry an Expert Group was constituted by the Department of Mines vide O.M. No. 4|44|81-COPU, dated 27-3-1981 (Text reproduced below), to examine certain matters connected with the estimation of copper in the reverts generated with the Khetri Copper Complex of Hindustan Copper Limited and the recovery of metal from such reverts, including their treatment in the accounts. The report of the Group is awaited. Government's reply to Recommendation No. 14 of the Committee on Public Undertakings can be formulated only after examining the Expert Group's Report.

Ministry of Steel & Mines (Department of Mines) O. M. No. 4|44|81-COPU, dated 27th March, 1981 regarding Constitution of an Expert Group for examination of certain matters concerning Hindustan Copper Ltd.

The undersigned is directed to say that the Department of Mines have decided to constitute an Expert Group to examine certain matters connected with the estimation of copper in the reverts generated at Khetri Copper Complex of Hindustan Copper Ltd. and the recovery of

metal from such reverts including their treatment in the accounts. The Expert Group will consist of the following :—

- | | |
|---|------------------|
| 1. Shri N. Rajan
Additional Secretary and
Financial Adviser,
Ministry of Industry. | <i>Chairman</i> |
| 2. Shri I.M. Aga,
Joint Adviser (Production),
Bureau of Public Enterprises, | Member |
| 3. Shri S.R. Tata,
Industrial Adviser,
Department of Steel. | Member |
| 4. Shri N.N. Subramanian,
Chief Ore Dressing Officer,
India Bureau of Mines. | Member |
| 5. Shri V. Vasudevan,
Controller of Accounts.
Ministry of Steel and Mines | Member-Secretary |

2. The terms of reference of the Group are as follows :—

- (i) To examine the actual procedures in vogue from time to time for sampling and weighing the ore extrated, ore milled, concentrate produced, concentrate utilised for copper production and for determining the amount of copper lost in tailings and contained in reverts|slag; to examine the adequacy of the procedures followed in preparing metal accounts.
- (ii) To see whether the metal balance statements were prepared periodically and whether they were based on adequate basic data.
- (iii) To examine the correctness and justification for adjustments made in metal balance statements from time to time, such as adjustments in reverts and metal content in concentrates.
- (iv) To see whether prudent procedures were followed to choose the party to whom the contract was awarded for smelting of reverts and return of metal, and if the terms of the contracts were settled in the best interest of the company.
- (v) Whether the terms that were settled were implemented and if they were varied whether proper care and judgment were exercised in the interest of the company.
- (vi) Whether adequate arrangements are in existence for ensuring that the value of the actual copper content of reverts as also of gold etc. be returned to the company.

3. The Group will submit its report as early as possible within a period of 3 months.

[Ministry of Steel & Mines, Department of Mines, O.M. No. 21|1|81-Met. III, dated 24th December, 1981]

Recommendation (Serial No. 15)

A net unaccounted shortage of copper content to the extent of 4,399 tonnes as at the end of March 1979 was noticed by the company although it was assumed that the accumulated reverts included this quantity. Neither the production of concentrates nor the feed to the smelter has been weighed. No proper metal accounting system has been followed to obviate unaccountable loss of copper at any stage of processing. Whenever shortage of concentrates was found it was assumed that it had gone into the reverts and adjustments were made in the books of accounts. Curiously enough, no attempt was made to have the stock of reverts weighed and analyse the copper content hereof to see whether the reverts actually contained the assumed quantity of copper. Subsequently when the reverts were crushed, sampled and analysed in 1978 before their shipment for toll smelting abroad and shortage of copper content to the extent of 4,399 tonnes was found, it was concluded by a committee appointed to investigate the matter (Wadhawan Committee) that the actual concentrate production was less than that reported by an amount equivalent to the shortage observed. This conclusion does not appear quite convincing. Neither the Wadhawan Committee nor the Committee of Board of Directors which subsequently went into the matter, examined the possibility of leakage or pilferage of the metal at any stage of production. There was import as well as indigenous procurement of concentrates which were also charged to the smelter at Khetri and there was no way of knowing the actual recovery of copper from these concentrates and whether it was lower than that assumed on the basis of which the concentrates were paid for.

(Paragraph No. 3.55)

Reply of Government

As stated in reply to Recommendation No. 14, Government have already constituted an Expert Group to examine certain matters connected with estimation of copper in reverts etc. at the Khetri Copper Complex of Hindustan Copper Ltd. The report of the Group is awaited. Government's reply to Recommendation No. 15 of the Committee can be formulated only after examining the Expert Group's Report.

[Ministry of Steel & Mines, Department of Mines, O.M. No. 21|1|81-Met. III, dated 24th December, 1981]

Further information called for by the Committee

Please furnish the outcome of the examination of the question of reverts by the Expert Group as also the action taken by government on the observations|recommendations of the Committee in the light of the findings of the Expert Group.

The Expert Group constituted by the Department of Mines on 27-8-81 was to give its report as early as possible within a period of three months. In case the Expert Group has not submitted its report so far, please state the reasons for the delay.

[L.S.S. O.M. No. 75|2|1-PU|81, dated February 10, 1982].

Further reply of Government

The Expert Group set up by Department of Mines on 27-3-81, could not furnish the report by the stipulated time limit of three months i.e. by June, 1981 as the problems and issues covered in the terms of reference had proved to be too complex to admit of being reported by the Group within a period of three months. Consequently, the time by which the Expert Group is to furnish the report has been extended upto 25th February, 1982 at the request of the Chairman of the said Group.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III dated 18 February, 1982]

Further reply of Government

Government constituted an Expert Group under the Chairmanship of Shri N. Rajan, Additional Secretary and Financial Adviser, Ministry of Industry to examine the matters connected with the estimation of copper in the reverts generated at Khetri Copper Complex of Hindustan Copper Limited and the recovery of metal from such reverts including the treatment in their accounts. The Group was also requested to keep in view and cover in detail the specific points raised in the above recommendations while finalising its report. The Group after examining all relevant documents and also taking evidence from the persons concerned, submitted a detailed report.

The Group has concluded that the metal balancing system followed by HCL is far from satisfactory and that the company has failed to take effective steps to improve the system inspite of useful recommendations made by earlier Expert Groups like the Wadhawan Committee and Dr. Biswas Committee. The Group has made a number

of valuable suggestions including setting up of a separate department to deal with the entire issue of metal accounting and seeking expert advice on evaluation of stocks. The Group has also adversely commented on the adjustment made, in the physical quantities as well as grade of copper in various years and has agreed with the observation made in the above recommendations that whatever could not be readily explained was put under reverts. The Group has further discussed at length the various implausibilities in the system, adopted by the company from time to time, and has observed that quantities and grades were both adjusted to obtain certain predetermined results, without ensuring that these adjustments were on scientific basis.

On the specific question of pilferage the group has concluded that while a definite finding was not possible, any large scale pilferage on a systematic nature would call for collusion on a large scale and would have also come to notice and therefore it had to be concluded that such large scale pilferage was practically impossible. The Group has also recommended the introduction of a better system in dealing with anode slimes for recovering precious metals.

Government have accepted all the findings and recommendations of the Expert Group and the company has been asked to implement these recommendations and report the progress made thereof to the Government quarterly and to the Board in every meeting.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/15/81-Met. III, dated 13th January, 1983].

Recommendation (Serial No. 18)

The Committee have been informed that no norms of recovery of metal at various stages of processing have been fixed by the suppliers of plants. The Committee would like to know whether it is the normal practice. Although the company itself had fixed in November 1977 some norms of recovery, the actual recoveries during 1976-77 to 1979-80 had been significantly lower than the norms and the loss suffered on this account of lower recovery is stated to be of the order of Rs. 233 lakhs. The position becomes all the more serious when it is considered that according to the report of the Wadhawan Committee (June 1978) the assumed process losses in the Khetri smelter appeared to be very liberal on a comparison with operations of flash smelters elsewhere. Although the Wadhawan Committee suggested that a Standing Study Group consisting of senior technical and operating personnel of K. C. C. should be constituted to quantify the present stagewise losses to fix up realistic norms and to review periodically the process losses and suggest revision of norms, it was only in November 1980 that a Committee had been constituted for the purpose. The Committee desire that stagewise realistic norms for process losses

should be fixed soon and losses reviewed periodically with reference to the norms so fixed to ensure that there are no avoidable process losses.

(Paragraph No. 3.65)

Reply of Government

Normally, technical consultants (suppliers of process knowhow/design) set out the recoverable norms and extend guarantee for these, subject to fulfilment of stipulated conditions. Equipment suppliers follow the specifications provided by the designers and generally guarantee throughputs.

The Department agree with the Committee that stagewise realistic norms for process losses should be fixed soon and the losses reviewed periodically with reference to the norms so fixed to ensure that there are no avoidable process losses.

Hindustan Copper Ltd. has informed that the recommendations of the Standing Committee for metal accounting constituted at Khetri, in November, 1980, are being implemented, that the Committee is reviewing the position and that the Committee will be in a position to take up the task of fixing up norms of recovery at various stages shortly. Hindustan Copper Ltd. has been asked to expedite the fixing up of norms of recovery vide copy of letter No. 21(18)81-Met. III, dated 9th December, 1981.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 24th December, 1981].

Further reply of Government

In reply of the Government on Recommendation No. 18, it was stated that Hindustan Copper Ltd. has been asked to expedite the fixing up of norms of recovery at different stages of operations. The Company has accordingly fixed the following norms of recovery for their Khetri Copper Complex :—

From Ore to Concentrate	91%
From Concentrate to Blister	94%
From Blister to Anode	99.3%
From Anode to Cathode	99.5%
From Cathode to Wire Bar	99.3%

The norms have been adopted with effect from April, 1982.

However, in this connection, it may be stated that the metal accounting at Khetri smelter and other plants is not completely perfect in the sense that certain facilities for assessing the tonnage and grade of intermediate products have still not been created.

In this connection it may also be noted that the recovery percentages take into account the metal contained in the slag and reverts which on efficient operating conditions are expected to be recycled without any accumulation. If, on occasions, due to various problems, the recycling do not take place as desired, the recovery would be lower. The Company have issued instructions to Khetri Copper Complex to adopt these norms.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/18/81-Met. III, dated 16-6-1982].

Recommendation (Serial No. 19)

The cost of production of copper at Khetri has gone up from Rs. 82,413 in 1977-78 to Rs. 34,993 per tonne in 1979-80 and is much higher than the international price of copper. The cost of production would have been higher but for the fact that there has been continuous increase in the average grade of ore lately and the government had reduced the excise duty on copper as a measure of assistance to HCL. The Cost of production is also higher than the selling price inspite of the fact that the selling price was raised from Rs. 19,920 per tonne in 1977-78 to Rs. 30,430 in 1979-80. The Committee understand that in U.K., major price increases in nationalised industries are referred to the National Board for prices and incomes. This allows the National Board to see whether such increases can be reduced or avoided by increased efficiency or changes of practices. The Boards enquiries cover the industry's machinery for keeping down costs including the appropriate forecasting and decision-making techniques. Admittedly, in any system, cost efficiency is important and it would be useful to have such an examination in our country too. The Committee trust that government would consider taking steps to have an independent examination of cost efficiency of the public undertaking before agreeing to any major increase in the price of their products.

(Paragraph No. 3.77)

Reply of Government

With reference to the Committee's observation that cost of production of copper at Khetri went up from Rs. 32,413 per tonne in 1977-78 to Rs. 34,993 in 1979-80, it is submitted that the increase in 1979-80 when compared to the previous year was Rs. 2,805 per tonne. The increase has been due to a number of factors including higher cost of inputs, labour etc., which are beyond the company's control. There were also other factors like capacity utilisation grade of ore at Khetri etc. as compared to mines in other parts of the world. The reasons for lower capacity utilisation have been looked into and measures

initiated for optimising capacity utilisation. The action includes re-tification of the design defects of the smelter during 1979 and import of copper concentrates to augment the concentrate feed to the smelter. With the improvements in smelter and availability of adequate concentrate feed, Khetri smelter produced 14,139 tonnes of blister copper during 1980-81 and 5,604 tonnes during April-September, 1981 as against 11,677 tonnes in 1979-80 and 10,425 tonnes in 1978-79. As a percentage of installed capacity, production of blister copper at Khetri during 1980-81 was 44.76 per cent, which has been higher than the previous year. This percentage is, undoubtedly, low but the plant had severe constraints of power supply during 1980-81.

2. Referring to the Committee's observation that the selling price was raised from Rs. 19,920 per tonne in 1977-78 to Rs. 30,430 in 1979-80, it is submitted that since 1973, indigenous copper is sold at a price equal to the ruling MMTC price. The MMTC price, in turn, is fixed, from time to time, by a Pricing Committee headed by the CCI&E, based on the cost of imported metal. The price of copper in the international market fluctuates and quite often the fluctuations are too severe. The international prices of copper dropped during 1977-78, which affected the MMTC price and consequently the financial performance of Hindustan Copper Limited. To meet the situation, certain fiscal measures were taken during January, 1978, including variation in the rates of customs/excise duties on copper.

3. The suggestion of the Committee regarding independent examination of cost efficiency of Public Undertakings before agreeing to any major increase in price of their products has been taken up with the Bureau of Public Enterprises.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/181-Met. III, dated 24th December, 1981]

Further Reply of Government

In the reply of the Government to the above recommendation, it was stated that the recommendation of the Committee would concern, all public sector undertakings, the Bureau of Public Enterprises have been addressed to consider the question of issue of suitable guidelines to all Ministries/Departments/Undertakings. The information furnished by Bureau of Public Enterprises is as follows :—

Whenever Government regulates or administers the price of products of public or private sector enterprises, an appropriate agency—whether BICP, or a special committee constituted for the purpose, looks into the cost structure so as to assess the likely costs at reasonable capacity utilisation. In this assessment, adjustment of costs is also made so as to determine these at normative consumption of utilities and inputs. The pricing decisions are, therefore, based on cost

examination by an appropriate agency. In view of these arrangements, the Government are of the view that adequate cost examination takes place before authorising any changes in administered/regulated prices.

[Ministry of Steel & Mines, Department of Mines Q.M. No. 21/16/81-Met. III, dated 15-10-82].

Recommendation (Serial No. 20)

After examining the project it does not come as a surprise to the Committee that the Khetri project had suffered a cumulative loss of Rs. 71.86 crores from 1972-73 to 1979-80. But for substantial increase in the selling price of copper and the protection afforded by lower excise duty the losses would have been still higher. Obviously the predominant reason for the losses has been the lower capacity utilisation of both copper circuit and the fertilizer plant. The estimated loss on this account is Rs. 10.41 crores, Rs. 7.14 crores and Rs. 9.16 crores in 1977-78, 1978-79 and 1979-80 respectively. The estimate does not take into account the price increase but is presumably based on 1976 price. On the basis of current level of prices and costs, it is expected that the unit could make a profit of Rs. 6.25 crores at a capacity utilisation of 90 per cent of the smelter. The Committee stress that all out efforts should be made to achieve the rated capacity so that the unit instead of being a drain on the national exchequer gives a fair return on heavy capital investment.

(Paragraph No. 3.78)

Reply of Government

It is true that the loss of Rs. 71.86 crores incurred by Khetri Copper Complex during 1972-73 to 1979-80 is, undoubtedly, high and but for the fiscal measures taken the losses would have been higher. The Department of Mines agree with the conclusion of the Committee that the predominant reason for the losses has been lower capacity utilisation of the copper circuit, which, in turn, prevented the optimum capacity utilisation of the Acid-cum-Fertilizer Plant.

The estimated loss during 1977-78 to 1979-80 cited in the recommendation is based on the following assumptions :—

- (i) Selling price as per last Revised Cost Estimates for Khetri Copper Complex at Rs. 20,000 MT for all three years.
- (ii) Costs relating to respective years.
- (iii) Imbalance between mine production and plant capacity will be met by imported concentrates.

The estimated profit of Rs. 6.25 crores of the unit at 90 per cent capacity utilisation of the smelter is based on the level of costs and average price of copper for 1979-80.

The Department of Mines have noted the recommendations of the Committee that all out efforts should be made to achieve the rated capacity of the Khetri Copper Complex so that the unit gives a fair return to the economy on the heavy capital invested. Hindustan Copper Ltd. have initiated steps to maximise capacity utilisation in the shortest possible time. The steps taken include briefly the following:--

I. Mines :

- (a) To supplement the mine production at Khetri and Kolihan, an open cast mine has been developed at Chandmari, apart from another small mine at Dariba ;
- (b) The Mineral Exploration Corporation has been inducted to speed up the mine development work at Khetri ;
- (c) Hindustan Copper Ltd. has developed the requisite expertise in drilling, blasting, loading and ore-transport operations for underground hard rock mining and the activities on this front are comparable to the standards in some of the major copper producing countries.

II. Concentrator :—Hindustan Copper Ltd. is considering the possibility of introducing ore sorting technology to remove the waste rock from the feed to the concentrator, in order to enrich the feed grade and get higher throughput with the existing facilities.

III. Smelter : The technological and operational problems of the flash smelter have been by and large overcome during 1979. Steps have been taken to augment the concentrate feed to the smelter by imported concentrates. Steps have also been taken to tackle the problem of excess generation of reverts as also to improve the quality of the anodes produced. With these, it is expected that with adequate power supply, the Khetri Copper smelter would achieve a capacity utilisation of nearly 80 per cent during 1982-83.

IV. Fertilizer Plant : The Fertilizer Plant at Khetri is based on the sulphuric acid produced from the sulphur di-oxide gas emanating from the smelter. The lower capacity utilisation of the smelter and its unstable operations led to lower capacity utilisation of the acid-cum-fertilizer plant. With the anticipated improvement in the smelter operations, the capacity utilisation of the fertilizer plant is also expected to improve. The Company is also considering the feasibility of improving fertilizer production by installing a sulphur burner to supplement the sulphur content of the sulphur-di-oxide arising from the smelter and converter gases.

V. With the above steps, capacity utilisation at Khetri Copper Complex is expected to improve. The availability of copper concentrate from the Malanjkhand Copper Mine of Hindustan Copper Ltd., beginning from the later part of 1982, will obviate the need for imported concentrates to augment the feed to the Khetri Smelter.

VI. Another important reason for lower capacity utilisation of Khetri Copper Complex has been power cuts and interruptions. The loss of production of copper on this account alone during 1979-80 is estimated at 3,593 tonnes of copper valued at Rs. 11.94 crores. Adding the value of other products of the Complex, the value of loss of production would be about Rs. 13.62 crores.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/1/81-Met. III, dated 24th December, 1981]

Recommendation (Serial No. 21)

The copper industry stood fully nationalised with the take-over of the Indian Copper Complex (Bihar) by the HCL in 1972. The projected demand of copper by the end of March, 1979 was of the order of 1.04 lakh tonnes. The plan target for indigenous production for the year 1978-79 was 27,000 tonnes against creation of capacity of 57,000 tonnes. However, regrettable the achievement was only 21,888 tonnes of production against capacity of 47,500 tonnes created. Thus, there is a huge gap between the demand and the indigenous availability and the country continues to rely on imports for meeting a major part of the demand. In this context the failure of the Khetri Copper complex becomes glaring. Though the Committee see no possibility of total avoidance of imports in the foreseeable future they desire that steps should be taken to see that at least 50 per cent of the requirement is met by indigenous production by the end of the Sixth Plan in view of the strategic importance of the metal. The protection afforded to the indigenous industry by way of lower excise duty on production and higher customs duty on imports should also be progressively relaxed inducing the industry to improve its cost efficiency.

(Paragraph No. 3.83)

Reply of Government

It is true that the Copper Industry in India stands nationalised since 1972. At present, apart from the Hindustan Copper Ltd., there is no other Company in India producing primary copper metal, though Chitradurga Copper Company and the Sikkim, Mining Corporation produce small quantities of copper concentrates which are supplied to Hindustan Copper Ltd. for smelting.

The figures of projected demand, and capacity for copper by the end of the Fifth Plan incorporated in the recommendation of the Committee, it is submitted, needs some elucidation.

Firstly, the demand of 1,04,000 tonnes of copper by the end of March, 1979 mentioned is the figure projected in the Fifth Plan. The Working Group on Non-Ferrous Metals set up in connection with the

formulation of the Sixth Plan has, however, estimated the apparent consumption of copper during 1978-79 and 1979-80 as 88,000 and 72,000 tonnes respectively.

Secondly, the target for installed indigenous capacity indicated as 57,000 tonnes per annum includes, *inter alia*, the capacity of fire refined copper (about 9,500 tonnes per annum) from the reverberatory furnace at Ghatsila, which being old and obsolete, was closed down in 1-4-1977. Further, the capacity of the Ghatsila smelter has been taken as 16,500 tonnes per annum, which, in fact, is the capacity for blister copper or hot copper metal. This has to be further refined to get copper cathodes and finally cast into wire rods. The capacity existing at Ghatsila for refining copper is only 8,400 tonnes per annum. A feasibility study is currently under way for rectifying this imbalance. It is only the copper cathodes or the wire bar that can be sold, and hence the capacity of the Ghatsila plant, in terms of saleable copper, should be reckoned as 8,400 tonnes per annum. This together with the capacity of 31,000 tonnes per annum for refined copper at Khetri, the installed indigenous capacity for copper (refined) should be taken as 39,400 tonnes per annum as against the figure of 57,000 tonnes per annum.

Thirdly, with regard to the target of production of 37,000 tonnes by March, 1979, it may be observed that with the closure of the reverberatory furnace the estimated production by 1978-79 should also be reduced from the figure of 37,000 tonnes per annum, to say, 27,000 tonnes per annum. As against the above, the actual achievement for the year 1978-79 was 39,400 tonnes capacity and 18,600 tonnes production in terms of refined copper or 47,500 tonnes and 21,888 tonnes respectively in terms of blister copper.

The reasons for shortfall in production of copper have already been gone into by the Committee. The Department of Mines fully agree that steps should be taken to maximise indigenous production of copper in view of its strategic importance. As already submitted during oral evidence, in view of the limited known ore reserves of copper in the country, imports cannot be avoided. Hindustan Copper Ltd. has taken up feasibility studies for expansion of mining and for expansion of smelting/refining capacity both at Ghatsila (upto 20,000 tonnes per annum) and at Khetri (upto 45,000 tonnes per annum). When these expansion schemes are completed, the indigenous capacity for production of copper will be 65,000 tonnes per annum. A firm time schedule for this can, however, be drawn up only after the Feasibility Reports have been received and investment decisions taken.

The Working Group on Non-Ferrous Metals (1980) has estimated the demand for copper by 1984-85 as 1,17,500 tonnes. Assuming that the expansion of the Ghatsila and Khetri smelters would be

completed by the end of the Sixth Plan, the Working Group had estimated that about 50 per cent of the demand by 1984-85 would be met by indigenous production.

The Department of Mines fully agree that the Hindustan Copper Ltd. should improve its cost efficiency. The indigenous copper industry would, however, need protection in view of increased costs of production due to factors like lower grade of the ore scale of operations etc. The extent of protection assistance needed will, however, be reviewed from time to time.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/181-Met. III, dated 24th December, 1981]

Recommendation (Serial No. 22)

In the initial stage the HCL suffered from lack of expertise. The engineering personnel after gaining experience by trial and error at the cost of the public exchequer are now steadily leaving the company for their good. In one year, 1979-80, 75 executives are reported to have left and 50 of them went abroad, notably to Zambia to take up assignments in her copper industry. The Committee view this phenomenon of Braindrain with considerable concern and dismay. The Committee have, however, been assured that the exodus in future will be contained within limits consequent on certain steps taken. There should be a uniform policy in this regard to be followed by all the public enterprises. The Committee suggest that the problem in all its aspects should be gone into by the BPE and suitable guidelines issued. The guidelines should cover *inter alia* the wage policy for highly skilled personnel, their service conditions and motivation, terms of deputation on training within and outside the country etc. The talent developed within the country at considerable cost to the economy should largely become available for the country's economic development.

(Paragraph No. 3.88)

Reply of Government

The annual turn-over of technical personnel (officers) from Hindustan Copper Ltd. has been 25—35 during 1975-76 to 1978-79. During 1979-80, however, 99 technical personnel (including 66 from Khetri) left the Company. Of these, 56 (including 48 from Khetri) are reported to have gone abroad for taking up assignments, as against 2-3 in the earlier years. The exodus during 1979-80 was mainly to Zambia. In fact, the Zambians resorted to direct recruitment of personnel required without approaching Hindustan Copper Limited or Government of India. The matter was brought to the notice of Government by Hindustan Copper Ltd. in August, 1979. The Department of Mines took up the matter with the Ministry of External Affairs and the Department of

Personnel and Administrative Reforms. The Ministry of External Affairs discussed the problem with the Zambian High Commissioner who agreed to do the needful to ensure that in future the Zambian Copper mining Companies refrain from direct recruitment and notify their requirements to the Government of India so that the latter could decide, in consultation with the Undertaking as to the number of persons who could be spared.

The problem of exodus of personnel from Hindustan Copper Ltd. has since been contained, by and large, inasmuch as during 1980-81 only four engineers left the Company for taking up jobs abroad.

The Department of Mines share the view of the Committee that the talent developed within the country at considerable cost to the economy should largely become available for the Country's economic development.

The recommendation of the Committee that the problem should be gone into, in detail, has been referred to the Bureau of Public Enterprises for necessary action.

[Ministry of Steel & Mines, Department of Mines O.M. No. 211/81-Met. III, dated 24th December, 1981]

Further reply of Government

In the reply of the Government to the above recommendation, it was stated that the recommendation of the Committee that the problem should be gone into, in detail, has been referred to the Bureau of Public Enterprises for necessary action. The Bureau of Public Enterprises have reported that the observations of the Parliamentary Committee have been noted. The problems faced by the public enterprises due to flight of technical and skilled personnel particularly to the Gulf and African countries are being reviewed by the Government from time to time. It is noted that there is a global shortage of skilled personnel in certain disciplines. A certain amount of movement of personnel is also inevitable. From a broader perspective, it is felt that availability of manpower is a factor of which India can take advantage for increasing earnings of its invisibles, establishing its reputation in scientific and technological fields through its personnel, and promotion of political relations and diplomatic goodwill. On the other hand such movement affects critical programmes in the public sector.

While it may not be possible to match the terms which highly skilled persons command in the international market, the conditions of living and facilities available to such persons and the environment in which they have to work are being reviewed by the Government at periodical intervals. In this context, it may be stated that while the Government has been encouraging public enterprises to make campus

recruitment and provide suitable stipends to the Management trainees during the period of probation on completion of which they are offered regular scales of pay and allowances. The enterprises normally obtain a bond from such Management trainees requiring them to serve the concerned enterprise for specific period of time. The terms of the bond so executed are to be enforced strictly as exit of the trained manpower at the critical movements adversely affect the project schedules themselves. The terms of the bond so executed are being relaxed subject to the discretion of the Management only when such movement takes place from one enterprise to another or from a public enterprise to a Central/State Government Department. The terminal benefits like the employers contribution towards the CPF, gratuity payments, or a sum equivalent to the salary for the leave period can also be forfeited by the enterprise if the concerned employee has not completed the requisite number of years of service. Government is also contemplating to withhold these terminal benefits, in the event of resignation from the enterprise with the intention to join private sector organisations.

Certain motivating factors are also under consideration of the Government to contain braindrain. These *inter alia* envisage framing of crash programmes for housing and schools by the enterprises for the children of the employees inculcating a sense of participation in management among the top scientists, engineers, professional persons, reducing the incidence of governmental interference in the day-to-day working of the enterprises, streamlining the selection and appointment procedures for scientists, technical persons assuring their rise to the level of Directors on the Board, providing suitable training facilities in India and abroad, liberalising retirement benefits such as raising the ceilings for gratuity payments, introduction of pension schemes, reviewing the salary structure for the top echelons of the public enterprises, etc. Steps are also being taken to remove handicaps which come in the way of movement of the persons from one enterprise to another by authorising transfer of gratuity, leave and other benefits. LTC facilities and other faring benefits like grant of conveyance allowance or reimbursement of the Local Travelling Expenses are being extended to the Sr. Executives. Monetary incentives in the form of incentive payments linked to productivity and profitability have also been conceded in some of the public enterprises. The scales of pay and allowances of the officers are also being reviewed at periodical intervals so that highly skilled and qualified scientists, engineers, doctors, etc. could be inducted in the public sector. The scheme of delegation of powers between the Government and the public enterprises is reviewed to make them operationally more autonomous. Even within the enterprises proper delegation of powers between the different levels of executives is being encouraged to ensure proper job satisfaction.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/1/81-Met. III, dated 12th March, 1982]

(Comments of the Committee)

Please see Paragraph 14 of Chapter I of the Report.

Recommendation (Serial No. 23)

In addition to incorporating the results of comprehensive appraisal of selected enterprises by the Audit Board, the Reports of the Comptroller and Auditor General of India brings out several topics of interest including systems deficiencies relating to Central public enterprises. These Reports are presented to Parliament year after year. The Committee are distressed to learn from the Department of Mines that all the Reports are not placed before the Boards of the concerned enterprises for giving directions to the management for improvement in their working. This should be done in future without fail.

(Paragraph No. 3.90)

Reply of Government

This Department has already instructed the Undertakings under its administrative control to place before the Board of Directors the reports of Comptroller and Auditor General or relevant extracts therefrom for its considerations and giving further directions, if any, to the management. In this regard text of letter No. 1(24)80-COPU, dated 6th November, 1980 is reproduced below :—

Ministry of Steel and Mines (Department of Mines) letter No. 1(24)80-COUP, dated 6-11-1980 from Shri C. P. S. Nair, Director to CMDs of Public undertakings under the Department regarding Reports of Comptroller and Auditor General.

I am directed to say that the questionnaire sent by the Lok Sabha Secretariat in connection with the review of the performance of public undertaking by Committee on Public Undertakings during 1980-81 seeks information, *inter alia*, on whether the reports of the Comptroller and Auditor General of India are discussed by the Board of Directors of public sector companies with a view to giving directions to the management for action.

2. The reports of the Comptroller and Auditor General of India—Union Government (Commercial)—are generally of three types viz. (i) some of the reports contain the comments of the statutory auditors| commercial audit on the annual accounts of the companies; (ii) others contain paragraphs on particular cases or transactions or topics relating to different undertakings; and (iii) others are comprehensive reports on the performance of particular undertakings.

3. It is requested that the reports of the C&AG or relevant extracts therefrom may kindly be placed before the Board of Directors for its consideration and giving further directions, if any, to the management.

The receipt of this letter may please be acknowledged.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 24th December, 1981]

Recommendation (Serial No. 24)

Incidentally, the Committee's attention has been drawn by the C&AG to a number of other points relating to HCL raised in his Reports, which have not been commented upon by the Committee. Such points have, however, been taken up with the Ministry|undertaking. The Committee desire that the issues involved should be sorted out in consultation with the C&AG and the follow-up action monitored by the Board|Administrative Department.

(Paragraph No. 3.91)

Reply of Government

Hindustan Copper Limited has already placed the points of interest arising from the C&AG Commercial reports 1978 (Part VI) and 1979 (Part V) before its Board of Directors. Points contained in the reports for the years 1975, 1976, 1977 are being placed before the Board of Directors of the Company at its next meeting.

2. The recommendation of the Committee that the issues involved in the points relating to Hindustan Copper Ltd. arising from the Comptroller and Auditor General's commercial reports should be sorted out in consultation with Comptroller and Auditor General and follow up action monitored by the Board and Administrative Department has been noted for compliance.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 24th December, 1981]

Recommendation (Serial No. 25)

An indepth study of the Khetri Copper Complex has brought to light, among other things, that the administrative Department of the Government was more or less a passive witness to the bad performance almost throughout. The Committee find that although according to the guidelines issued by BPE in 1969, the controlling Ministries|Departments were to hold review meetings at least twice a year and according to the guidelines issued subsequently in 1975, such meetings should be four in a year, the review meetings were not held systematically and as frequently as was required. The Special Secretary Department of Mines, agreed with the Committee that the project implementation and performance could have been much better had action-oriented review meeting been held regularly. The Committee trust that in future the

Department would not be found wanting in the discharge of its responsibilities in regard to proper functioning of the public enterprises under its control.

(Paragraph No. 3.94)

Reply of Government

Meetings to review the performance of Hindustan Copper Limited are being held since 1970. Information regarding the number of meetings held, level at which they were held was furnished to the Lok Sabha Secretariat *vide* this Department's O.M. No. 4|8|80-COUP, dated 23-12-1980.* It is true that during years 1973, 1974, 1977 and 1978 only one review meeting each was held. However, the Department has been receiving monthly letters from the Chief Executives of Undertakings under its control, including the Chairman-cum-Managing Director, Hindustan Copper Limited, highlighting the performance of the undertaking in the preceding month and pointing out problem areas. These letters are examined and put up to the Joint Secretary|Secretary|Minister, as required, and appropriate action initiated wherever called for. In fact, during the oral evidence of the representatives of the Department of Mines during December 1980, brief chronological history of certain cases of delay on the part of NPCC|MAMC|TSL, which were followed up by the Department of Mines at Secretary|Minister's level was also furnished. It is further submitted that in addition to the monthly letter of the Chief Executives and the review meetings, the performance of the undertakings also are reviewed during the Annual Plan discussions.

The Committee's expectation that in future, the Department would not be found wanting in the discharge of its responsibilities in regard to the proper functioning of public enterprises under its control has been fulfilled inasmuch as during the year 1981, meetings to review the performance of Hindustan Copper Ltd. were taken by Secretary (Mines) on the following dates :—

1. 30-1-1981
2. 27-4-1981
3. 4-3-1981
4. 3-11-1981

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 24th December, 1981]

*Not reproduced.

CHAPTER III

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

Recommendation (Serial No. 1)

Planning and implementation of Khetri Copper Complex, which were initially handled by the NMDC were taken over by the HCL which was incorporated in 1967. Earlier in 1961, the NMDC employed an American firm of consultants to prepare a feasibility report for the copper complex utilising the ore from Khetri mines. The scope of the Project was thereafter enlarged by including the development of Kolihan mines and production of triple super phosphate utilising the sulphur value of the ore and the estimated production of copper was increased from 21,000 tonnes per annum to 31,000 tonnes in 1966, but was later scaled down to 25,700 tonnes in March, 1972. Despite such significant changes neither was fresh feasibility study nor detailed project report prepared. This lapse cannot but be deplored.

(Paragraph No. 1.22)

Reply of Government

A feasibility report for the Khetri Copper Complex was originally prepared by M/s. Western Knapp Engineering Company Limited. The Consultants recommended production of 21,000 tonnes of copper metal per annum, based on the Khetri Copper ore deposit, by the Reverberatory smelting process. While considering the feasibility report of Western Knapp Engineering a view was expressed that the flash smelting process should be adopted so as to recover the sulphur values in the copper concentrates raised from the Khetri Copper ore. In fact, even though, the report of the Western Knapp Engineering Company Limited, also mentioned about flash smelting process, this was not pursued because no arrangement could be made for foreign exchange. When in 1964, foreign exchange by way of French Credit was available, the company went for flash smelter process which was found to be better as it utilised fully the sulphur values. Government therefore, approved the project as conceived by W.K.E. in 1962 at a cost of Rs. 24.44 crores.

In the meanwhile, in May, 1964, it was decided to change the scope of the project so as to set up a copper smelter by the flash smelting process, which was expected to yield, in addition about 600—700

tonnes per day of sulphuric acid. With this, the smelting capacity was increased to 31,000 tonnes per annum having regard to the new copper ore deposit located in Kolihan.

Subsequently, when the Khetri copper mine was opened up, it was found that the deposit was lensoid and the ore reserve estimates made earlier, based on drilling at 100 metres interval, had to be scaled down to some extent. With the scaling down of the ore reserves and the achievable ore production, the metal production capacity of the project had to be revised.

This Ministry has carefully considered the observation of the Committee that despite such significant changes neither was fresh feasibility study made nor detailed project report prepared and that this lapse cannot but be deplored. In this connection it is submitted that the major change in the scope of the project arose from the decision (taken in May, 1964) to adopt the flash smelting process so as to utilise the sulphur. This decision was sound in itself on two main grounds. Firstly, India has no deposit of elemental sulphur and the country has been dependent on imports for this basic raw material required by a number of key sectors. From the foreign exchange saving angle, therefore, production of by-product sulphuric acid was (and is) as important as production of copper metal. Secondly, recovery of sulphur values from the copper concentrates is a major measure in the field of pollution control and but for the decision in 1964 to set-up the sulphuric acid plant at Khetri, the project would have had to spend considerable money on pollution control or would have had to let off the sulphur di-oxide gases which are hazardous to the environment in and around Khetri. As already brought out in the report of the Committee, a detailed project report was prepared for the Khetri Acid-cum-Fertilizer Plant before sanctioning the component of the project.

It is true that subsequent to 1952 there was no fresh "feasibility study" or "detailed project report" for the Khetri Copper Complex as a whole but detailed cost estimates for the project were, worked out by the National Mineral Development Corporation|Hindustan Copper Limited from time to time and the reasons for increase in costs gone into, in detail, both by the Company and the Government before sanctioning the revised cost estimates each time. In fact, on 30-1-65 Government advised National Mineral Development Corporation to proceed with further pleasing on the basis of the whole project and furnish project estimates covering mining, concentration, smelting, refining and sulphuric acid. It cannot, therefore, be said that there was no detailed project planning or project evaluation or realistic cost estimates or profitability study.

It is also not out of place to mention that there were no detailed instructions on the subject of preparation of feasibility report|detailed project report for project at the relevant time. It was only in May 1966 that the Planning Commission brought out a booklet entitled "Feasibility Studies for Public Sector Projects".

The preface to this booklet says "this Manual has been brought out as a guide to the preparation of feasibility studies for industrial projects in the public sector". The Manual also says that the "exact requirements and contents of feasibility study, and a project report are, at present, not clearly defined in the Government procedures. Nor is it clear whether a project should be approved on the basis of one report or two. In the best some projects have been approved on the basis of a feasibility study, some on project report and others on the basis of reports with entirely different titles and contents."

The Manual makes it clear that once a Feasibility Report is prepared and the project sanctioned, if there is change in the estimates following a change in the Foreign Exchange financing arrangement, it is not necessary to prepare a fresh project report as will be seen from the following extract :—

"In many cases, however, loans are tied to a particular country, and the equipment has to be purchased from that country. The cost equipment often varies considerably from country to country. In such a case, the estimates and schedules prepared in the Feasibility Report are likely to change after the source of foreign exchange is identified. The result is often an immediate change in the estimates for project without any further work being accomplished other than a loan approval.

Having made the basic investment decision on the basis of the feasibility study, it is recommended that, it is not necessary for projects to prepare project report and submit it to the Government for the purpose of sanctioning the project."

The Manual of the Planning Commission was followed up by the Ministry of Finance *vide* their D.O. letter No 1942-BPE|67, dated 3-8-1967, from the then Deputy Prime Minister to the Minister of Steel, Mines & Metals and O.M. No. 2(75)|68-BPE, dated 23-4-68, from the Bureau of Public Enterprises. The O.M. emphasises the need for preparation of feasibility studies for public sector projects as the report would cover the economic, commercial and financial aspects of the project which are essential pre-requisites for sound, investment

decisions. It also lays down that where feasibility study gives sufficient information, there would be no need for a separate Detailed Project Report there need only be detailed engineering and detailed cost estimates.

The Deputy Prime Minister's letter mentions the matters to be covered in a feasibility report as (i) demand study, (ii) technical features (iii) location, (iv) project estimates (capital and operating costs) and (v) profitability including cash flow and (vi) cost benefit etc. The only known large unexploited copper ore deposit at the relevant time was in Khetri. There has never been any doubt about the need for capacity for copper production based on demand. The flash smelting process decided was the only one available for copper production with facilities for sulphur recovery. There was thus no purpose in taking a demand study, technical features and location of the project with the change in scope of the project. The project costs (capital and operating and profitability including cash flow, were worked out every time the estimates were revised. Thus, the essential components of feasibility report, viz. capital and operating costs as also profitability and cash flow of the project, were revised from time to time and as such the question of any lapse does not arise.

[Ministry of Steel & Mines, Department of Mines M. No. 21-1-81-Met. III, dated 27th July, 1982]

Recommendation (Serial No. 2)

According to an estimate prepared in March 1966 by the NMDC the cost of the enlarged project with Rs. 78.52 crores. This indicated that the project would yield a profit of 12.5 per cent. The estimate underwent revision thrice after the project was taken over by the HCL. The latest estimate sanctioned by the Government in July 1979 surprisingly after the project was completed, put the cost at Rs. 138.36 crores. There has been phenomenal cost escalation of the order of 76 per cent albeit significant reduction of benefit. A post-factor appraisal of the project by the Planning Commission revealed ironically that the financial rate of return would be negligible even with the vast increase in copper prices by 1979. Although a cut off economic rate of return of 12 per cent is reported to be adopted by the Planning Commission for clearance of projects, the Internal Rate of Return (IRR) of the Khetri complex was finally found to be no more than 4.5 per cent on an economic analysis. At 12 per cent discount rate the next present value (NPV) of the project turned out to be negative, i.e., minus Rs. 132 crores, such a project would not have been ordinarily taken up for implementation. It is indeed distressing that that government was presented with a *fait accompli* and there was no scope left to the various organisations scrutinising the estimates to make any worthwhile contribution

to effect economy. The Special Secretary's specious plea that the project could still be justified on the basis that copper is a strategic metal is at best an excuse for a totally uneconomic investment.

(Paragraph No. 1.23)

Reply of the Government

The revision of the cost estimates of the Khetri Copper Project since 1966 was necessitated by a number of reasons like devaluation of the rupee in June, 1966, the ore body turning out to be lensoid and irregular necessitating additional mine development, global inflation following the 1973 oil crisis, longer period of construction etc., apart from change in the scope of the project. The specific reasons for the increase in costs were gone into, in detail, every time the revised cost estimates were approved by the Government. It is also relevant to mention that the approval given to the cost estimates of the National Mineral Development Corporation in respect of the Khetri Copper Project in 1966 was more by way of administrative approval rather than sanction for expenditure, as is clear from the Cabinet note (October, 1966). It clearly said that pending firming up of the cost estimates, approval should be given by the Finance Ministry to individual expenditure proposals connected with the project for such essential requirements, which could not await the formal sanction of the Project as a whole.

With reference to the Committee's observation that the latest estimates were sanctioned by the Government in July, 1979, after the project was completed, it is submitted that the sanctioned cost of the project stood at Rs. 114.84 crores in May, 1974. By this time, construction of the copper circuit was, by and large, complete and, in fact, the smelter had been commissioned in November, 1974. While submitting the proposals of RE 1975-76 and BE 1976-77, in December, 1975, HCL indicated that the estimated completion cost of the Khetri Copper Complex would exceed the sanctioned cost. The Company came up for approval of the revised cost estimates of the project in March, 1976. The processing of these estimates, however, took a long time and final approval of the revised cost estimates of the project (at Rs. 138.36 crores) could be accorded only on 24-7-1979. The time taken for the approval of the revised cost estimates was mainly due to the need to obtain detailed clarification/additional information on a number of points and also consideration of the question of derating the mine capacities, in consultation with the concerned Departments.

It is true that appraisal of the project by the Planning Commission in 1979, revealed that the financial rate of return would be negligible despite the increase in copper prices. In view of limited known ore

deposits there was no room for choice. At the time when Khetri Project was conceived this was the only sizeable copper belt available for exploration and exploration as the other major copper deposits in Singhbhum Copper Belt, Bihar was mainly under the leasehold of a private sector company-Indian Copper Corporation.

With reference to the Committee's observation that there was no scope left to the various organisations scrutinising the estimates to make any worthwhile contribution, it is submitted that the revised cost estimates submitted by Hindustan Copper Ltd. in 1976 were scrutinised by the appraisal agencies of the Government of India. In fact, this scrutiny, which necessitated additional information|clarifications from Hindustan Copper Limited, delayed the issue of the sanction. Again, during the scrutiny it was decided to derate the mining capacities.

In evaluating the plea of strategic importance for the project, it is submitted that the plea should be related to the period when the Khetri Project was considered between 1962 and 1968. In 1962, the country was consuming 78,000 tonnes of copper whereas the production was insignificant. When the Government accepted the Western Knapp Engineering Report on the project to May, 1962, the border dispute with China had already assumed major proportions and finally erupted into an armed conflict in October, 1962. Thereafter, though the Government promoted import substitution and could reduce the consumption level of copper to 62,000 tonnes by 1965, the requirement of metal was still very considerable. At this stage a further imperative for augmenting domestic production was provided by the sudden aggression by Pakistan in 1965. It may be added that the strategic importance of the Project was appreciated all through these years and was also explicitly brought out in the paper submitted to the Cabinet Committee on Industries in October, 1966 while seeking approval to the project. The paper mentions :—

“It was, however, not merely a question of profitability insofar as this project was concerned. Copper was considered to be of a critical importance to the national economy and it was accordingly imperative to make vigorous efforts to develop indigenous production. At any rate, enough production must be developed in the shortest possible time to meet the Defence requirements of Copper”.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21-1-81-Met. II, dated 24th December, 1981].

Recommendation (Serial No. 3)

The basic bungling that materially altered the economics of the project was the gross overestimation of the ore deposits at Khetri. The Committee were started to hear that the deposits were reassessed

and scaled down to 40 million tonnes of 0.91 per cent average grade of copper from the level of 106 million tonnes of 1 per cent grade. Quariously there were no detailed geological studies before the project formulation. It was assumed that in between two holes drilled at 100 meters interval there was a continuous ore body. This was however, proved entirely wrong when mine development started. Surely, a more amateurish handling of the basis assessment of a project potential cannot be expected from any quarter.

(Paragraph No. 1.24)

Reply of Government

Detailed exploration of the Khetri Copper deposits by drilling by Indian Bureau of Mines commenced during March, 1957. The exploration programme which forms the basic for the ore reserve calculations consisted of ore drilling, underground exploration work and mapping. In general, the exploration drilling consisted of a series of bore holes drilled from the surface. Underground exploration work was also carried out which consisted of driving approximately 3075 meters of tunnels in the form of inclined adits and a series of drifts and cross cuts, both along and across the mineralised zones at one level (350 MRL). Underground diamond drilling was also carried out. Around 34 surface bore holes were drilled over a strike length of approximately 3 Kms. Based on the exploration data available at the time of preparation of the feasibility report, Western Knapp Engineering Company (WKE) in their feasibility report of December, 1961 had estimated the copper ore reserves at Khetri at 1 per cent copper grade as below :—

Proved Ore	33 million tonnes
Probable Ore	73.59 million tonnes
	<hr/>
Total :	106.59 million tonnes
	<hr/>

The consultants had also assumed the shape of the ore body as below :—

“Ranges from 6 ft. to +150 ft. in width and extends over a strike length +10,000 ft. and to a depth of +2500 ft. Secondary deposits paralleling the main zone are not as continuous.”

Regarding the regularity of the deposit, the consultants had stated in the feasibility report “Continuous with the exception of barren pillars.” The proved ore zone was only upto a depth varying from 240 meters to 500 meters from surface based on actual ore intersection in the

bore holes. As seen from the feasibility report, derivation of the estimate of probable ore is based on the assumption that conditions prevailing in that portion of the deposits considered as proven ore can be extrapolated. The extrapolation was limited to a depth of 840 meters (2500 ft.) from hilltop. It was anticipated by the consultants that the deep diamond drilling would be sufficiently advanced that an evaluation could be made during Phase I to clarify the accuracy of the extrapolation. However, no reports from the deep drilling programme were available upto the time of preparation of the feasibility report.

It may be pointed out that Khetri exploration was the first major copper exploration venture undertaken by the exploration agencies in the country. The only other major copper field known at that time was the Singhbhum copper belt in Bihar where Mosaboni Mines were being worked. With the type of data generated from the exploration carried out at that time, the consultants had assumed that the Khetri ore bodies were continuous. Presumably, this was done considering the nature of the ore body at the only other copper mine at Mosaboni, Bihar where copper ore occurs as a regular and continuous ore body even today over a 4 Kms. strike length and upto 1200 meters in depth. In such a regular deposit, continuity could probably be assumed between two bore holes located 100 meters apart. That the same parameters would not hold good for the type of ore body at Khetri was revealed only by subsequent detailed exploratory work.

Subsequent detailed exploration by further drilling from surface and underground alongwith mine development carried out by National Mineral Development Corporation|Hindustan Copper Limited has revealed that the nature of Khetri ore body is entirely different from that of Mosaboni mine ore body. The Khetri ore body consists of as many as 50 dis-continuous ore lenses located in an echelon pattern along the strike as well depth. The average continuity of the lenses along the strike is about 90 meters and depth continuity about 200 meters.

Based on the ore reserve data available in the feasibility report by WKE of 1961 and the ore reserve assessment of Hindustan Copper Ltd. as on 1-4-1979, comparative position of the reserves separately from surface to zero meter level and that below zero meter level is furnished below :—

WKE—1961	Million tonnes		
	Proved	Probable	Total
Surface to 0-M Level	29.4	21.5	50.9
Below 0-M Level upto—390 M	3.6	52.09	55.69
	33.0	73.59	106.59

HCL—1-4-79	Proved	Probable	Total
Surface to 0-M level	5.3	29.44	34.74
Below 0-M level upto-300 M		5.63	5.63
	5.3	35.07	40.37

It may be mentioned that compared to the limited surface drilling and underground development of one level done in 1961, a very large quantum of surface drilling, underground drilling and underground development had been carried out at Khetri by 1979 which has helped to provide very much more data making it possible for estimating ore reserves with high level of confidence than was possible in 1961. However, a study of the comparative reserve estimates in 1961 and 1979 reveal that the reserves between surface to zero meter level have been scaled down only by about 16 million tonnes. Considering that depletion from the reserves by mining upto 1979 is around 3 million tonnes or so, the actual scaling down is only by about 13 million tonnes upto zero meter level.

However, the position of reserves below zero meter level shows a substantial variation as 55.69 million tonnes in the 1961 estimates has been scaled down in 1979 to 5.63 million tonnes. The main reasons for this large variation are summarised below :—

- (i) Hindustan Copper Ltd.'s estimates in 1979 are limited to a strike length of only about 800 meter's and estimates are based on 3 bore hole intersection at zero meter level and 9 bore hole intersections at varying depths below zero meter level (lowest intersection being at 260 meters level). Based on the experience gained over the years in the Khetri deposit, Hindustan Copper Ltd. has restricted the area of influence of individual bore holes to only 15 meters on either side. The 1961 WKE estimates were based on very limited scanty data with practically no bore hole intersections below zero meter level. It was merely an extrapolation of the assumed continuous ore body over 3 Kms. strike length down to a depth of 390 meters below zero meter level.
- (ii) A very large area included in the probable zone i.e. approx. 2.2 Kms. of strike length and 390 meters depth below zero meter level still remains to be explored. Hindustan Copper Ltd. has drawn up a detailed exploration scheme for proving the reserves below zero meter level. The company has already started development work for reaching the drill sites for underground exploration, which is expected to be completed by 1983-84. It

is estimated that about 2,000 meters of mine development and 6,000 meters of diamond drilling from the zero meter level drill sites will be needed. The drilling from the drill sites in zero level is expected to commence in 1983 and the exploration likely to be completed by 1985-86. It is only thereafter that the full picture of the reserves position below the zero meter level will emerge. Whether the 56 million tonnes projected in the 1961 estimates below zero meter level will be established or to what extent they will get scaled down can be known only after the detailed exploration programme is completed.

From the elucidation given in the foregoing paras, it may be mentioned that it will not be strictly correct to state that 106 million tonnes estimated in 1961 has been scaled down to 40 million tonnes in 1979. Scaling down of reserves from surface to zero meter level is only to the extent of 13 million tonnes based on the detailed exploration and mine development carried out in this zone. Whether the reserves of 56 million tonnes estimated in 1961 below zero meter level will get scaled down and if so, to what extent can be known only after much more detailed exploration is carried out below this level. The present estimates of Hindustan Copper Ltd. have been limited to only a very small portion of the zone below zero meter level and based on a few bore holes drilled in this zone. It is also clear that a lot of geological work and detailed exploration was carried out before arriving at the ore reserves estimates in 1961.

As soon as the irregular nature of the ore lenses was known, Hindustan Copper Ltd. changed its exploration technique by adopting certain improvements as below:—

- (a) Diamond drilling at every 30 m from surface.
- (b) Definition drilling at 30 m interval from underground with 2—4 holes in fan shape to define the individual ore lenses.
- (c) survey of the bore holes through a borehole survey camera which takes the photo of the hole path and indicates deviation along strike as well as dip directions.
- (d) Estimation of ore reserves with different confidence at each stage of exploration :—

Fully blocked : Reserves estimated on long hole rings; Reserves under production or ready for production—90 per cent confidence level.

Party blocked 'A' Reserves estimated on longitudinal section on stope limits; Reserves under stope preparation—85 per cent confidence level.

'B'—Geological reserves after definition drilling under stope design—80 per cent confidence level.

Drill reserves —Indicated : Reserves on longitudinal section within 15 m on all sides of a drill intersection—70 per cent confidence level.

Inferred : Reserve on longitudinal section in the area in between or beyond the Drill indicated Category upto the lense boundaries—50 per cent confidence level.

The above improvements in drilling and exploration techniques have helped to improve the confidence level of ore reserve estimates which form the basis for preparation of feasibility report for mining projects.

Department of Mines have taken another major step in ensuring the reliability of ore reserve estimates before taking up preparation of feasibility reports. The Department has constituted in May, 1979 a Standing Committee for review of exploratory data and assessment of ore reserves of non-ferrous deposits. Additional Secretary of the Department is the Chairman of the Committee and a number of geological and mining experts from non-ferrous metal undertakings and also Geological Survey of India, Mineral Exploration Corporation Limited and Indian Bureau of Mines are members of this Standing Committee. The terms of reference of this Committee are as below :-

- (i) Examination of exploratory data and assessment of ore reserves of non-ferrous metal deposits in leasehold areas of Central Public Sector Undertakings based on investigations of Geological Survey of India|Mineral Exploration Corporation|Undertakings.
- (ii) To decide whether the assessment furnished in reports of ore reserves could be accepted as satisfactory for preparation of feasibility reports or whether further exploratory work and|or re-assessment is considered necessary.

The public sector undertakings now submit the ore reserve assessment reports of deposits which they intend to take up for preparation of feasibility report for consideration of the Standing Committee. These reports are considered by the Committee and clearance given for preparation of feasibility reports only after the assessment is considered as satisfactory by the Committee. In such cases, where

the exploratory data and ore reserve assessment is not considered as satisfactory, the Committee asks the undertaking to take up additional exploratory work and re-assess the ore reserve estimates with the requisite level of confidence before preparation of feasibility reports.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21/1/81-Met. III, dated 24th December, 1981].

Recommendation (Serial No. 6)

The Khetri complex comprises mines at Khetri and Koliban and concentrator, smelter, refinery and acid-cum-fertilizer plants at Khetri. The project as a whole was expected to be operational by May 1972. The mines development and commissioning of the plants were, however, badly delayed by 2-3 years. The delay meant huge escalation of cost. There were conceptual shortcomings and execution flaws besides the project authorities were let down by the consultants and contractors engaged for the project implementation. As pointed out earlier in this Report, adhocism ruled the project planning with its inevitable impact on the implementation. Modern techniques like PERT were not employed for project monitoring and control to obviate time slippage. What irks the Committee most is that the organisational structure of this mining and metallurgical complex initially at the crucial stage of its implementation was admittedly unsuitable. Despite the huge capital outlay a Director (Finance) was appointed only in August 1973. Surely it was the responsibility of the Department of the Government that controlled the HCL to see that such deficiencies were not there.

(Paragraph No. 2.28)

Reply of Government

With reference to the Committee's observation regarding delay in the project, it is submitted that the principal reasons were lack of expertise, delay on the part of contractors in some cases and deficiencies in some sections. In this connection, it is relevant to mention that non-ferrous metalliferous mining under hard rock conditions in deep mines, as also smelting and refining of these metals, is relatively of recent origin in India. The experience available within the country in mining and smelting of non-ferrous metals, including copper at the time of taking up Khetri Copper Project was very limited. Even the available expertise being then in the private sector there was hardly any conscious effort to develop indigenous design capabilities and consultancy. The shortcomings and delays in the planning and execution of the Khetri Copper Complex have to be viewed in this context.

Gaining from the experience of the projects taken up since 1967, the Department of Mines, had in fact identified from time to

time some of the basic shortcomings and taken a number of remedial steps as below :—

- (i) A technical wing was added to the Department of Mines in 1970, headed by a Chief Technical Adviser to guide and advise the Department on different matters. In 1974 the personnel of the Technical Wing were blended with the Department proper so as to make them administrative functionaries. Since then the Department has been having 2-3 technical officers on its rolls from the mining and metallurgy, disciplines.
- (ii) To build up indigenous designs and technical consultancy services in non-ferrous mining and smelting HCL/HZL were addressed in 1971 to consider associating a firm like Engineers India Limited. M/s. Engineers India Limited has since emerged as one of the important engineering consultants in non-ferrous metals.
- (iii) The Public sector undertakings under the Department of Mines have built up their own Research and Development Cells/Planning Wings so as to develop/absorb the know-how and expertise in mining and smelting.
- (iv) Induction of technical personnel from different disciplines on the Board of Directors of the Companies under the Department.
- (v) Mineral Exploration Corporation Ltd. was incorporated in 1972 to take up detailed exploration as also to provide mine construction services. Bharat Gold Mines Ltd. under Department of Mines have also expanded their mine construction division and executed various shaft sinking and mine development contracts for public sector mining companies including Hindustan Copper Limited.

With regard to the Committee's observation that modern techniques like PERT were not employed for project monitoring and control, it is submitted that Hindustan Copper Ltd. was advised to draw on PERT charts for the various parts of the Khetri Copper Complex at the Performance Review Meeting taken by Minister (PC&MM) on 3-6-1970. At the subsequent Review Meeting held on 20-10-1970, the Company reported that PERT charts for various components of Khetri Copper Complex (mine concentrators, smelter, refinery etc.) had been prepared by the PERT experts of National Productivity Council and that the progress was being reviewed on the basis of new proforma with the assistance of the PERT engineers. Modern techniques like PERT were therefore employed commencing from the year 1970, in Khetri Copper Project when it entered the construction stage.

The Committee has observed that the organisational structure of the Company was unsuitable at the stage of implementation and that Director (Finance) was appointed only in 1973. It may be stated that a Standing Committee of the Board of Directors of Hindustan Copper Ltd. set up in February, 1968, reviewed the organisational structure and man power plans of the Company from time to time. In September, 1969 the Chairman, Hindustan Copper Ltd., addressed Secretary (Mines) suggesting the creation of whole time functional Directors for Finance & Administration, Mining & Geology, Process & Metallurgy, Acid & Fertilizer. It was felt by Ministry that as the Chairman of the Company was due to retire, proposals for reorganisation should await the consideration of the new Chairman.

While considering the re-constitution of the Board of Directors of Hindustan Copper Ltd. in September 1971 the Minister (S&M) minuted that the Group of the Ministers discussing personnel policies of public sector had agreed that apart from the Chairman-cum-Managing Director there should be at least 2 more functional Directors in public sector undertakings. Further in March 1972, Government entrusted the management of the Indian Copper Corporation to the Hindustan Copper Ltd. and the Company became a multi-unit undertaking. With the appreciable increase in the activity of the Company, in 1972 the Board of Directors of Hindustan Copper Ltd. recommended the creation of the post of Director (Finance) and Director (Personnel). Formal proposals were received in June, 1972 and were approved in the same month. While Director (Personnel) was appointed on 17-7-1972, the incumbent of the post of FA & CAO was appointed as Director (Finance) on 1-8-1973. Hindustan Copper Ltd. had all alone been having an FA & CAO on its management, and actually in 1969-70 in the absence of the Chairman, the FA & CAO acted as Chairman-cum-Managing Director for a shortwhile.

The organisational structure of the Company has thus been under review, from time to time, and the Company did have an Financial Advisers to Chief Accounts Officer during 1967-72. In fact, all the undertakings under the Department of Mines were having only FA & CAO at the relevant period. The post of Financial Adviser & Chief Accounts Officer of Hindustan Copper Ltd. was upgraded to that of Director (Finance) in August, 1973. As the same person working as FA & CAO in 1972-73 was appointed as Director (Finance) in HCL, it is felt that the absence of the post of Director (Finance), by itself, did not make the organisational structure unsuitable.

The Department of Mines agree with the observations of the Committee that it is the responsibility of the concerned Ministries/Departments to see that the organisational deficiencies of undertakings under their control are looked into.

(Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 24-12-1981)

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

—NIL—

CHAPTER V

RECOMMENDATIONS IN RESPECT OF WHICH FINAL REPLIES OF GOVERNMENT ARE STILL AWAITED

Recommendation (Serial No. 10)

There was delay in construction of cathode melting and wire bar plants by the turnkey contractors, GEC and the contractors having failed to commission the plant, the contract was rescinded at their risk and cost. The amount claimed against this concern is Rs. 3.74 crores and the matter is reported to be under arbitration.

(Paragraph No. 2.32)

Reply of Government

M/s. General Electric Company in association with M/s. Birlec of United Kingdom, were commissioned in 1971 for setting up the Cathode Melting and Wire Bar Casting Plant at Khetri after contacting a number of firms in Japan, Sweden, U.K., USA, Italy, Switzerland etc. From the records it is seen that the only firm who offered a complete process package for the plant including technical knowhow, design, supply of equipment, erection and installation was M/s. Birlec of U.K. The offer was examined by Hindustan Copper Ltd. in consultation with its consultants, viz. Western Knapp Engineering of U.S.A. and Venot-Pic of France. While offering their comments on the Birlec in their letter dated 10-7-70, M/s. Venot-Pic had informed that the proposal answered perfectly the requirements of the Khetri Copper Project and that the designs and equipment offered were confirmable to the requirements. As this was the only offer, Hindustan Copper Ltd. checked back with Venot-Pic on the response from other parties and Venot-Pic sent copy of the negative replies received from 3 firms (one each from France, Italy and USA), informed that the additional information called for from another party viz. Brown Boveri, was never received and that there was no reply or acknowledgement from other companies. Thus it is clear that the selection of General Electric Company|Birlec for the setting up of the wire bar casting plant was done by Hindustan Copper Ltd. after checking up on the technical competence of the party.

In terms of the contract, the plant was to be handed over, after satisfactory test runs, within 28 months i.e. by August, 1973. The party could not, however, commission the plant satisfactorily till May,

1976. Due to their repeated failure to commission the plant satisfactorily, the contract was terminated by Hindustan Copper Ltd. in May, 1976, at their risk and cost, and the matter was referred to arbitration in 1977. The arbitration proceedings are still in progress. Separately Hindustan Copper Ltd. took steps to commission the plant by installing a regular oil burner in the furnace to replace the electrical induction heater and with intensive efforts stabilised the basic parameters for casting wirebars. Hindustan Copper Ltd. has been addressed vide letter No. 21|11|1980-Met. III, dated 21-11-1981 to take steps to get the arbitration proceedings expedited.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|1981-Met. III, dated 24-12-1981]

Further information called for by the Committee

What is the present position of the arbitration proceedings
(L.S.S. O.M. No. 75|2|1-PU|81 dated February 10, 1982)

Further reply of Government

Hindustan Copper Ltd. has indicated that the solicitor and Advocate concerned with the arbitration proceedings had been requested to take necessary steps to expedite the same and intimate them the expected time by which the said proceedings would be concluded.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|1981-Met. III, dated 18 February, 1982]

Further information called for by the Committee (Rec. 10) .

The latest position in regard to Arbitration Proceedings in respect of claims against M/s. GEC may please be intimated.

(L.S.S. O.M. No. 75|2(1)-PU|81 dated 14-2-1983)

Further reply of Government

HCL had reported that the hearings of the case would be over in about six months time and the award could be expected by November-December, 1983. The Company is also pursuing the matter.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21-1-1981-Met. III, (Vol. II), dated 1-3-1983]

Recommendation (Serial No. 16)

The Swiss firm, which was selected for toll smelting the reverts did not themselves undertake the smelting. It is doubtful whether any tenders were at all invited by the HCL from any other known smelters.

It was also noticed that in the final settlement arrived at with the firm the percentage of copper and gold content in the reverts as agreed to was in all cases lower than the result of analysis of samples by HCL. Neither did the agreement provide for the return of copper based on actual recovery, nor did the company receive any information in regard to copper actually recovered. There was thus no means of assessing the correctness of copper and gold contents in the reverts, as agreed to.

(Paragraph No. 3.56)

Reply of Government

As stated in reply to Recommendation No. 14, Government have already constituted an Expert Group to examine certain matters connected with estimation of copper in reverts etc. at the Khetri Copper Complex of Hindustan Copper Limited. The report of the Group is awaited. Government's reply to Recommendation No. 16 of the Committee can be formulated only after examining the Expert Group's Report.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21-1-1981-Met. III, dated 24-12-1981]

Recommendation (Serial No. 17)

The Committee regret that inspite of the fact that a huge loss was involved and there were many pertinent questions which remained unanswered, the Ministry did not consider it necessary to have the matter examined thoroughly by an independent body but chose at one stage to refer the matter back to the Board for an indepth study by a Committee of the Board. It was only at the instance of the Committee that the Ministry agreed to institute further enquiry. The Committee desire that the whole matter be examined expeditiously by an independent body associating the C.B.I. and responsibility fixed.

(Paragraph No. 3.57)

Reply of Government

As stated in reply to Recommendation No. 14, Government have already constituted an Expert Group to examine certain matters connected with estimation of copper in reverts etc. at the Khetri Copper Complex of Hindustan Copper Ltd. The report of the Group is awaited. The question of associating Central Bureau of Investigation will be considered after the report of the Exper. Group has been received and examined.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 24th December, 1981]

Further information called for by the Committee

Please furnish the outcome of the examination of the question of reverts by the Expert Group as also the action taken by government on the observations|recommendations of the Committee in the light of the findings of the Expert Group.

The Expert Group constituted by the Department of Mines on 27-3-1981 was to give as report as early as possible within a period of three months. In case the Expert Group has not submitted its report so far, please state the reasons for the delay.

(L.S.S. O.M. No. 75|2|1-PU|81, dated 10th February, 1982)

Further reply of the Government

The Expert Group set up by Department of Mines on 27-3-1981, could not furnish the report by the stipulated time limit of three months i.e. by June, 1981 as the problems and issues covered in the terms of reference had proved to be too complex to admit of being reported by the Group within a period of three months. Consequently, the time by which the Expert Group is to furnish the report has been extended upto 25th February, 1982 at the request of the Chairman of the said Group.

[Ministry of Steel & Mines, Department of Mines O.M. No. 21|1|81-Met. III, dated 18th February, 1982]

Further reply of Government

The Expert Group has examined the award of toll smelting contract in great depth. While the Group has given the benefit of doubt wherever it could be given, it has at the same time clearly brought out certain serious lapses on the part of the management. The Group has concluded that copper reverts were not normally an item of trade and that HCL had no previous experience in the matter. They have also pointed out that HCL's interest were not hurt by not inviting global tenders. This conclusion is also borne out by subsequent developments when, inspite of global tenders floated by HCL, no worthwhile offers were received. Although the Group has commented adversely on the lack of proper negotiating procedure it has concluded that the terms negotiated sought to protect HCL's interest in accordance with know international prac-

tion. The Group has pointed out the following lack of basic safeguards in the contract :

- (i) No security deposit was obtained from the foreign firm.
- (ii) No termination date for receiving the reverts was stipulated.
- (iii) No provision was incorporated regarding HCL selling the material at the risk and cost of the contractor in case of default.
- (iv) The force majeure clause appears to tilt in favour of the contractor.
- (v) Arbitration proceedings are to be held in England.

The Group has further pointed out that the Finance Wing of the Company was not consulted except at the meeting held on 17-18th January, 1980 when Director (Fin.) was present. It has further been pointed out that the company did not take legal advice while negotiating and finalising the contract.

The Group has also pointed out that the changes made in the terms of the contract for the last shipment was not in the interest of HCL. The revised terms were settled without working out financial implications and obtaining legal opinion. Board's approval for the revised terms was also not taken and no formal revision agreement was drawn up. Another deviation pointed out in the 4th shipment was that no determination of gold content in the reverts were made with the result, the settlement grade was much lower than HCL analysis. The grades arrived at the Japanese port were applied to the reverts sent to North Korea which were only much richer in copper content and HCL's interests were adversely affected since the company did not insist on sampling at the Korean site. The Group has concluded that negotiations for revising the terms of the last shipment were conducted and the settlement arrived at rather precipitatively.

The Government have accepted the findings of the Expert Group. A copy of the report of the Expert Group was also sent to the CBI who felt that there were sufficient grounds for registration of a regular case of conspiracy against officers of M/s. Hindustan Copper Limited who negotiated and concluded the deal and partners of M/s. Anrit Steel Limited who represented the foreign firm in this contract. The CBI,

however, requested for a formal complaint from this Department for registration of a regular case. This Department informed the CBI that they themselves could take further action in the matter without a formal complaint from the Department. The CBI have since reported that they have registered a preliminary enquiry for an indepth probe in the matter.

[Ministry of Steel & Mines, Department of Mines, O.M. No. 21|15|81-Met. III, dated 13th January, 1983]

Comments of the Committee

Please *see* Paragraph 11 of Chapter I of the Report.

NEW DELHI ;
April 2, 1983

Chaitra 12, 1905 (S)

MADHUSUDAN VAIRALE
Chairman,
Committee on Public Undertakings

APPENDIX I

(Vide reply to Recommendation at

NET PRESENT

KHETRI COPPER

Calculation on Net Present Value at 12% Discount

Sl. No.	Year	Discount Factor @12%	Cash out Flow For		Total Cash Out Flow (2+3)	NPV for Capital Cost & Working Capital (4×1)
			Capital cost	Working Capital		
		(1)	(2)	(3)	(4)	(5)
1.	Upto 1968-69	3.900	1540.96		1540.96	6009.74
2.	1969-70	3.480	788.41		788.41	2743.67
3.	1970-71	3.110	1205.25		1205.25	3748.33
4.	1971-72	2.780	1350.99		1350.99	3755.75
5.	1972-73	2.480	1289.77		1289.77	3198.63
6.	1973-74	2.210	1705.48	282.70	1988.18	4393.88
7.	1974-75	1.970	1369.63	1293.68	2663.31	5246.72
8.	1975-76	1.760	812.52	1956.06	2768.58	4872.70
9.	1976-77	1.570	657.68	757.48	1415.16	2221.80
10.	1977-78	1.400	286.26	(2631.02)	(2344.76)	(3282.66)
11.	1978-79	1.250	312.64	1862.43	2175.07	2718.84
12.	1979-80	1.120	439.04	(165.81)	273.23	306.02
13.	1980-81	1.000	76.73	180.01	256.74	256.74
14.	1981-82	0.893	96.00	360.25	456.25	407.43
15.	1982-83	0.797		198.58	198.58	158.27
16.	1983-84	0.712				
17.	1984-85	0.636				
18.	1985-86	0.567				
19.	1986-87	0.507				
20.	1987-88	0.452				
21.	1988-89	0.404				
22.	1989-90	0.361	(687.18)	(5774.46)	(6461.64)	(2332.65)
TOTAL			11244.18	(1680.10)	9564.08	34423.21

VALUE OF

COMPLEX

ALTERNATIVE-I

rate (Base Year 1980-81)

(Rs. in lakhs)

Cash Out-Flow from Operation		Net Cash in-Flow/(Out-Flow)	Mine Deve- lopment Exp- enditure	Net in-Flow, (Out-Flow)	NPV from Operation
Out-Flow For Operation	In-Flow From Sales Revenue	(7-6)	during the Yr.	including Mine Deve- lopment	10 x J
(6)	(7)	(8)	(9)	(10)	(11)
(10.54)	19.52	30.06	222.14	(192.08)	(476.36)
0.69	168.90	168.21	149.03	19.18	42.39
30.42	34.13	3.71	163.71	(160.00)	(315.00)
(73.72)	230.46	304.18	205.77	98.41	173.20
2607.80	2721.91	114.11	331.12	(217.01)	(340.71)
5489.66	2756.56	(2733.10)	137.34	(2870.44)	(4018.62)
1844.28	2326.69	482.41	280.52	201.89	252.36
3841.41	4161.59	320.18	331.58	(11.40)	(12.77)
3935.01	3200.34	(734.67)	386.09	(1120.76)	(1120.76)
6226.61	4260.53	(1966.08)	396.18	(2362.26)	(2109.50)
7859.38	5616.16	(2243.22)	581.74	(2824.96)	(2251.49)
7155.06	6073.67	(1081.39)	581.74	(1163.13)	(1184.15)
7499.06	6412.75	(1086.31)	581.74	(1668.05)	(1060.88)
7499.06	6412.75	(1086.31)	581.74	(1668.05)	(945.78)
7499.06	6412.75	(1086.31)	581.74	(1668.05)	(845.70)
7499.06	6412.75	(1086.31)	581.74	(1668.05)	(753.96)
7499.06	6412.75	(1086.31)	581.74	(1668.05)	(673.89)
7499.06	6412.75	(1086.31)	581.74	(1668.05)	(602.17)
83900.42	70046.96	(13853.46)	7257.40	(21110.86)	(16243.99)

NPV = (-) 50667.20

Calculation of NPV at 12% Discount rate with

Sl. No.	Year	Discount Factor	Cash out Flow for		Total Cash Outflow (2+3)	NPV for Capital Cost & Working Capital (4 x 1)
			Capital Cost	Working Capital		
		(1)	(2)	(3)	(4)	(5)
1.	Upto 1968-69	3.900	1566.79	..	1566.79	6110.48
2.	1969-70	3.480	793.61	..	793.61	2761.76
3.	1970-71	3.110	1212.21	..	1212.21	3769.97
4.	1971-72	2.780	1429.50	..	1429.50	3971.01
5.	1972-73	2.480	1383.53	..	1383.53	3434.15
6.	1973-74	2.210	1346.65	282.70	2129.35	4705.86
7.	1974-75	1.970	1377.97	1293.68	2671.65	5263.15
8.	1975-76	1.760	827.56	1956.06	2783.62	4899.17
9.	1976-77	1.570	661.26	757.48	1418.74	2227.42
10.	1977-78	1.400	313.54	(2631.02)	(2317.48)	(3244.47)
11.	1978-79	1.250	312.64	1862.43	2175.07	2718.84
12.	1979-80	1.120	439.04	(165.81)	273.23	306.02
13.	1980-81	1.000	76.73	180.01	256.74	256.74
14.	1981-82	0.893	96.00	360.25	456.25	407.43
15.	1982-83	0.797	..	198.58	198.58	158.27
16.	1983-84	0.712	..	..	..	..
17.	1984-85	0.636	..	..	..	..
18.	1985-86	0.567	..	..	..	..
19.	1986-87	0.507	..	..	..	..
20.	1987-88	0.452	..	..	..	..
21.	1988-89	0.404	..	..	..	..
22.	1989-90	0.361	(687.18)	(5774.46)	(6461.64)	..
TOTAL			11649.85	(1680.10)	9969.75	37745.80

ALTERNATIVE-II
(Base Year—1980-81)

Foreign Exchange Premium at 25%

Cash flow from Operation		Net Cash Inflow/ (Outflow) (7-6)	Mine Development Expenditure During the Year	Net Inflow/ (Outflow) Including Mine Development (8-9)	NPV from Operation (10 x 1)
Outflow for Operation	Inflow from Sales Revenue				
(6)	(7)	(8)	(9)	(10)	(11)
..
..
..
..
(10.54)	19.52	30.06	222.14	(192.08)	(476.36)
0.69	168.90	168.21	149.03	19.18	42.39
144.99	34.13	(110.86)	163.71	(274.57)	(540.90)
103.31	269.09	165.78	205.77	(39.99)	(70.88)
2746.56	3291.30	544.74	331.12	213.62	335.38
5567.36	3337.07	(2230.29)	137.34	(2367.63)	(3314.68)
1925.19	2754.61	829.42	280.52	548.90	686.13
3961.82	5014.27	1052.45	331.58	720.87	807.37
4238.76	3869.86	(368.90)	386.90	(754.99)	(754.99)
6787.11	5072.85	(1714.26)	396.18	(2110.44)	(1884.62)
8699.34	6651.98	(2047.36)	581.74	(2629.10)	(2095.39)
7228.81	7223.78	(5.03)	581.74	(586.77)	(417.78)
7572.81	7646.37	73.56	581.74	(508.18)	(323.20)
7572.81	7646.37	73.56	581.74	(508.18)	(288.14)
7572.81	7646.37	73.56	581.74	(508.18)	(257.65)
7572.81	7646.37	73.56	581.74	(508.18)	(229.70)
7572.81	7646.37	73.56	581.74	(508.18)	(205.30)
7572.81	7646.37	73.56	581.56	(508.18)	(183.45)
86830.26	83585.58	(3244.68)	7857.40	(10502.08)	(9171.27)

NPV = (-) 46917.07

Calculation of NPV at 12% Discount Rate (Base Year 1980)

Sl. No.	Year	Discount Factor at 12%	Cash Outflow for		Total Cash Outflow (2+3)	NPV for Capital Cost and Working Capital (4 x 1)
			Capital Cost	Working Capital		
		(1)	(2)	(3)	(4)	(5)
1.	1968-69	3.900	1540.96	..	1540.96	6009.74
2.	1969-70	3.480	788.41	..	788.41	2743.67
3.	1970-71	3.110	1205.25	..	1205.25	3748.33
4.	1971-72	2.780	1350.99	..	1350.99	3755.75
5.	1972-73	2.480	1289.77	..	1289.77	3198.63
6.	1973-74	2.210	1705.48	282.70	1988.18	4393.88
7.	1974-75	1.970	1369.63	1293.68	2663.31	5246.72
8.	1975-76	1.760	812.52	1956.06	2768.58	4872.70
9.	1976-77	1.570	657.68	757.48	1415.16	2221.80
10.	1977-78	1.400	286.26	(2631.02)	(2344.76)	(3282.66)
11.	1978-79	1.250	312.64	1862.43	2175.07	2718.84
12.	1979-80	1.120	439.04	(165.81)	273.23	306.02
13.	1980-81	1.000	76.73	180.01	256.74	256.74
14.	1981-82	0.893	96.00	360.25	456.25	407.43
15.	1982-83	0.797	..	198.58	198.58	158.27
16.	1983-84	0.712	..	..	..	..
17.	1984-85	0.636	..	..	..	..
18.	1985-86	0.567	..	..	..	..
19.	1986-87	0.507	..	..	..	..
20.	1987-88	0.452	..	..	..	..
21.	1988-89	0.404	..	..	..	..
22.	1989-90	0.361	(687.18)	(5774.46)	(6461.64)	(2332.65)
			11244.18	(1680.10)	9564.08	34423.21

N.P.V. = (-) 30865.02

ALTERNATIVE-III

(Rs. lakhs)

81) with sale price of Copper at Rs. 28,000/MT

Cash flow from Operation		Net Cash Inflow/ (Outflow) (7-6)	Mine Deve- lopment Exp. During the Year	Net Inflow/ (Outflow) including Mine Devel. (8-9)	NPV from Operation (10 x 1)
Outflow	Inflow				
(6)	(7)	(8)	(9)	(10)	(11)
..
..
..
..
(10.54)	19.52	30.06	222.14	(192.08)	(476.36)
0.69	168.90	168.21	149.03	19.18	42.39
30.42	34.13	163.71	3.71	(163.00)	(315.20)
(73.72)	306.60	380.32	205.77	174.55	307.21
2607.80	3212.53	604.73	331.12	273.61	429.57
5489.66	3558.25	(1931.41)	137.34	(2068.75)	(2896.25)
3844.28	2925.77	1081.49	280.52	800.97	1001.21
3841.41	5805.77	1964.36	331.58	1632.78	1828.71
3935.01	5050.91	1115.90	386.09	729.81	729.81
6226.61	6052.25	(174.36)	396.18	(570.34)	(509.49)
7859.38	7907.90	48.52	581.74	(533.22)	(424.98)
7155.06	8641.25	1486.19	581.74	904.45	643.97
7499.06	9173.25	1674.19	581.74	1092.45	694.80
7499.06	9173.25	1674.19	581.74	1092.45	619.42
7499.06	9173.25	1674.19	581.74	1092.45	553.87
7499.06	9173.25	1674.19	581.74	1092.45	493.79
7499.06	9173.25	1674.19	581.74	1092.45	441.35
7499.06	9173.25	1674.19	581.74	1092.45	394.37
83900.42	98723.24	14822.86	7257.40	7565.46	3558.19

APPENDIX II

(Vide para 3 of Introduction)

Analysis of action taken by Government on the recommendations contained in Eighteenth Report of the Committee on Public Undertakings (Seventh Lok Sabha).

I	Total number of recommendations made	25
II	Recommendations that have been accepted by the Government (Vide recommendations at S. Nos. 4, 5, 7, 8, 9, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24 and 25)	18
	Percentage to total	72%
III	Recommendations which the Committee do not desire to pursue in view of Government's reply (Vide recommendations at S.Nos. 1, 2, 3 and 6).	4
	Percentage to total	16%
IV	Recommendations in respect of which replies of Government have not been accepted by the Committee	NIL
	Percentage to total	NIL
V	Recommendations in respect of which final replies of Government are still awaited (Vide recommendations at S. Nos. 10, 16 and 17)	3
	Percentage to total	12%

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