

**FORTY-SIXTH REPORT**  
**COMMITTEE ON PUBLIC**  
**UNDERTAKINGS**  
**(1987-88)**

**(EIGHTH LOK SABHA)**

**BHARAT GOLD MINES LIMITED**  
**(MINISTRY OF STEEL AND MINES—**  
**DEPARTMENT OF MINES)**



*Presented to Lok Sabha and  
Laid in Rajya Sabha on 28-4-1988*

**LOK SABHA SECRETARIAT**  
**NEW DELHI**

*April, 1988/Vaisakha, 1910 (S)*

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(1987-88)

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## INTRODUCTION

1. The Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, presents this Forty-Sixth Report on Bharat Gold Mines Ltd.

2. The Committee's examination of the working of the Company was mainly based on the Report of the Comptroller and Auditor General of India, 1986, Union Government, (Commercial) Part IV.

3. The Committee took evidence of the Representatives of Bharat Gold Mines Ltd. on 17, 18 and 19 November, 1987 and 5 January, 1988 and also of the Representatives of the Ministry of Steel & Mines (Department of Mines) on 1 and 2 March, 1988.

4. The Committee considered and adopted the Report at their sitting held on 26 April, 1988.

5. The Committee wish to express their thanks to the Ministry of Steel & Mines (Department of Mines) and Bharat Gold Mines Ltd. for placing before them the material and information they wanted in connection with examination of the Company. They also wish to thank in particular the Representatives of the Ministry of Steel & Mines (Department of Mines) and the Undertaking who appeared for evidence and assisted the Committee by placing their considered views before the Committee.

6. The Committee also place on record their appreciation of the assistance rendered by the Comptroller & Auditor General of India.

NEW DELHI ;

April 27, 1988  
Vaisakha 7, 1910(S)

VAKKOM PURUSHOTHAMAN,  
*Chairman,*  
*Committee on Public Undertakings.*

# PART I

## BACKGROUND ANALYSIS

### CHAPTER I

#### EXPLORATION AND MINING

##### *A. Introduction*

1.1 The gold deposits in Kolar Gold Fields (KGF) were being exploited since 1880 by the mining companies managed by John Taylor & Sons, U.K. In November, 1956, the erstwhile State Government of Mysore took over the mines and formed a Departmental Undertaking named Kolar Gold Mining Undertaking (KGMU). The Government of India took over the KGMU in December, 1962 and managed it as a Departmental Undertaking. In order to raise gold production by increasing exploration and to discover new and promising reserves, Government decided, in January 1972, to form a new company. In pursuance of this decision the Bharat Gold Mines Limited was incorporated in March, 1972 and took over the mines in April, 1972.

1.2 In the KGF area there are three mines (Mysore, Champion Reef and Nundydroog) and two mills (Mysore and Nundydroog). A fourth mine at Yeppamana in Andhra Pradesh, which was abandoned by John Taylor & Sons in 1927, was re-opened and commissioned along with a mill in May, 1984. \*

1.3 Almost all the primary gold produced in India comes from this Company and the Hutti Gold Mines Company (a Karnataka Government Undertaking). By treating about 48.9 million tonnes of gold ore, averaging 16.23 gms. of gold per tonne, 794 tonnes of gold has so far been produced from Kolar Gold Fields. The mineable reserves are now estimated at 3.45 million tonnes with a recoverable grade of 4.21 gms. per tonne. The recoverable gold is estimated at 14.92 tonnes.

1.4 To find permanent solution to various problems faced by the Company, such as depleting ore reserves and grade of ore, non-discovery of new reserves, mounting losses, etc., various committees were appointed to examine its working. In March, 1985, the Company appointed Shri K. S. R. Chari, former Secretary, Department of Mines, Government of India, to study the operations under certain specified terms of reference, including the scope for recommending whether the operations could be wound up if it was found that they were not viable, and if so, to indicate the time horizon for such winding up. The report was submitted by Shri Chari in September, 1985. An Inter-ministerial Committee was constituted in August, 1985 by the Government to study various aspects of the operations of the Company and suggest measures to make it financially viable. The Committee submitted its report in December, 1985.

### B. Deployment of Manpower and Equipment for Exploration

1.5 According to Audit, the problem of depleting ore reserves was the motivating factor for formation of the Bharat Gold Mines Ltd. so that it could strengthen and widen the exploration activities to discover new promising reserves and thus increase the production of gold. However, the Company did not pay enough attention to the deployment of adequate qualified and trained manpower and equipment for its Exploration Department. In this connection a sub-committee of the Committee on Science & Technology of the Government of India had observed in June, 1973 :

“The function of the Exploration Department connected with the exploration for additional reserves is most unsatisfactory due to lack of qualified and trained men and equipment for the work. For these very reasons, the activity of the Department has been confined in locating of ancient workings in the existing leasehold based on old geological maps—which is an integral part of mining operations and cannot be considered as exploration and development.”

1.6 The deficiencies in manpower and organisation of the Exploration Department affected the exploration activities, as the Department did not have a regular Officer-in-Charge till January 1976 and he too was transferred in January 1978. Though three subordinate officers were inducted during June to November 1978, a Manager (Exploration) was positioned only in June 1982. Creation and filling-up of other posts of Geologists, Geo-statistician and Engineers necessary for strengthening the department, was done only during 1981-82 to 1983-84. It was only in 1981-82 that the Department was re-organised and its scope of work widened and specified to cover, *inter alia* the following :

- (i) Surface and underground exploration in KGF leasehold.
- (ii) Surface exploration in the area south of KGF upto Chigar-gunta, outside KGF leasehold.
- (iii) Geological mapping of ore bodies in KGF Mines for understanding ore behaviour.
- (iv) Review and re-estimation of ore reserves by geostatistical techniques.
- (v) Perspective planning for selecting targets all over the country for gold exploration.

1.7 The Committee desired to know the reasons for not deploying adequate qualified and trained manpower and equipment for exploration specially when this was the motivating factor for formation of the company. The Managing Director of Bharat Gold Mines Ltd. stated in evidence :—

“I do not think, there has been any type of loss arising for not having had a full-fledged Department, right from 1972 . . . we did not have our own officers, but we had the fortune of availing the help from Geological Survey of India (GSI), which is having a large wing of officers . . . We had an opportunity of interacting with them. We were taking their help and there was not much loss on account of this.”

1.8 When the Committee enquired as to why the Exploration Department did not have a regular Officer-in-charge for a long time, the witness stated as follows :—

“At that point of time, the main thrust was in the known ore body trying to identify continuity of the ore body. This is more of a mining oriented activity. So it was to be headed by a mining man. Subsequently we changed our strategy by going outside the lease hold area and concentrated in north and south.”

1.9 In this connection, the Secretary, Department of Mines, stated in his evidence before the Committee that it was considered whether the exploration of gold should be done by BGML or by an agency outside it. Around the same time, Mineral Exploration Corporation was set up by the Government for the purpose of exploring minerals. Then it was thought that the exploration for new gold occurrences i.e. outside the leasehold areas of BGML might be done by the Mineral Exploration Corporation. The exploration did not stand neglected at all even in BGML's own areas and also where the new gold occurrences could be identified. A specialised Group of BGML was also established later on in 1981. But what they did was, within BGML's own leasehold areas, they re-evaluated gold occurrences. They could not undertake exploration in other areas unless they had a prospective licence or mining lease. The Secretary informed the Committee that on the whole about Rs. 27 crores had been spent by Government on exploration of gold and specialised agencies of the best type had been utilised for the purpose. The beneficiary of this would be BGML.

1.10 The Committee desired to know how it was ensured that these massive inputs made by Government for exploration of gold did not result in duplication of effort by the three agencies viz. GSI, MECL and BGML. The Managing Director, BGML stated in evidence as follows :—

“The functions of the Company (BGML), the GSI and the MECL have been defined by the Government of India. The Geological Survey of India is responsible under its Charter, for collection, collation and dissemination of geological data and providing basic geological information essential for the successful implementation of practically all the developmental programmes in the country. The Mineral Exploration Corporation Ltd. (MECL) was formed in October, 1972, to take over the Geological Survey of India's function of detailed mineral exploration to create sufficient data base for investment for exploitation. The BGML as national exploiting agency for gold, is responsible for producing gold from economically viable projects identified by GSI/MECL.

The Central Geological Programming Board reviews every year all the geological work carried out in the country and approves the programmes of GSI, the Standing Ore Economic Committee constituted by the Government studies and recommends the prospects to be taken up for detailed exploration by the MECL. The recommendations of the above Committee are placed before the Co-ordination Committee headed by the

Secretary (Mines), for financial sanction to enable MECL to undertake detailed exploration. All the exploiting agencies, GSI, MECL, Planning Commission etc. are represented in all the above Committees. This ensures that there is no overlapping of functions and duplication of effort."

### *C. Abandoned Projects*

#### *(i) Chinnabhavi Mine*

1.11 The Chinnabhavi Mine, forming part of the Ramagiri Gold Fields in Andhra Pradesh and abandoned by John Taylor & Sons in 1927, was re-opened in 1973 for exploration. As the information obtained from geological mapping, resampling and diamond drilling did not warrant any further work, it was decided to terminate the exploration activities at the mine. As a consequence, the net exploratory expenditure of Rs. 14.28 lakhs (after salvaging assets valued at Rs. 5.21 lakhs) was written off in 1977-78.

1.12 The Committee desired to know whether any data was available with the BGML to give it confidence that it could profitably consider the reopening of the Chinnabhavi Mine. They were informed by the company in a note that it was the most successful mine in the Ramagiri Gold Fields in the past having worked the largest and the richest ore shoots known in the field. According to M/s. John Taylor & Sons (who were the pioneers in the field of mining in various parts of the world) the two ore shoots worked in Chinnabhavi Mine had a grade of 15.3 g/t. and 7.7 g/t. and it was the deepest mine i.e. 335 m. below the surface in Ramagiri Gold Fields. The total lateral development was about 1000 m. It was thought that further development in this area had not been done due to the state of technology at that time and non-availability of power for deep mining. Thus it was considered to be having highly potential prospect. Under the circumstances, it was decided that No. 5 shaft would be dewatered upto 150 m. level, workings re-sampled and the area explored intensively by exploratory development and diamond drilling.

1.13 In this connection, the Managing Director, BGML stated in evidence as follows :—

"We had high expectations of the Chinnabhavi Mine in those days which prompted us to take up preliminary exploration. We were unfortunate and we definitely failed. We gave lot of reliance to John Taylor's reports because they were one of the pioneering gold miners in the country. They mined copper also. This particular mining company had extensive work to their credit. We were sure this is one of our path-finders to go by. But unfortunately it was our bad luck that we could not develop the mine in Chinnabhavi."

#### *(ii) Mamandur Multi-metal Project*

1.14 Based on the results of mineral survey of 1957-58 near the Mamandur village in Tamil Nadu, and the analytical data which indicated occurrence of combined lead-zinc-copper as well as silver associated with



it in large proportions, and also based on the work done by GSI/UNDP, the Mamandur Multi-metal Project was taken up in January 1974 for developing a multi-metal deposit. The project was, however, abandoned in May 1979. The net expenditure of Rs. 28.93 lakhs on this project (after salvaging assets worth Rs. 9.74 lakhs) was written off in the accounts for 1979-80.

1.15 The Committee desired to know why the company went in for the exploration in the multi-metal project when its primary function was in respect of production of gold and other public sector undertakings were in existence for activities in the field of lead-zinc, copper and silver. Bharat Gold Mines stated in a written reply that in view of the dwindling ore reserves in the K.G.F. mines, and non-availability of any new gold prospect for taking up exploitation, with a view to diversify its activities, the company was on the look out for other mining prospects which could be worked with its expertise in hard rock mining. When the Company came to know that the Mamandur multi-metal copper-lead-zinc and silver project in Kallakuruchi Taluk, South Arcot District, Tamil Nadu, which was investigated by GSI, was found to be attractive, it decided to take this project for exploratory mine development and the Indian Bureau of Mines was entrusted with the responsibility of ore beneficiation and pilot plant studies along with the preparation of a feasibility report.

1.16 On being asked whether it was for the first time that the company went in for exploration of multi-metal ore, the Managing Director, BGML stated in evidence :—

“Yes, Sir. It was the first time that the company went in for exploration of multi-metal ore after the gold ore....there is hardly any difference between mining in hard rock for gold or copper or zinc where the mining skill is the same.”

1.17 When enquired about the reasons for abandoning the project, the representative of BGML stated in evidence :—

“We went there with an idea that we could make a mine of it; but the total reserves available came down by half by later developments. At that time we made mid-term appraisal of the whole situation and decided that it was not worthwhile going further because we would make a big loss. So, we abandoned the venture itself. We spent Rs. 38.66 lakhs during the year 1974—78.”

1.18 The Chari Committee appointed by BGML in its report submitted in September, 1985 has inter alia stated that the working mines in the KGF was on their last legs and their closure, one after the other was only a matter of time. In this context when the Committee desired to know the efforts being made by BGML for increasing production of gold, the Managing Director of the company informed in evidence :—

“We have taken the remedial measures. In view of the declining gold production in Kolar Gold Fields, the Government of India felt the necessity to explore the K.G.F. leasehold

within the shortest possible time by a crash exploration programme using the latest techniques. Accordingly a programme was drawn up associating international experts through UNDP. The exploration under this scheme has since been completed by associating GSI and MECL. This, however, did not generate any significant ore reserves within the leasehold. In view of this, it has now been decided by the Government that the other known target areas outside the Kolar Gold Field leasehold, should be explored on high priority to enable the infrastructure and expertise of the company to be better utilised."

1.19 On being asked to state the areas handed over to BGML for exploratory mining outside KGF, the company informed the Committee in a written reply that Chigargunta and Mallappakonda in South Kolar Schist Belt and Yeppamana in Ramagiri Gold Field were handed over to BGML for exploratory mining. However, after detailed studies by the company, Mallappakonda was found to be uneconomical at the prevailing gold prices.

#### *D. Problems and constraints in mines*

1.20 According to the Company the nature of the ore deposits (being narrow and steeply inclined vein type) in KGF Mines does lend itself to full-scale mechanisation. Labour intensive technology has to be employed, except where partial mechanisation is feasible. The typical problems of the mines are discussed below.

#### *Champion Reef Mine*

1.21 This is the deepest mine having reached ultradepths of over 3 Kms. Adverse conditions are stated to be encountered due to ultra-deep workings, causing severe ground control problems and high rock temperatures. Nearly 66 per cent of the total ore reserves of 16.02 lakh tonnes, with a rich grade of 7.21 g/t were not available for mining due to rockbursts, waterlogging, mine safety, shaft pillars, etc. till the end of 1985-86. This limited the working from identified reserves to those currently available for mining (viz. 5.45 lakh tonnes with an average grade of 7.93 g/t) and necessitated larger mining from miscellaneous and development sources with overall lower grade of 4.72 g/t. Re-opening/reclamation and footwall driving in choked levels took much time and large manpower, as waste rock had to be excavated without producing ore.

1.22 The Committee desired to know whether 66 per cent of the total ore reserves of 16.02 lakh tonnes in Champion Reef Mines could not be mined at all. Bharat Gold Mines stated in a written reply that 16.02 lakh tonnes of reserves existing in Champion Reef Mine consisted of ore of water logged areas and areas affected by rockbursts in Glen Ore Shoot of Osborne Section and Northern Folds. After dewatering and reclamation of these areas under Plan Schemes, part of the reserves in Glen Ore Shoot between 103 and 106 levels totalling 49,422 tonnes at an average grade of 10.75 g/t has been already brought into production. In case the Plan Scheme is continued, the areas below 106th level can also

be re-opened and mined in future. Similarly in the Northern Folds, the damaged Sub-Auxiliary shaft has been reclaimed upto 106th level so far and it would be continued upto 109th level. This would permit the sinking of a new shaft later after which all the reserves exposed by recent reclamation work in Northern Fold Area, would be available for future extraction by the stope drive method.

### *Nundydroog Mine*

1.23 In the Nundydroog Mine, the limiting factors were stated to be technology and mine lay-out. As a result, workers had to cover long distances to reach the working spot from the main shaft.

When the Committee desired to know the remedial measures proposed to be taken to overcome the constraints in Nundydroog Mine, the Managing Director, BGML stated in evidence as follows —

“Henry’s shaft was a major shaft in Nundydroog Mine, meant for working the Champion Lode in early years. After the exhaustion of the reserves in Champion Lode, the West Reef was developed extensively which is located at a distance of 400 metres west of Henry’s shaft and the reserves are situated another 600 metres north of the above shaft, thus totalling a distance of about 1000 metres. This has imposed a serious constraint on the effective working time of work persons as a result of longer travel time and movement of materials over long distances. Golconda shaft which is located closer to the West Reefs in the Northern part of the mines is in the water-bearing strata which has caused deterioration of the wooden guides over the years resulting in the frequent breakdowns. The haulage between Golconda and Golconda Auxiliary shafts is not wide enough for handling higher tonnages.

As the reserves adjoining Henry’s shaft are almost depleting and mining of the remaining large reserves are governed by efficient shaft service at Golconda shaft which is at the other extreme, high priority was given to the renovation of Golconda Shaft by temporarily suspending the production activities in Golconda section for a period of nearly 9 months. The shaft has been renovated recently, by replacing the wooden runners by steel guides. Old compressed air main has been replaced.....Action has been initiated in clearing the levels of sand spillages to provide free access to the stopes and also for free tramping of ore from the stopes.”

### *Mechanisation*

1.24 The Chari Committee had observed that “the future of the Champion mine is greatly dependent on the success of the proposed mechanisation schemes. The question that obviously would arise in this context is as to what will happen if the schemes do not give the expected results. One thing is clear and that is champion mine, with the presently

obtaining geo-mining conditions and at the prevailing levels of output, cannot be an economical proposition.”

1.25 When the Committee asked as to what extent the mechanisation scheme succeeded, BGML informed in a note that the introduction of raise boring technique in Champion Reef Mine would involve a huge outlay in foreign exchange and its effective use in this mine due to adverse temperature and ground condition was not found favourable with the manufacturer of the Raise Borer who visited this mine. In view of the present stage of the mining operations in KGF, it was considered not feasible to try this technique.

1.26 In this connection, Managing Director, BGML stated in evidence :—

“In respect of Champion Reef Mine, there is no scope for mechanisation because of the serious limitations on the working conditions.

1.27 However, in regard to Nundydroog mine, the witness stated :—

“A revised limited mechanisation scheme is Nundydroog mine is under implementation . . . . In case this proves to be a success, we will definitely go in a bigger way to produce more ore from this area through mine mechanisation. In this way, we expect our output to increase.”

#### *E. Re-opening of Yeppamana Mine*

1.28 During 1961—68 the Indian Bureau of Mines (IBM) and the GSI did some exploration, reclamation and underground development of the Yeppamana Mine in the Ramagiri Gold Fields in Andhra Pradesh, which was abandoned by John Taylor and Sons in 1927. Their exploration report projected a yield of 6.9 g/t. After the capital project was sanctioned (based on the estimated yield) in October, 1981, a further estimate in June 1982 based on sample results of Ore sheets revealed an expected yield of about 80 per cent only of 6.9 g/t and the yield after milling and smelting was expected to be 3.1 g/t. However, the reserves were estimated in November 1982 at 5.70 lakh tonnes with a grade of 4.69 g/t. The reserves as on 31-3-1987 calculated geostatistically were stated to be 4.75 lakh tonnes with a grade of 3.21 g/t. The Yeppamana Mine was commissioned in May 1984, with an installed capacity of 250 tonnes per day (76,000 tonnes per annum) with matching capacity for treatment of ore in the mill for production of gold concentrates. The actual yield after commencement of production has been 1.78 g/t in 1984-85, 2.83 g/t in 1985-86 and 2.99 g/t in 1986-87.

1.29 The Committee desired to know the reasons for large variations in the estimated and actual grade of ore. Bharat Gold Mines Ltd. stated in a written reply that in the reports of Yeppamana 10 per cent reduction for assay plan factor tailing loss and 10 per cent for dilution factor was only considered. In actual Mining, it was noticed that the assay Plan factor and the dilution factor were higher. The over estimation of the grade by taking a lower factor for dilution was mentioned in the report of

Sri Paliwal who was asked to look into the working of the Yeppamana Mine by the Secretary, Department of Mines.

1.30 In this connection, the Managing Director of the Company stated during evidence :—

“There has been a significant discrepancy in the original estimate which we corrected also by applying this new correction factor.”

1.31 The Committee asked whether these variations were not indicative of inadequacies and deficiencies in the existing system of estimation of grade by the agencies responsible for collection, collation and dissemination of geological data. The Secretary, Department of Mines stated in his evidence before the Committee :—

“I would submit that when the estimations are made they have very detailed sampling technologies as to how representative is a sampling and that is collected for making an assessment of whole metalliferous mine. It is one of the most difficult technology estimations. I think we should accept the statement of the fact. There may be errors at the time of exploration and unless there is a touch of optimism, we cannot go ahead. Once we go ahead and unless optimism is toned down as to what is the problem, there will be some wrong estimation and all that . . . . .

Secondly, in the course of working of a mine, unless dilution of ore is totally avoided, the grade will not be maintained, whether it is due to inaccurate estimation in the first instance or due to dilution sometimes in the course of the operation of the mine, this has to be checked up properly. When grades are actually worked out for the total whole body, certain averages are worked out and grades are arrived at, may be some of us may be ahead.

That is the way that we did. But whether sampling has been done in a particular manner, whether there are any errors, whether the sampling has been rightly done or whether it is sufficiently represented, all these points have to be kept in mind. In the case of metalliferous mines like iron ore, lime-stone or others, the problems of sampling are slightly more.”

1.32 The Managing Director, BGML informed the Committee in evidence that the Yeppamana project was sanctioned by Government in October 1981 for Rs. 437.97 lakhs which was revised in November 1982 to Rs. 577.43 lakhs. This revised project sanction envisaged production of 287 kgs. of gold per annum valued at Rs. 441 lakhs with an annual profit of Rs. 141 lakhs and a return of 24.5 per cent on investment. The expenditure incurred to end of March 1986 was Rs. 706.05 lakhs.

1.33 On being asked the reasons for increase in cost of the project, BGML informed the Committee in a note that from the total capital expenditure upto 1985-86 of Rs. 706.05 lakhs, the credit for ore obtained amounting to Rs. 57.06 lakhs which had been assumed in the EFC

Memorandum, would have to be deducted. Thus the net expenditure would be Rs. 648.99 lakhs against the sanctioned cost of Rs. 577.43 lakhs showing an excess of Rs. 71.56 lakhs. The excess has been due to expenditure on certain items not envisaged in the EFC report but included in the cost. When asked the reasons for not including such items in the EFC report, a representative of the Company stated in evidence :—

“It has to be done within the Company’s resources. The initial investment was made up to the start of production only.”

1.34 The targets and achievements of ore hoisted at the Yeppamana Mine during the last 3 years from 1984-85 to 1986-87 were as under :—

(Figures in lakhs of tonnes)

Year	Target	Ore hoisted	%short- fall
1984-85	0.39	0.23	41
1985-86	0.60	0.24	60
1986-87	0.54	0.34	36

1.35 When the Committee asked whether the project has so far yielded the estimated return of 24.5 per cent on investment, the Company stated in a note that the estimated return of 24.5 per cent was based on the full production of 250 tonnes per day. The rated production could not be achieved due to the restricted water availability on account of severe drought coupled with the power interruptions, low voltages and shortage of manpower. The carbon-in-leach process for gold extraction was new and was introduced for the first time in India. It took some time to stabilise. The teething problems in the Crusher house, tube mills and the filter plant had to be attended to. The water shortage problem was overcome by transporting water through tankers from a nearby village, conservation of available water to the extent of 80 per cent from mill tailings and identifying alternate sources of water outside BGML’s leasehold in the Government land so that additional borewells could be sunk. The matter of power fluctuations and interruptions was pursued with Andhra Pradesh State Electricity Board who indicated their inability to improve the situation. Significant reduction in the voltage fluctuation was achieved by manual operation of a booster transformer. The shortage of manpower was overcome by transferring men from K.G.F. and limited recruitment locally after arriving at an agreement with the local union.

1.36 In this connection, the Managing Director, BGML, informed the Committee in evidence :—

“...within the next few months many of the problems will be overcome and we expect that it will start producing 80 per cent to 85 per cent of its rated capacity.”

## CHAPTER II

### PRODUCTION

#### A. Ore hoisted

2.1 According to Audit, the capacity of KGF mines (based on shafts actually put to use for mining and the ore reserves exploitable) was assessed by the National Productivity Council and approved by the Board in June, 1984. The capacity is as under :

	Mines		Mills
	No. of shafts	Tonnes per annum	Tonnes per annum
Mysore Mine . . . . .	6	120384	188480
Champion Reef Mine . . . . .	5	197600	—
Nundydroog Mine . . . . .	3	304000	209000
Total-KGF Mines . . . . .	14	621984	397480
Yeppanana Mine . . . . .		76000	76000

2.2 The targets for mining of ore were being fixed taking into account the ore reserve blocks, the calculated stoping width and grade, prevailing wall rock conditions, stoping sequences, areas permitted by Directorate General of Mines Safety, the output per man shift (OMS) of the area in the past years, number of available shifts for blasting, clearing, supporting, etc. The targets and the actual ore hoisted by BGML during 1979-80 to 1986-87 were as follows :

(Figures in lakhs of tonnes)

Year	Total targets	Total Ore hoisted	% of shortfall of underground ore to targets
1979-80 . . . . .	3.63	3.45(0.18)	10
1980-81 . . . . .	3.68	3.65(0.18)	6
1981-82 . . . . .	3.96	3.73(0.24)	12
1982-83 . . . . .	3.91	3.64(0.35)	16
1983-84 . . . . .	3.50	3.41(0.34)	12
1984-85 . . . . .	3.93	3.47(0.06)	18
1985-86 . . . . .	3.59	2.92(0.02)	21
1986-87 . . . . .	3.06	2.66(0.14)	18

(Figures in brackets are for ore hoisted from surface mines and included in the total).

2.3 As regards shortfall in targets from 6 per cent to 21 per cent in the ore hoisted during 1979-80 to 1986-87, the Ministry informed Audit in August, 1986 that the budgets were framed on the basis of various

projections but due to unstable working conditions certain areas earmarked for production had to be avoided. Strict statutory mine safety measures also prevented quick reclamation of the areas affected by rock-bursts. When enquired whether these factors could not be taken into account while framing the budget targets, BGML replied in a note :

“The budgets are framed in the month of August of the previous year i.e. 7 months before the start of the new financial year. While framing the budgets, the constraints then being faced like areas already affected by previous rockbursts under clearance, stopes which will be ready for getting the stoping permission from the Director General of Mines Safety and the likely date of the receipt of DGMS approval are taken into consideration. In actual facts, however, in some years we have experienced heavier rockbursts which have resulted in closure of areas. The rockbursts occurring in KGF Mines are unique. Like earthquakes the occurrence of rockbursts cannot be predicted in advance.”

2.4 The Managing Director of the Company, however, stated in evidence as follows :—

“Pioneering in-house R&D efforts currently on in the form of seismic and micro-seismic investigations are aimed at being able to predict the occurrence of rockbursts so as to remove men and costly machinery and equipment to safer places to minimise the damage caused by such violent bursts of rocks caused by inherent and induced stresses.”

2.5 When asked the reasons for decline in ore production despite various exploration schemes undertaken by the company, the Managing Director, BGML stated :—

“Since 1880, 794 tonnes of gold has been extracted from the mines in KGF, and only 19 tonnes of gold (in situ) scattered in remote areas of the three working mines are available for mining and the richest of them is located at the ultra deep levels of Champion Reef mine . . . . The cream of the ore body has already been taken out. Now we are left with most of the leaner zones in our mines. Unfortunately most of the schemes undertaken did not generate fresh reserves of high grade in the upper levels, where mining could have been much simpler.”

#### *B. Production Planning*

2.6 According to Audit, the production planning in the BGML was based on the results of detailed studies on ore availability, ore grade, type of ore and its influence on gold recovery, mining sequences, type of ore-mix possible from different grade sources etc. While preparing the annual production budgets, the sources were broadly divided into Payable, Low grade, Exploratory and Development.

2.7 The Nundydroog Mine was stated to be having maximum reserves in terms of tonnage of ore but poor in grade, whereas the Champion Reef Mine was having less reserves of ore with high grade of gold. While the planning for optimal exploitation of ores called for greater proportion of



mining from Nundydroog Mine compared to the Champion Reef Mine, the mining targets set declined from 2.3 : 1 in 1979-80 to 1.8 : 1 in 1984-85 and the actual production declined from 2.4 : 1 to 1.8 : 1 during this period. Only in September 1984 this was realised and the Board was informed about the plans and schemes drawn up for maintaining the ratio of mining between the two mines at 4 : 1. However, even in 1985-86 the ratio of actual production was 2.1 : 1.

2.8 The Committee enquired as to why the proper ratio for production of ore between Nundydroog and Champion Reef Mines was not realised and maintained earlier. The company replied in a note that when this proposal was made, it was under the consideration of the Management that extensive mechanisation would be done in Nundydroog Mine. Before the introduction of large scale mine mechanisation in low grade narrow vein ore bodies, expert opinion was sought from UNDP Mining Engineer. Since he opined that mine mechanisation in narrow and low grade ore-bodies would result in high dilution of ore making the mining operations un-economic, large scale mechanisation was deferred. Therefore, on an experimental basis, mine mechanisation was being done on a limited area to confirm its large scale implementation at a future date. The ratio of mining between Nundydroog Mine and Champion Reef Mines in 1986-87 was stated to be 2.2 : 1.

### C. Production of gold

2.9 In the KGF area, Bharat Gold Mines Ltd. has two mills viz. Mysore and Nundydroog. Another mill was commissioned in May, 1984 alongwith the mine at Yeppamana in the Ramagiri Gold Fields in Andhra Pradesh. The capacity of the mills and the ore milled during 1979-80 to 1986-87 were as under :—

Year	(Figures in lakh of tonnes)							
	Mysore		Nundydroog		Yeppamana		Total	
	Capacity	Ore milled	Capacity	Ore milled	Capacity	Ore milled	Capacity	Ore milled
1979-80	1.64	1.34 (18)	2.33	2.04 (13)	...	0.07	3.97	3.45 (13)
1980-81	1.64	1.47 (10)	2.33	2.11 (9)	...	0.07	3.97	3.65 (8)
1981-82	1.76	1.56 (11)	2.32	2.08 (11)	...	0.09	4.08	3.73 (9)
1982-83	1.89	1.69 (10)	2.09	1.92 (8)	...	0.02	3.98	3.63 (9)
1983-84	1.89	1.51 (20)	2.09	1.91 (9)	...	...	3.98	3.42 (14)
1984-85	1.89	1.56 (17)	2.09	1.69 (19)	0.76	0.22 (70)	4.74	3.47 (27)
1985-86	1.89	1.17 (38)	2.09	1.91 (28)	0.76	0.24 (68)	4.74	2.97 (38)
1986-87	1.89	1.06 (44)	2.09	1.26 (40)	0.76	0.34 (55)	4.74	2.64 (42)

(Figures in brackets indicate the percentage shortfall in ore milled compared to capacity).

2.10 The targets and achievements in gold production by the company and grade of gold recovered during the years 1979-80 to 1986-87 were as given below :—

Year	Gold Production			Grade of Gold		
	Targets	Gold produced	Percentage of shortfall to targets	Targets	Actual Grade of gold recovered (Grams per tonne)	Percentage of shortfall to targets
	(in Kgs.)					
1979-80	1983.9	1649.5	17	5.46	4.78	12
1980-81	1777.5	1562.6	12	4.83	4.28	11
1981-82	1682.5	1420.6	16	4.25	3.81	10
1982-83	1564.0	1369.9	12	4.00	3.77	6
1983-84	1433.0	1185.6	17	4.09	3.47	15
1984-85	1337.0	1091.2	18	3.40	3.14	8
1985-86	1278.0	915.8	29	3.55	3.14	12
1986-87	1313.0	792.0	39	—	2.97	—

Besides 642.9 Kgs. of silver was also produced upto 1985-86 as by-product.

2.11 The Committee pointed out that there was shortfall ranging from 8 per cent to 44 per cent in capacity utilisation of mills and asked as to why the production of ore was not planned to the extent of the available milling capacity. BGML stated in a written reply as follows :—

“The production targets of the three mines is more than the capacity of one mill and less than the capacity of two mills. To plan the production of the Mines to the extent of the available milling capacity of both the mills, there were severe constraints owing to non-availability of alternative ways and severe ground problem in Champion Reef Mine and bad condition of the Shaft equipment at Golconda Shaft. The alternate way at Sub-Auxiliary to work Auxiliary section of Champion Reef has been reclaimed upto 106th level and later upto 107th level to facilitate normal work in all the stopes below 106th level.”

2.12 Asked about the steps proposed to be taken to improve the capacity utilisation of the mills, the Managing Director BGML stated in evidence:—

“We have got two mills (in KGF) one is Mysore Mill and the other one is the Nundydroog Mill. Both are starving for ore. This is a serious constraint which we face. Our capacity utilisation is rather low. We are fully aware of this fact. We are now planning to bring ore from the new mine at Chigargunta . . . We expect that the Mysore Mill will be better utilised in the

future... In fact, during 1986-87, we have already produced 43.5 Kgs. of gold in that mill treating Chigargunta ore."

In regard to the Yeppamana Mill, the witness stated :—

"We had endless problems with our plant and power supply fluctuations, frequent power interruption etc. .... And we have been able to overcome this situation by having our own DG sets. ... The other problem has been the shortage of water. In fact we had to transport water from a distance of 2 Km. in tankers. Right now we have achieved about 40 per cent of the rated capacity of the mill and we are hopeful of overcoming the present bottlenecks and expect to do better within the next 3 months time."

2.13 When the Committee desired to know the financial effect of the under-utilisation of capacity of mills, they were informed in a note submitted by the company that to the extent the milling capacity was not utilised, the unit cost of gold production went up on account of large fixed costs. The effect of under-utilisation of the mill capacity on the cost production of 10 gm. of gold during the three years 1984-85 to 1986-87 was stated to be as under :—

	1984-85	1985-86	1986-87
	Rs.	Rs.	Rs.
Actual cost of production per 10 gm.	2,947	3,769	4,299
Effect on cost per 10 gm. of under-utilisation of actual capacity	521 (17%)	959 (25%)	1,294 (30%)

2.14 In regard to shortfalls in gold production and gold recovery consistently from 1979-80, it has been stated that low ore production has contributed to the shortfall in gold production. The company informed Audit in March, 1986 that the low recovery of gold was generally due to mill call factor and tailing losses. This, apart from the low recovery in the grade of gold, was attributable to the budgeting of ore production from various sources and the deviations in actual mining from the budgeted sources as indicated below :

(Figures in tonnes)

Year	Payable sources		Low grade sources		Exploratory, development and other sources	
	Budget	Actuals	Budget	Actuals	Budget	Actuals
1983-84	1,47,045 (43)	1,16,023 (38)	50,248 (15)	47,127 (16)	1,47,879 (42)	1,38,756 (46)
1984-85	1,47,117 (44)	1,03,123 (37)	57,888 (17)	43,250 (16)	1,28,995 (39)	1,30,409 (47)
1985-86	72,971 (25)	53,085 (22)	61,510 (21)	52,636 (22)	1,54,519 (54)	1,32,839 (56)

NOTE: (i) Figures for Yeppamana, Chigargunta and Mallappakonda have been excluded.

(ii) Figures in brackets denote percentage to total.

2.15 According to Audit, the deviations from budgets were particularly unfavourable in Nundydroog Mine. As this mine did not have the problems of heavily depleted reserves and of inaccessibility/ultradepths/ground control, etc. faced by the Mysore and Champion Reef Mines and in view of the fact that it had large reserves and ample mining capacity the deviations lacked justification.

2.16 When asked the reasons for budgeting larger share from exploratory and development sources which contained very low grade of gold, BGML stated in a note as follows:—

“Budgeting in exploratory areas is done only out of sheer necessity, as the stopes of higher grade ore reserves were not available for production work. In some instances, the exploratory areas came in the sequence of stoping which necessitated the normal mining activity in such areas. Developments are budgeted with an expectation of generating high grade ore reserves, after taking into consideration the information available from the adjoining areas. Whenever the anticipated grades were not achieved, such development faces had been suspended abruptly.”

#### D. Residual losses

2.17 After the recovery of gold from ore during milling, some residue of gold is lost in the ore. The following table shows the norms and actuals of gold lost during milling:—

(Grams per tonne)

Year	Mysore Mill		Nundydroog Mill	
	Norm	Actual	Norm	Actual
1979-80	0.270	0.310	0.540	0.573
1980-81	0.340	0.274	0.600	0.519
1981-82	0.280	0.354	0.600	0.642
1982-83	0.336	0.354	0.643	0.714
1983-84	0.354	0.356	0.677	0.812
1984-85	0.354	0.350	0.677	0.792
1985-86	0.354	0.364	0.677	0.763

The excess residual losses over norms during 1979-80 to 1985-86 worked out to 108.66 Kgs. of gold valued at Rs. 173.07 lakhs of which 87.22 Kgs. of gold valued at Rs. 142.20 lakhs occurred in Nundydroog Mill.

2.18 On being enquired about the reasons for continued excess residual losses, the company stated in a note that the liberation of the gold from the ore depended on the characteristics of the ore. In free milling ore more gold was liberated while in refractory ore the gold which

was locked up in impurities did not get fully liberated. Hence tailing losses would vary with the proportion of the free milling ore and the refractory ore. The norms are also revised depending on the composition of the ore mix planned to be sent to the mills. The free milling ore was mainly available in Champion lode system. The ore from Nundydroog was completely refractory and most of the ore from Chigargunta was also refractory in nature. As the ore mix treated in the plant varied from year to year, the tailing losses could not remain constant.

2.19 About steps being taken to reduce the residual losses, it was stated that experiments were being conducted in the laboratories of Atomic Mineral Division of BARC, Hyderabad for recovery of gold through bioleaching route, in view of the reported lower operating and capital costs. Experiments were still in progress and their results would be evaluated. The carbon in pulp technology was under implementation in Yeppamana Mine. Depending on its success, it was proposed to be adopted in other mills also.

2.20 According to Audit, a scheme costing Rs. 185 lakhs approved by the Board in November 1983 to improve the recovery of gold in tailings by installation of Flotation Cell in Nundydroog Mill involving a pay back period of 2 years was approved by Government for Rs. 115 lakhs for funding during 1986-87. According to Chari Committee the delay in implementation of scheme is costing Rs. 30,000 a day at the existing level of production.

2.21 The Committee desired to know the reasons for delay in implementation of the scheme when the installation of Flotation cell was considered to improve the recovery of gold. BGML stated in a note that the scheme was initially deferred in view of the decision taken by the Government not to incur expenditure of new starts as the phasing out of the gold mining operations was under consideration. However, in view of the advantages of the scheme, it was decided in 1986-87 to go ahead with the scheme. The project has now been taken up for implementation. Orders for major equipments have been released and the scheme was likely to be completed by March, 1989. However, in his evidence before the Committee, the Secretary, Department of Mines stated in this connection as follows :—

“This scheme was a scheme of the Sixth Plan . . . . This was shown in the 7th Plan as a continuing scheme. Therefore, in 1985-86 the company did not get any money for this particular purpose but in the previous two years, Rs. 34 lakhs and Rs. 35 lakhs can be said to have been allocated for this particular work, in an overall manner . . . . Against the total of Rs. 918 lakhs that they had asked for, we had sanctioned Rs. 680 lakhs and the priority they gave to this particular work was left to the company. . . . they have constructed a building spending about Rs. 5 lakhs . . . . They said that unless there was a building there was a danger of the equipment getting rusted. It is the position which came in January, 1985 . . . . And now they have placed the orders. In 1987-88 we have provided Rs. 1 crore. This year, 1988-89 we have provided one more crore of rupees and we are earmarking them for that particular purpose.”

### E. Productivity

2.22 The output of ore per manshift (OMS) of underground productive workers mine-wise and for all the mines during 1979-80 to 1985-86 was as under :

Year	(In tonnes)			
	Mysore Mine	Champion Reef Mine	Nundydroog Mine	For all the Mines
1979-80	0.381	0.398	0.421	0.404
1980-81	0.378	0.333	0.448	0.396
1981-82	0.388	0.337	0.412	0.383
1982-83	0.387	0.316	0.411	0.375
1983-84	0.314	0.300	0.401	0.347
1984-85	0.352	0.309	0.348	0.337
1985-86	0.292	0.278	0.359	0.317

2.23 On being enquired about the main reasons for declining OMS over the years, BGML stated in a note submitted to the Committee as under :

- (i) The mines in K.G.F. are very old and the working conditions of the mines are deteriorating.
- (ii) Due to extensive stoping done in the mines we are encountering more and more of rock pressure leading to rockbursts. As a result, the production areas have to be reclaimed and normal safe conditions are to be restored before deployment of production men at such faces.
- (iii) The scattered workings in all the Mines, particularly in Mysore Mine, also contributed to low OMS.
- (iv) Recently recruited supervisors are yet to gain requisite supervisory skills and sufficient experience in order to exercise strict control over the work persons."

2.24 In regard to the recruitment of supervisors, the Committee were informed by a representative of BGML in evidence that under the provisions of the Metalliferous Mines Regulations, 1961, for reaching the supervisory grade, a person had to pass certain examination to get the competency certificate. BGML's workmen joined as workers under 'unskilled category' and gradually acquired the requisite experience. But because of their low literary level, they were not able to qualify the written examination.

2.25 In this connection, the Managing Director of the Company informed the Committee in his evidence that for a few years oral examination was also allowed for experienced persons. The system of grant of service certificate after oral examination was stopped sometime in 1968-69. As a

result, the Company had to take fresh diploma-holders. It took four years to train them for their effective utilisation in the mine. Even before picking up the job, they passed the second class or First Class Mine Manager's certificate of competency and left the Company for better opportunities. Thus, BGML had to make fresh recruitment of foremen again. In this way, the company's experienced workers did the job but the newly recruited persons were designated as Foremen. The witness added that the output depended mainly on effective supervision and the effective work carried out by the workers. If the condition for written examination was relaxed, the Company could avoid fresh recruitment for the posts of foreman to the extent it was doing at present. In the supervisory cadre the Company recruited 12 persons in 1983-84, 4 in 1984-85 and 74 in 1987-88.

2.26 The Committee desired to know the Government's views on exemption of BGML's experienced workers from taking the written examination. The Department of Mines informed the Committee in a written reply as follows :

"It is understood from the company that they had approached the Director General of Mines safety, Dhanbad, in the matter. However, he had replied that it would not be possible to grant exemption.

The Deptt. of Mines has appointed a Committee with Controller General, Indian Bureau of Mines, Director General, Mines Safety and Director, Central Mining Research Station for reviewing the present rules on mines safety to bring them in line with the latest advances in technology. BGML has been asked to send a detailed proposal regarding exemption of some experienced employees from taking certain written tests prescribed by Director General, Mines Safety. After obtaining the detailed proposal from the Company together with full justification, it is proposed to refer the proposal to the above mentioned committee for advising the Government in this regard."

#### *F. Manufacture of TCT rods*

2.27 One of the facilities taken over by the Company from the erstwhile Kolar Gold Mining Undertaking is a shop for the manufacture of Tungsten Carbide Tipped (TCT) drill rods and re-tipping of used rods with a rated capacity of 18,000 for new rods and 12,000 for re-tipping on 3 shift basis. With the installation of certain balancing equipments the total capacity was increased to 1,05,456 rods (including re-tipping) on 3 shift basis from May, 1983. The Company informed Audit in June 1984 that this was the 'installed annual machine capacity' and applying a human efficiency factor of 0.8, the realistic rated capacity was 84,365 rods on 3 shifts basis equivalent to 28,121 rods per annum on single shift basis. The Company uses these rods for internal consumption and also sells them under the brand name 'GOLDRILL'.

2.28 The details of the production of rods from 1978-79 onwards are as under :—

	New rods (No. of rods)	Retipped rods	Total
1978-79 . . . . .	12,374	4,042	16,416
1979-80 . . . . .	9,903	2,631	12,534
1980-81 . . . . .	8,639	2,631	11,270
1981-82 . . . . .	11,455	4,023	15,478
1982-83 . . . . .	14,215	1,945	16,160
1983-84 . . . . .	19,593	2,943	22,536
1984-85 . . . . .	18,924	2,279	21,203
1985-86 . . . . .	20,075	2,398	22,473
1986-87 . . . . .	19,563	2,593	22,156

2.29 When the Committee desired to know the basis for applying 0.8 as the human efficiency factor for the fixation of rated capacity for manufacture of TCT rods, the Department of Mines informed in a note that as per the report of the Central Labour Institute, Bombay who were appointed by BGML to re-draw the Incentive Scheme for the company in 1974-75 in respect of surface central workshops, the standard time comprises normal time including preparation/setting time plus 20 per cent allowances for personal needs. The Company had accordingly fixed the rated capacity for manufacture of the TCT rods, taking into consideration human efficiency factor of 0.8.

2.30 The Committee enquired the reasons for shortfall in production of TCT rods compared to capacity especially when a large domestic market demand for drill rods reportedly existed. BGML stated in a note furnished to the Committee that the initial quality control problem faced by the Company and the need to compete against the aggressive marketing policy of the private sector companies came in the way of the faster growth of this product. In addition, the change in the drilling technology namely introduction of long hole drilling and less allocation for irrigation projects, stagnated the demand for this product. According to the Company, even its competitors had not been able to achieve their rated capacities in view of the slackness in the market and their expectation of increase in projected demand did not materialise. In the meantime two more companies in the private sector started production of TCT rods. Later, one more multinational company also started production. Hence, the production programme was made to match the order book position year to year. The order position did not go up substantially as the demand for the drill rods in market remained stagnant. However, with the improved quality, better marketing practice and support extended by the Government, the order book position of BGML during the year was stated to be much better almost equivalent to one shift capacity production.



The order book position as on 31-10-1987 for the current financial year was 23827 rods valued at around Rs. 161 lakhs. Another 5000 rods were required towards captive consumption. If this trend continued, the Company may have to go in for second shift operation of the plant.

2.31 On being asked to state as to how the entry of Private Companies in the field affected the production of TCT rods by BGML, the Department of Mines informed in a written reply that the BGML obtained ISI certification for TCT drill rods in September, 1984. After that, only one more company in the private sector commenced production. This company was granted Industrial Licence in December, 1984. The turn-over of the BGML in respect of TCT drill rods would have been higher but for the entry in the field of this company.

2.32 In July, 1976, Government emphasised that the company should improve the quality of rods so that it could compete with the other indigenous manufacturers. BGML entered into an agreement with Multiplex Consultants, Pune for supply of specifications for equipment, plant layout, technical know-how etc. The initial programme submitted by the consultants in September, 1978 contemplated completion of work by December, 1978. This was later rescheduled to be completed by June 1979. However, the consultants completed the job only by 1983-84. The Company got ISI certification in September, 1984. No penalty could be levied from the consultants for delay in completion of the job since the agreement did not provide for it.

2.33 In regard to the non-inclusion of penalty clause in the agreement, the Company in a note furnished to the Committee stated :

“The royalty payable to the consultant was to be determined only after the quality of the rod was proved. The consultants were loosing as long as they delayed the transfer of technology and subsequent proving the quality of rods. The royalty @ Rs. 3/- per rod for outside sale and @ Re. 1/- per rod for captive consumption was payable. This amounted to Rs. 1.33 lakhs on sales upto 1983-84 and Rs. 0.27 lakh on internal consumption, which was not paid to the consultant. This itself was considered adequate penalty for not completing the assigned tasks in time.”

## CHAPTER III

### FINANCIAL MATTERS

#### *A. Pricing Policy*

3.1 Bharat Gold Mines Ltd. incurred losses since inception except during 1979-80 and 1980-81. The accumulated losses of the company as per Balance Sheet stood at Rs. 5970 lakhs at the end of 1986-87. Even after taking into account the subsidy of Rs. 1350 lakhs and Rs. 822 lakhs received from Government during 1985-86 and 1986-87 against cash losses, this comes to Rs. 3798 lakhs. The Company has thus wiped out its paid-up capital of Rs. 3427 lakhs.

3.2 Apart from the decline in production of gold and increase in cost of production of gold, the pricing policy for gold was also stated to have adversely affected the profitability of the Company.

3.3 The Committee desired to know the pricing policy of Government in respect of gold. In their reply, the Department of Mines informed the Committee that the Cabinet Committee on Economic Policy and Coordination in October, 1976 approved the following formula for gold acquired from the two companies viz. BGML and HGML :

“.... The Reserve Bank will purchase at a price which is equal to the cost of production of the mine in 1975-76 plus a 12 per cent return on its capital and reserves subject to a periodical review which may take into account inescapable increase in cost.

The above would be subject to a minimum price equal to the average international price during the preceding month and a maximum price equivalent to the average international price in the preceding month plus 25 per cent.”

Subsequently, this formula was not adopted by the State Government of Karnataka in respect of Hutti Gold Mines Ltd.

3.4 Keeping in view the increasing cost of production of BGML, the formula was revised w.e.f. 1-4-1984 which envisaged that the Company would be paid the IMF price for the entire gold produced by it and made over to the Government. In addition, it would be paid a subsidy equivalent to the difference between the IMF price and the price equivalent to the London Metal Exchange (LME) price of the preceding month plus 25 per cent of that or the average Indian Market price of the preceding month whichever is less.

3.5 When asked about Company's view on the present pricing policy of gold, the Company stated in a written reply furnished to the Committee that by restricting the prices to the lower of the two, the Company was

always at a disadvantage in that the product invariably fetched only a lower price than what would be available in the free market. After this policy was introduced from 1st April, 1984, the position with regard to the value realised by the Company and the value that would have accrued had Indian market price been allowed has been stated by the Company as under :—

(Rupees in lakhs)

	Realised under Pricing Formula	Realisable under Indian Market Price
1984-85	1875.47	2091.72
1985-86	1632.70	2014.11
1986-87	1708.01	1876.80
Apr/Oct. 1987 (7 months)	1162.59	1280.34

3.6 In this connection, the Managing Director of the Company stated in his evidence before the Committee as follows :—

“If the Company had been paid the Indian market price of gold, it would have made profits till 1982-83 and even during 1983-84, it would have made only a marginal cash loss..... We are not getting realistic prices which has distorted financial position of the Company.”

3.7 Subsequently, the Company furnished the following details of profit/loss of the company pertaining to the years 1972-73 to 1986-87 as per the Balance Sheet and the position of profit/loss that would have prevailed, had the company been paid the Indian market price for gold :—

(Rs. in lakhs)

Year	Profit(+)/Loss(—) as per Balance Sheet	Profit (+)/Loss(—) Under Indian Price (Pre-Tax)
1972-73	(—) 58.15	(—) 166.49
1973-74	(—) 162.21	(—) 50.37
1974-75	(—) 180.24	(—) 30.60
1975-76	(—) 249.82	(—) 6.07
1976-77	(—) 134.34	(+) 209.13
1977-78	(—) 214.18	(+) 21.72
1978-79	(—) 82.12	(+) 120.35
1979-80	(+) 352.13	(+) 477.63
1980-81	(+) 567.88	(+) 580.12
1981-82	(—) 99.56	(+) 204.00
1982-83	(—) 290.21	(+) 58.29
1983-84	(—) 568.92	(—) 254.05
1984-85	(—) 1261.84	(—) 896.63
1985-86	(—) 1741.67	(—) 1144.26
1986-87	(—) 1846.66	(—) 1458.82
	(—) 5969.91	(—) 2366.05

(Average annual Indian market price adopted upto 1977-78 and monthly computation made from 1978-79 onwards).

3.8 The Chari Committee had observed that a positive and more helpful gold pricing policy by the Government could largely have prevented BGML from getting into the present unfortunate position which has resulted in portraying BGML as a losing concern. Whereas BGML has not been paid market price for gold produced by it, Hutti Gold Mines Limited has all along been allowed to sell gold at prevailing Indian market prices, but the quantity of sale was limited by the certified demands of licenced industrial users, the rest of the gold produced by it being required to be made over to Government at a premium of 35 per cent over the LME price, as in the case of BGML. This policy had placed HGML in a more favourable position over BGML at least till April, 1984 particularly when the former's gold occurrences were comparatively at shallow depths and its cost of production was distinctly lower than that of BGML.

3.9 The report of the Chari Committee also brought out that Government had built up a surplus of Rs. 154.88 crores by 31-3-1985 accruing to it through gold made over by BGML since its inception (on account of difference between Indian market value and compounded value of amounts paid by Government). The Chari Committee, therefore, recommended that BGML should be given market price for gold produced by it with immediate effect.

3.10 When the Committee desired to know the Government's reaction on paying market price to BGML for the gold produced by it, the Department of Mines stated in a written reply as follows :—

“The price paid for gold has been revised from time to time upwards from LME price to LME price plus 25 per cent and subsequently to LME price plus 35 per cent. However, realising that even this increase in price is not remunerative to the company it has now been decided to permit BGML to sell its gold in the open market to the licenced dealers subject to the procedure prescribed by the Gold Control Administrator..... The notification for the purpose is under formulation by the Office of the Gold Control Administrator.”

In this connection, the Secretary Department of Mines also stated in evidence that if this was allowed from the year 1988-89 onwards, the BGML's position would be improving by about Rs. 5 crores per annum.

#### *B. Cost of Production*

3.11 The cost of production of ore and that of gold in BGML during 1981-82 to 1986-87 as under :—

Year	Cost of production of Ore (Rs./tonne)	Cost of production of gold (Rs./10 gms)
1981-82	610	1608
1982-83	668	1770
1983-84	757	2159
1984-85	918	2947
1985-86	1188	3769
1986-87	1323	4299

3.12 The main elements of cost of production of the company were stated to be salaries and benefits to employees, materials power, interest and depreciation. Of the cost of production of gold during 1986-87, salaries and wages accounted for 58 per cent, Materials 19 per cent and Power & lighting 16 per cent.

3.13 In regard to the extent of increase in salaries and wages, the Managing Director, BGML, informed the Committee in evidence :—

“My wage bill which was Rs. 13.1 crores during 1981-82, has become Rs. 20.38 crores in 1986-87. This increase is due to DA as well as the basic wage revision as a result of the negotiations with the union.”

3.14 However, according to Audit, the substantial additional recruitment of manpower from 1979-80 also contributed to the increase in salaries and wages. As labour cost was more in the nature of fixed cost in these mines, the impact of the manpower additions would continue to contribute to the total costs in future also. This aspect of excess manpower has been dealt with separately in the succeeding paragraphs of this Report under Manpower Analysis.

3.15 The cost of materials increased from Rs. 532 lakhs in 1981-82 to Rs. 676 lakhs in 1986-87. The increase was attributed by the company to the general increase in price of materials and inflationary tendency.

3.16 The cost of power and lighting in the company during 1981-82 to 1986-87 was as follows :—

Year	(Rs. in lakhs)	
	Cost of power & lighting	
1981-82	293	
1982-83	300	
1983-84	365	
1984-85	508	
1985-86	567	
1986-87	565	

3.17 Regarding the increase in cost of power, the Managing Director, BGML stated in evidence that the power tariff was increased periodically by the State Government of Karnataka. The cost of power per unit went up from 7 paise in 1972 to 29 paise in 1980-81. Thereafter the tariff increased steeply and it was 100 paise per unit in 1987.

3.18 The Chari Committee recommended in this connection that Karnataka Government may provide relief by not levying higher rate of tariff for power supplied from the Sivasamudram Hydel Station, whose capital costs must have depreciated considerably ever since it was installed decades ago as a captive plant for supply of power to the KGF.

3.19 The Secretary, Department of Mines, informed the Committee in evidence that when the erstwhile Kolar Gold Mining Undertaking was transferred from the Mysore Government to the Government of India, only the mines were transferred and not the generating station, even though the entire cost had been paid by the erstwhile M/s. John Taylor & Sons. Since the property remained with the Karnataka Government in their overall total assets, the cost of power went up at a very steep rate on account of tariff increases from time to time.

3.20 When the Committee enquired whether the matter was taken up by the Ministry with the State Government of Karnataka with a view to securing lower power tariff for BGML, the Department of Mines replied in a note submitted after evidence that the issue of reduction of power tariff from 60 paise prevailing in June 1985 to the original tariff of 17 paise was discussed by the then Minister of Steel and Mines with Chief Minister of Karnataka when the former visited Karnataka in June 1985. However the tariff rates were not reduced.

3.21 Asked about the feasibility of setting up a captive power plant for BGML, the Secretary, Department of Mines, stated in evidence as follows :—

“If we set up a captive power plant, in the younger age of the mine, it is all right . . . . If we now put up a captive power plant, it would be a costly affair. Karnataka is a far-off place from any coal basin. The result is, cost would go up.”

3.22 The Committee desired to know the steps being taken by the company to reduce the costs. BGML stated in a note that consumption of power in 1986-87 was 808 lakh units as against 845 lakh units in 1985-86 and 925 lakh units in 1984-85. Further savings of 5 per cent in power consumption was envisaged during the current year. The overtime payment which was Rs. 102.41 lakhs during 1983-84 has been brought down to Rs. 58.83 lakhs in 1986-87 despite increase in rates of basic wages and dearness allowances. Certain economies were also stated to have been effected by re-use of salvaged materials from the mines.

3.23 The Committee were informed by the company that it being over 100 years old, had to develop a complete infrastructure in the form of workshops, township, hospital and other welfare facilities for its employees. These infrastructural facilities created at a time when they were not available, have in the last few decades become a burden on the company.

3.24 As a cost reduction measure the company discussed the matter regarding divestment of township maintenance and sanitation functions in BGML colony with the Additional Chief Secretary, Government of Karnataka, Director of Municipalities and the Deputy Commissioner, Kolar District. The response from the State Government was not very encouraging. According to the company it was understood during the discussions that in view of the paucity of resources in the State Government, this could be taken up by them provided sufficient funds were made available by the Government of India. In respect of handing over the hospital, discussions were held with the State Health authorities and the authorities of ESIC.

In view of the availability of hospitals in the neighbouring town a part of which was being utilised by ESIC, they did not agree to take over the hospital functions.

Avenues to find an agency like the Ex-servicemen Association to run the Canteens also did not bear fruit.

3.25 The Committee asked whether the question of divestment of these functions was followed up by the Department of Mines with the State Government of Karnataka. The Department of Mines in a written note stated as follows :—

“The Government has been aware of the discussions between BGML and the State Government of Karnataka for transfer of functions such as town maintenance, sanitation and hospital etc. However, Government of Karnataka wanted to know the decisions on the proposal for phasing out the KGF mines which has been under consideration of the Government. Now that the Government has taken a decision to phase out the KGF mines over a period of 7 years, the question of transfer of these functions is proposed to be followed up with the State Government.”

### *C. Canalisation of gold*

3.26 The Chari Committee had suggested that the Government should treat BGML as the canalising agency and advance necessary Foreign Exchange from its reserves to import 50 to 60 tons of gold annually for sale in the open market at the ruling prices, at a pre-determined rate of 10/20 gms. per occasion of wedding etc. On an investment of about 600 crores a year in Foreign Exchange, the Government could get a minimum return of Rs. 400 crores even if the mark-up was limited to just 60 to 65 per cent. In this process, not only would the financial losses incurred by the BGML be wiped out but at the same time, smuggling of gold, with all its risks and uncertainties would become a highly uneconomic venture and would get quickly eliminated.

3.27 On being enquired about the Government's reaction to this suggestion, the Secretary, Department of Mines stated in evidence as follows :—

“A Working Group was set up by the Ministry of Finance in May, 1986 to carry out a study on all aspects of the gold policy and to make suitable recommendations to the Government . . . . The Report of the Committee has not yet been received.”

3.28 Subsequently, the Department of Mines informed the Committee in a written note submitted after evidence that during the deliberations of the Working Group the following observations were made :—

“(i) The group entrusted with the task of revision of the Gold Control Act is considering certain amendments to the Act with a view to liberalise it and remove irritants on the basis of existing policy. In case there is a substantial change in the policy relating to import of gold, it would have large

implications for the Gold Control Act's structure and even its survival.

- (ii) At present, gold is coming into the country through unofficial channels and it would have to be explored whether a legalised route could be set up. The likelihood of the unofficial trade in the commodity continuing even if legalised routes were to be permitted, would have to be examined.
- (iii) It is crucial to assess the level of import of gold in which smuggling would be unattractive."



## CHAPTER IV

### FUTURE OF BGML

#### *A. Phasing out of KGF Mines*

4.1 According to the Ministry, the Kolar Gold Fields (KGF) have been working continuously for 106 years now operating at depths up to 3.3 kms. With progressive exhaustion of reserves and increasingly difficult mining conditions being encountered, the production of gold has come down from a level of 10 to 17 tonnes per annum in the first four decades of this century to the current level of less than 1 tonne. The total remaining ore reserves are estimated at 6.9 million tonnes with a total gold content of nearly 34.95 tonnes. Of this, the mineable reserve on a cut-off grade of 4 grams per tonne would be 3.54 million tonnes with a recoverable grade of 4.21 grams per tonne; and the recoverable gold is estimated at 14.92 tonnes. At the present rate of extraction, the reserves may last for about 12 years.

4.2 It has been stated that with mining being undertaken at great depths where problems of ground control, temperature, dust, long travel time of workmen etc. were encountered, the cost of operations inevitably went up. In this connection, Audit has observed that the company could not achieve corporate viability as a predominantly gold mining company in view of the increasing cost of production, dwindling reserves, low grade of gold recovery and with no new reserves having been discovered. Unless the company diversified in a big way into other activities so as to make its operation viable, its survival as a healthy corporate entity hung in the balance.

4.3 The company has informed the committee in a written note that the Mysore Mine is planned to be phased out in next two years and action has already been initiated to curtail mining operations in this mine and it is now mainly concentrated in taking out the richer remnants and for salvaging operations.

In this connection, the Secretary, Department of Mines also informed the Committee in evidence :

“What happened to the Mysore Mine was it was practically exhausted and the same thing is going to happen to the Champion Reef Mine and the Nundydroog Mine. The day is not far off. It is very near.”

4.4 In this context, the Committee desired to know the Government's plans in regard to the future viability of the company and how the work force would be redeployed. The Department of Mines stated in a written reply that the relevant issue for determination was the optimum time frame for actually effecting the closure of these mines. In December 1985,

a committee constituted under the Chairmanship of the Cabinet Secretary recommended that the gold mines operations in KGF should be phased out in 5 years. The Chari Committee however, envisaged the closure of the mines over more extended time frame subject to various investments being made.

4.5 It was assessed by the Government that the areas in which implications of the phasing out of the KGF mines would be felt were continuance of the important scientific experiments being conducted by the Bhabha Atomic Research Centre and Tata Institute of Fundamental Research (TIFR); displacement of large complement of trained workmen; extinction of four generations of expertise in hard rock mining in such deep and difficult conditions; going into disuse of the assets acquired over a century of operations in the form of well developed infrastructure; and non-exploitation of the identified reserves mainly in Nundydroog Mine and in some richer areas in the deeper levels of Champion Reef Mine.

4.6 Keeping in view the above considerations, it has been assessed and decided that the optimum period for phasing out the operations of the KGF mines would be seven years. Mines have to be kept open for at least this length of time for enabling the Department of Atomic Energy to continue the vital experiments at the KGF Mines. The Department of Mines have further stated that in this period, the diversification programmes of the company in areas of Mine construction and contract works would be stepped up, certain other gold deposits would be developed and the work force rendered surplus from the existing mines would be gradually absorbed to the maximum extent possible, in these newer fields of activities envisaged for the company.

### *B. New Projects*

4.7 About the other prospective areas outside KGF apart from Yeppamana, the Managing Director, BGML informed the Committee in evidence that Chigargunta in South Kolar, Kempinkote in Hassan District, Gadag in Dharwad District, Bisanatham in Chittoor District, Kolari in Maharashtra and Kunderkocha in Bihar were under detailed exploration by Mineral Exploration Corporation Ltd. While BGML had made plans for regular production of gold from 1990-91 from Chigargunta, it was expected that the results of the exploration by MECL in the other areas would be made available shortly to enable Bharat Gold Mines Ltd. to decide on investment for exploration.

4.8 The Chari Committee has recommended that the Chigargunta mine should be brought into production quickly. The company informed in a note that BGML has carried out feasibility studies and has planned a production of 250 tonnes ore per day by 1990-91. The mine was estimated to have 4.69 lakh tonnes of reserves of grade 2.87 gm/tonne. The capacity of the mine was expected to be 71,462 tonnes per annum.

4.9 Asked about the present position of the project, the Managing Director, BGML, stated in evidence :

"The feasibility report was prepared during March, 1987 and we have, after the clearance of the Board, sent it to the Government in the month of May, 1987. Now, the project has been

already taken up for the construction in the light of the encouraging results from the exploration activities. The results have been encouraging in the three different blocks of this project. The Government has already approved the expenditure of Rs. 15 lakhs during 1986-87, Rs. 80 lakhs during 1987-88 and Rs. 145 lakhs for 1988-89 (against a total outlay of Rs. 4.97 crores) which have been earmarked as a part of the construction activity. In fact, we have taken advantage of the situation since we ourselves have been sharing the exploratory work with MECL. We have already undertaken part of the construction activity which would contribute to the development of the project faster. . . . The work is going on for the last 3 years."

### *C. Diversification*

4.10 As a Corporate Strategy the company is reported to have diversified into mine construction and contract works, manufacture and erection of mining equipment, consultancy in mining and allied activities so as to offer a comprehensive range of consultancy and project execution services to the Indian mining industry.

#### *(i) Projects and Contracts Division*

4.11 With a view to diversify its activities, Bharat Gold Mines established a Projects & Contracts Division in 1972. After undertaking a few jobs on cost plus basis, the Division now undertakes jobs on contract and on a competitive basis. During the last 7 years, the turnover from this Division increased from Rs. 35 lakhs to Rs. 320 lakhs and the anticipated turnover during 1987-88 was stated to be Rs. 400 lakhs. The Division has completed assignments worth Rs. 8 crores and contracts worth Rs. 16 crores were on hand.

4.12 In regard to the future potential of this Division, the Committee were informed by the company in a note that jobs had been undertaken in copper, lead, zinc, manganese and coal sectors. With the massive investment of over Rs. 20,000 crores proposed in the coal sector to achieve the target of 450 million tonnes of coal by the end of the century, a lot of potential existed for substantial assistance being rendered by BGML by taking up shaft sinking, drifting and other allied excavation jobs in underground coal mines and non-coal mines.

4.13 In this connection, the Secretary, Department of Mines informed the Committee in evidence as follows :—

"We took up with the Department of Coal and told them that in a number of coalfields where exploration in new mines was taking place we are taking steps to encourage BGML to take this work on contract. In the Bharat Coking Coal Ltd. in West Bengal and in the Eastern Coal Fields we have already inducted these people to do this work . . . Similarly from the Hindustan Zinc Ltd. also we have got work now.....for the Uranium Corporation of India, we are getting work for a rapid shaft sinking . . . With the Soviet Union we have an arrangement by

which they supply the technology, BGML absorbs the technology and this technology is being utilised for the first time in the country for their rapid shaft sinking in the mines of Uranium Corporation of India in Bihar."

4.14 In regard to the rapid shaft sinking technology two agreements were concluded by the company with Tsvetometpromexport (TSMPE), Moscow viz. one in June, 1983 to get 13 of the company's engineers trained in USSR in 2 batches and another in October 1983 for transfer of technology. Between January and June 1984, 13 engineers of the company were imparted on job training by TSMPE. Under the agreement of October 1983, TSMPE were to hand over free of charge the data required for preparation of feasibility study reports. If the Company|its Customers take a decision to use the technology and equipment, TSMPE were also to furnish confidential information on the terms to be agreed upon under a separate agreement|contract. A separate agreement has not so far been concluded.

The Ministry is also reported to have informed Audit in August, 1986 that due to certain problems the acquisition of technology for high speed shaft sinking was delayed and this was under active negotiation.

4.15 The Committee desired to know the reasons for delay in transfer of technology. BGML stated in a written reply that TSMPE had sent a draft agreement for which certain modifications were suggested. M|s. TSMPE intimated that the modifications could be discussed at a meeting to be held at a highest level. In the meanwhile BGML was informed by M|s. UCIL that the clearance for the project is yet to be received from the Government. Accordingly, BGML was pursuing the matter with Government so that the company could finalise the agreement with Soviets.

4.16 Subsequently, the Secretary, Department of Mines informed the Committee in his evidence as follows :—

"The Uranium Corporation of India has this as one of the approved projects. So, for executing the project, they have engaged the BGML and they have to get the technology from the Soviet Union which is under their consideration and execute the contract in terms of the Uranium Corporation of India, over the tight schedule.....Uranium Corporation of India has got a very tight schedule of 48 months."

4.17 In reply to a query about the time required for execution of the contract, the witness stated that the estimated time for the import of equipment and technology absorption of technology and the completion of work would be 48 months.

#### (ii) *Modernisation of Workshops*

4.18 Till 1972, the workshops of BGML were undertaking only the maintenance of mining machinery and manufacture of components of various mining machinery for internal consumption. A project report for modernising the workshops and diversifying their activities was prepared by National Industrial Development Corporation (NIDC) in 1973. The report was also updated and submitted to Government in October 1976.

But the project was not implemented till 1982 for want of information regarding existing established capacities (as desired by the planning Commission) and paucity of funds.

4.19 In 1982, the Company considered the issue again and NIDC confirmed that the report, updated in 1976 was still valid. The Board approved in August, 1982 a proposal which envisaged *inter alia* :

- (i) replacement of obsolete machines and acquisition of balancing equipment in a phased programme of 2 years at an estimated cost of Rs. 166 lakhs under Phase I, to be met out of allocation made to the Company for replacements and renewals;
- (ii) an expansion programme at an estimated cost of Rs. 90 lakhs under Phase II subject to Government's sanction;
- (iii) increasing production activities from Rs. 375 lakhs in 1981-82 to Rs. 500 lakhs under Phase I and to Rs. 650 lakhs under Phase II.

4.20 In pursuance of implementation of the scheme the Company placed orders for equipment worth Rs. 24.50 lakhs in 1983-84. Pending final decision on the Chari Committee report submitted in September 1985, all new investment proposals were deferred.

4.21 When the Committee desired to know the reasons for delay in implementation of Phase-I of the Modernisation Scheme, BGML stated in a note that the delay was due to delay in procuring two major equipments *viz.* Vertical Turret Lathe and Planning Machine amounting to Rs. 106.34 lakhs. Since these machineries were high value items, it required time for floating enquiries, getting quotations, satisfying the specifications, obtaining technical clarification and verifying the quality of their earlier supplies to other customers before the placement of order. The scheme was completed in September 1986, at a cost of Rs. 171.53 lakhs.

4.22 On being asked whether any decision has since been taken for investment in Phase-II of the Scheme, the Department of Mines stated in a written reply as follows :—

“In view of the decision to phase out the gold mining operations in KGF and strengthening the diversification activities, the Phase-II has to be reviewed based on the products identified to be manufactured for which the company has been asked to prepare feasibility reports.”

#### *D. Outlay*

4.23 The Government tentatively approved in August, 1985 a capital outlay of Rs. 2110 lakhs for implementation by BGML during the VII Plan period comprising Rs. 842 lakhs for continuing schemes, Rs. 210 lakhs for new schemes, Rs. 1028 lakhs for replacement/renewals and Rs. 30 lakhs for Science and Technology programme of the company. After review, the company sent a revised proposal for an outlay of Rs. 4041.86

lakhs in September, 1985. The Managing Director of the Company informed the Committee in evidence (November, 1987) that no decision has been taken so far on the revised proposal even though the company had also submitted the mid-term appraisal in July-August, 1987.

4.24 When the Committee desired to know the Government's views in the matter, the Secretary, Department of Mines stated during his evidence held on 1-3-1988 that there were three major items included in the revised proposals submitted by the company. One was setting up of a commercial plant on the heap-leaching process. A pilot plant has already been set up. Unless the economic viability of the plant was proved, it would be unwise to go in for a commercial plant at a cost of Rs. 6 crores. The second project related to conversion of equipment in the mines from 25 Hz. to 50 Hz. involving a cost of Rs. 382 lakhs. The future life of the mines being 7 to 8 years, this was also not considered desirable. The third project was Electronic ore Sorter involving Rs. 475 lakhs.

4.25 On the utilisation of Rs. 2110 lakhs so far, the witness stated :—

“Normally, this is supposed to be utilized over a period of 5 years. Because we want to get certain things pushed forward, upto March, 1988. Rs. 13 crores would be released and balance of Rs. 8 crores in the remaining two years.”

4.26 The Committee have also been informed by BGML that looking at the recent thrust for diversification in the company to meet the situation arising out of the phasing out of the KGF mines, certain schemes and projects have been envisaged for their concurrent development. These schemes and projects would have to be tailored in the same time frame as the phasing out of the KGF mines over a period of seven years and the resultant surplus manpower gainfully redeployed in the new schemes/projects. If the schemes and projects are not started in time, it will be difficult to develop these schemes and projects so as to synchronise with the phasing out of the KGF mines.

4.27 In regard to schemes for opening up and exploitation of shallow gold deposits which are in an advanced stage of exploration, the company informed the Committee as under :—

- “(i) Old Bisanatham Mine in Chittoor District of Andhra Pradesh with an investment of Rs. 5 crores to produce 30,000 tonnes of ore yielding 90 Kgs. of gold per annum;
- (ii) Kempinkote area in Hassan district of Karnataka. With an investment of about Rs. 5 crores it would be possible to produce 30,000 tonnes of ore yielding 90 Kgs. of gold per annum;
- (iii) Gadag Gold Fields in Dharwar District, Karnataka. With an investment of about Rs. 5 crores it would be possible to produce 30,000 tonnes of ore yielding 90 Kgs. of gold; and
- (iv) There are other areas which look promising namely, Chitradurga area where the copper bearing crushed conglomerates are reported to be gold-associated and amenable for open-cast

mining. Another interesting one is Uti deposit near Hutti. These two deposits also need being looked into."

4.28 The additional funds required during 1988-89 for the above schemes together with the Engineering Projects and manufacture of mining equipment were stated to be Rs. 350 lakhs against which Rs. 1 crore has been tentatively agreed by the Planning Commission.

4.29 When the Committee desired to know the Government's assessment of these schemes, the Secretary, Department of Mines informed the Committee in evidence that in addition to the Rs. 21 crores already sanctioned for Seventh Plan, Rs. 189.95 lakhs have been sanctioned for exploration of Kempinkote mine. Rs. 220.54 lakhs have been sanctioned for Bisanaatham Gold Mine. Both BGML and MECL were working together on these two mines.

#### *E. Manpower Analysis*

4.30 According to Audit, the erstwhile KGMU had, in the context of the need for reduction of high working costs, secured considerable depletion in the strength of employees by 1966-67 and had maintained the strength at more or less the same depleted level upto 1970-71. The BGML also continued the same policy and further depleted the strength gradually to 11,999 till end of 1978-79. But from 1979-80 some new workers have also been recruited. The details of recruitment and depletion from 1979-80 onwards were as follows :—

Year	Recruitment	Depletion	Net addition	Total No. of employee
1979-80	865	763	(+)97	12,096
1980-81	1,575	889	(+)686	12,782
1981-82	1,112	880	(+)232	13,014
1982-83	597	699	(-)102	13,002
1983-84	330	590	(-)260	12,742
1984-85	722*	646	(+)76	12,818
1985-86	100	692	(-)592	12,226

\*Includes 384 for Yeppamana Mine.

As per a note submitted to the Cabinet Committee on Economic Affairs in November, 1987, the total manpower strength of BGML as on 1-4-1987 was 11,900.

4.31 One of the reasons given by the Company for additional recruitment of workers was that during 1980-81 when gold prices were ruling high it was planned to re-open areas with leaner ores for mining and advance action for recruitment was taken. However, after a review of international gold prices, Audit has pointed out that in view of the inconsistency and instability in prices, going in for a substantial additional

recruitment lacked justification at least after April, 1983 as it was a recurring additional burden.

4.32 In this connection, the Chari Committee had also observed *inter alia* as follows :—

- (i) If only strict control over manpower had been exercised during the past 7/8 years, the problems would not have been so serious today.
- (ii) Some 3,500 to 4,000 persons can be considered to be surplus to the present level of the Company's operations.
- (iii) Efforts should be made to reduce manpower by about 1,000 so that in 3 to 4 years' time such reduction together with normal wastage itself should cover the number likely to become surplus on account of closure of the Mysore Mine.
- (iv) Based on the per capita expenditure on salaries and welfare expenses for 1985-86, the burden of 1,000 surplus men would work to Rs. 185.10 lakhs per annum.

4.33 On being asked whether any new appointments had been made in the Company after the receipt of the Chari Committee Report, the Department of Mines informed the Committee that a total of 186 persons were appointed by BGML after receipt of the Chari Committee Report as indicated below :

Statutory requirements . . . . .	110
Government approval . . . . .	74
Approval of Board (Doctors) . . . . .	2
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	186

4.34 Subsequent to a decision taken in April, 1985 to appoint Institute of Applied Manpower Research to conduct a manpower study in all the non-ferrous sector Mines and Metals under the Department of Mines, the IAMR was entrusted by Government in November, 1985 to study the manning pattern in BGML and to suggest ways and means of reducing manpower in the short as well as in the long run.

4.35 The Institute of Applied Manpower Research in their Report given in March 1986 recommended reduction of 3718 personnel from the then existing strength of company by closing of Mysore Mines and Mysore Mine Mill. However, such reduction was not considered feasible by the Company in view of factors such as (i) necessity of working the Mysore Mine for another 2 years for taking out remnants and for salvaging the equipments and material in the mine ; (ii) scattered working in the mines and other problems requiring employment of a high percentage of non-productive men in the mines and (iii) in the case of service department the strength will have to be based on the work load and not on production.

4.36 The Committee desired to know whether it had been brought to the notice of Government that the implementation of the recommendations



of IAMR was not feasible. The Managing Director, BGML stated in his evidence before the Committee (January, 1988) :—

“This matter was not taken up with the government because they were considering the phasing out of gold mining operations in KGF.”

4.37 In this connection, the Department of Mines informed the Committee in a note submitted after evidence as follows :—

“The Company has reported to the Government in the last week of February, 1988 that it would not be possible to implement the Report of IAMR for a number of reasons . . . . The report received from the company is currently under examination in the Department of Mines.”

4.38 In the meantime a Group set up under the chairmanship of Cabinet Secretary considered the status of the BGML and decided in October, 1985 that the staff in the Company should be reduced by at least 20 per cent per annum over the next five years and desired the company to submit a detailed plan in this regard. The Company, accordingly, formulated an action plan in November, 1985 and submitted it to the Government. A voluntary retirement scheme formulated by the Company was also sent to Government finally in November 1987 for approval and for provision of funds.

4.39 When the Committee desired to know the decision taken by Government on the action plan and voluntary retirement scheme, the Department of Mines stated in a written reply that pending decision of the Government on the proposal to phase out KGF mines, the voluntary retirement scheme was not approved earlier and was kept in abeyance. The matter was still stated to be under consideration. As regards Ministry's reaction to the action plan, it was stated that reduction of manpower by either re-deployment or voluntary retirement for workers to be introduced in the company or retrenchment formed part of package of measures which broadly coincided with the period in which the operations of the KGF mines would be phased out.

4.40 According to the proposals approved by Government for re-deployment of surplus personnel of BGML, with the progressive increase in mining of gold deposits outside KGF and strengthening of the diversification programme, the absorption of the surplus personnel from the existing mines was planned to be done as indicated below :—

(a) Strength on 1-4-87 . . . . .	11,900
(b) Normal depletion through retirements etc. at the rate of 400 persons per year . . . . .	2,800 —
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	9,100
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## (c) Re-employment (in other mines and activities):

Yeppamana	502
Chigayunta	500
New mining projects	650
Mine Construction and Contracts	2,300
Workshop Products & Sales	1,500
Pumping and other requirements for scientific studies	840
Corporate office and other functions	208
	6,500

The personnel required for hospital and municipal functions would have to be retained. This would still leave a surplus of about 1,700 persons. In addition, 840 persons would have to be retained for pumping operations for the special scientific studies, if the same continue beyond 7 years. Since the retention of these persons would be solely for the scientific experiments the cost would be entirely borne by BARC. As regards the surplus personnel, a plan could be considered for engaging them in extracting residual ores from the KGF mines on a selective and limited basis provided it was economical to do so. In the alternative, they could either avail of a voluntary retirement scheme, which was proposed to be introduced as per BPE guidelines, or be retrenched with the usual compensatory benefits.

4.41 The Chari Committee has suggested that it should be possible to find outlets for the surplus officers of BGML in some other public sector companies under the Ministry. When the Committee desired to know the action taken in this regard, the Managing Director, BGML stated in evidence :—

“When the Mysore mines and Mysore mill are closed, only then this can be considered and not before that.”

## PART II

### CONCLUSIONS/RECOMMENDATIONS OF THE COMMITTEE

1. Bharat Gold Mines Limited was incorporated in March 1972 and after a month i.e. April, 1972 three mines of Kolar Gold Fields viz. Mysore, Champion Reef and Nundydroog and two mills (Mysore and Nundydroog) were also taken over by the Company. The motivating factor for the formation of the Company was to strengthen and widen exploratory activities to discover new promising reserves and to increase gold production. However, the Committee have gathered an impression that right from its inception the Company did not bestow any serious attention to the exploratory work by deploying adequate equipment and trained and qualified manpower. Its activities were mostly confined to locating ancient workings in the existing lease hold areas based on old geological maps which is an integral part of mining operation and cannot be considered as exploration and development.

2. The deficiencies in manpower and organisation of Exploration Department have affected the exploration activities of the Company. The Department did not have a regular officer incharge till January, 1976 and he too was transferred in January, 1978. Further, although three subordinate officers were inducted into the Exploratory Department during June to November, 1978, a Manager (Exploration) was positioned only in June, 1982. In fact, a Sub-Committee of the Committee on Science & Technology of Government of India, while commenting adversely about the working of Exploration Department stated : "The function of the Exploration Department connected with the exploration for additional reserves is most unsatisfactory due to lack of qualified and trained men and equipment for the work." Strangely, the deficiencies in the organisation and scope of work persisted in the Exploration Department for a long time and it was not before 1981-82 that the Department was reorganised and its scope of work widened.

3. The Managing Director of BGML expressed that the Company had not suffered any type of loss on account of this deficiency, as they had utilized the expertise and services of the Geological Survey of India (GSI), which is having suitable manpower and expertise in the matter. The Committee are not convinced of the justification advanced by the Company for the inadequacies in the Exploration Department. In their view, the Company should have had its own full-fledged Exploration Department to strengthen and widen the exploration activities and thus fulfil the objective of discovering new promising gold areas. The Committee cannot but express their unhappiness on the failure of the Company on this account.

4. The Committee note that in 1973 Bharat Gold Mines Ltd. went in for exploration of Chinnabhavi Mine in Andhra Pradesh which had been abandoned by John Taylor & Sons as far back as in 1927. The BGML ostensibly presumed that further development in this area had not been

done due to the state of technology at that time and non-availability of power for deep mining. However, the BGML had also to abandon the project and the net exploratory expenditure of Rs. 14.28 lakhs was written off in 1977-78. The Managing Director of the Company admitted in evidence that "we were unfortunate and we definitely failed. We gave lot of reliance to John Taylor's reports." The Committee do not appreciate the re-opening of Chinnabhavi Mine by BGML without gathering any fresh data through GSI/MECL which resulted in infructuous expenditure of Rs. 14.28 lakhs which cannot be considered insignificant looking at the financial state of the company.

5. Almost in similar circumstances, the Company had also to write-off in 1979-80 the net expenditure of Rs. 28.93 lakhs incurred on the Mamandur Multi-metal project taken up in 1974 for exploration of lead-zinc-copper and silver together. It appears that the project was taken up by BGML based on the results of mere general survey carried out without having detailed exploration done by MECL. The Committee recommend that in future, the Company should not take up for exploration any areas which have not been identified to be exploitable by any competent Authority.

6. Champion Reef Mine is the deepest mine having reached depths of over 3 kms. According to the company, adverse conditions are encountered due to ultra deep workings, causing severe ground control problems and high rock temperatures. Upto end of 1985-86, nearly 66 per cent of the total ore reserves of 16.02 lakh tonnes, with a rich grade of 7.21 g/t were not available for mining due to rockbursts, water logging, mine safety, shaft pillars etc. which limited the working from identified reserves to 5.45 lakh tonnes with an average grade of 7.93 g/t. However, after dewatering and reclamation of certain areas in Glen Ore shoot of Osborne Section and Northern Folds affected by water logging and rockbursts, reserves totalling 49,422 tonnes have been brought into production. More areas can also be reopened and mined in future if the Plan schemes are continued. The Committee need hardly emphasise that concerted efforts should be made to bring into production at the earliest the remaining areas affected by water logging and rockbursts so that the comparatively richer ore of Champion Reef mine is not left unexploited. The Committee also recommend that the results of the limited mechanisation scheme presently under implementation in Nundydroog Mine should be evaluated quickly and if found feasible, no time should be lost in full scale implementation of the scheme. The Committee would like to be apprised of the results of the evaluation.

7. The Committee note that during 1961-68, the Indian Bureau of Mines (IBM) and the GSI did some exploration, reclamation and underground development of the Yeppamana Mine in the Ramagiri Gold Fields in Andhra Pradesh which was abandoned by John Taylor and Sons in 1927. Their exploration report projected a yield of 6.9 g/t. After the capital project was sanctioned based on this estimated yield, a further estimate in June 1982 revealed an expected yield of about 80 per cent only of 6.9 g/t and the yield after milling and smelting was expected to be 3.1 g/t. Strangely, the reserves were again estimated in November, 1982 at 5.70 lakh tonnes with a grade of 4.69 g/t. As at the end of 1986-87, the reserves were geostatistically calculated at 4.75 lakh tonnes with a grade of 3.21 g/t. The

actual yield after commencement of production has been 1.78 g/t, 2.83 g/t and 2.99 g/t during 1984-85 to 1986-87 respectively. The Committee are unhappy over these large variations in the estimation of grade of ore made at the Yeppamana Mine from time to time. What is worse, the actual grade of ore did not match with any of the estimates. The Managing Director of the Company admitted during evidence that "there has been a significant discrepancy in the original estimate which we corrected also by applying the new correction factor." The Committee are constrained to observe that these variations are only indicative of the inadequacies and deficiencies in the existing system of estimation of grade by the agencies responsible for collection, collation and dissemination of geological data. There is thus an urgent need to improve the techniques of estimation of ore and ore grade so that more reliable data are available before taking investment decisions in regard to mining of ores of different metals in future.

8. The Committee have observed that Yeppamana Mine was commissioned in May, 1984 with an installed capacity of 250 tonnes per day (76,000 tonnes per annum) with matching capacity for treatment of ore in the mill for production of gold concentrates. However, the actual production of ore during the years 1984-85, 1985-86 and 1986-87 was only 0.23 lakh tonnes, 0.24 lakh tonnes and 0.34 lakh tonnes respectively which represented a shortfall of 41 per cent, 60 per cent and 36 per cent from the targets of ore production set for these years. No wonder, therefore, that the project could not yield the estimated return of 24.5 per cent on investments. The reasons for not achieving the rated production were stated to be the restricted water availability on account of severe drought, power interruptions and low voltages and shortage of manpower. It took some time to stabilise the new carbon-in-leach process for gold extraction. The Committee expect that, as assured by the Managing Director of BGML, sincere efforts would be made to overcome these problems as early as possible so as to substantially increase the capacity utilisation at the Yeppamana Mine. The Committee would like to be apprised of the results achieved by these efforts.

9. The shortfall in hoisting of ore in BGML ranged from 6 per cent to 21 per cent. The shortfalls have been attributed to the unstable working conditions in mines due to which certain areas earmarked for production had to be avoided. It has also been stated that while framing the budgets, the constraints then being faced like areas already affected by previous rockbursts under clearance, stopes which would be ready for getting the stoping permission from the Director General of Mines Safety and the likely date of the receipt of DGMS approval are taken into consideration. But the rockbursts occurring in the mines cannot be predicted in advance. The Committee desire that a procedure should be evolved whereby the approval from the DGMS for undertaking stoping in the identified areas is received well in time. The in-house R&D efforts in regard to seismic and micro-seismic investigations should also be intensified so that the occurrence of rockbursts can be predicted as far as possible so as to ensure safety of workers and minimise the damage to machinery and equipment.

10. The Committee find that the shortfall in ore milled, compared to capacity, increased from 9 per cent in 1982-83 to 44 per cent in 1986-87.

Similarly the shortfall in production of gold compared to targets during this period increased from 12 per cent to 39 per cent. The production of gold consistently declined from 1649.5 kgs. in 1979-80 to 792 kgs. in 1986-87 while the grade of gold recovery fell from 4.78 gms/tonne to 2.97 gms/tonne during the same period. The under-utilisation of milling capacity and shortfall in production of gold has been attributed to low ore production due to various constraints. However, what the Committee are pained to observe is the grave effect of under-utilisation of milling capacity on the unit cost of production of gold. The under-utilisation of milling capacity increased the cost of production of gold per 10 gms. by Rs. 521, Rs. 959 and Rs. 1294 during 1984-85, 1985-86 and 1986-87 respectively, thus accounting for as much as 17 per cent, 25 per cent and 30 per cent of the actual cost of production during these years. Undoubtedly, the situation is alarming and calls for concerted efforts to utilise the milling capacity to the maximum extent, so that the adverse effect of underutilisation on the cost of production is minimised. The Committee would emphasise that this factor should also be kept in mind while planning the production of ore in future.

11. The Committee are informed that while preparing the annual production budgets, the sources are broadly divided into Payable, Low grade and Exploratory and Development sources. Audit have pointed out that the low recovery of gold is also attributable to the budgeting of ore production from various sources and the deviations in actual mining from the budgeted sources. In this connection, the Committee have been informed by the Company that budgeting in exploratory areas was done only out of sheer necessity as the stopes of higher grade ore reserves were not available for production work. Development areas were budgeted with an expectation of generating high grade ore reserves. Whenever the anticipated grades were not achieved, such development faces had been suspended abruptly. However, the Committee are at a loss to understand the unfavourable deviations made from budgets in Nundydroog Mine which has large reserves and ample mining capacity and does not have the problems of heavily depleted reserves and of inaccessibility/ultra depths/ground control etc. faced by the Mysore and Champion Reef Mines. The Committee are not convinced of the arguments advanced by the Company for such deviations. The Committee would stress that keeping in view the limited life of KGF mines, BGML should work out a proper strategy to provide all inputs so that the working areas can produce as per the budgeted programme.

12. The Committee observe that the Nandydroog Mine is having maximum reserves in terms of tonnage of ore but poor in grade, whereas the Champion Reef Mine is having less reserves of ore with high grade of gold. With a view, therefore, to conserve the rich reserves of Champion Reef Mine, optimal exploitation of ores called for greater proportion of mining from Nundydroog Mine compared to the Champion Reef Mine. However, the ratio of targets set for mining from these two mines declined from 2.3 : 1 in 1979-80 to 1.8 : 1 in 1984-85 and the actual production declined from 2.1 : 1 to 1.8 : 1 during this period. It is only in September, 1984 that the company realised the need for maintaining a higher ratio of mining between the two mines and accordingly drew up plans and schemes for maintaining the ratio of mining from these two mines at 4 : 1. In spite of all this, even in 1985-86 and 1986-87 the ratio of actual production of ore was 2.1 : 1 and 2.2 : 1 respectively. This clearly shows that the above deficiency has not been set right.

13. The reason for not maintaining the ratio of 4 : 1 has been stated to be that the large scale mechanisation of Nundydroog Mine envisaged earlier has been deferred and a limited mechanisation on an experimental basis was being done. Due to this the increase in production of ore from this mine could not be achieved. The Committee are, however, strongly of the opinion that pending full scale mechanisation of Nundydroog Mine, the production of ore from this mine could have been achieved by proper deployment of manpower. They recommend that this should be attempted at least now lest a situation should arise where the rich reserves of Champion Reef Mine are exhausted and the company is left with the ore of poorer grade at Nundydroog Mine turning the operations of the company from bad to worse.

14. It is reported that after the recovery of gold from ore during milling, some residue of gold is lost in the ore. The Committee find that almost during all the years from 1979-80 to 1985-86, such residual losses exceeded the norms both in Nundydroog and Mysore Mills and the excess losses in both these mills during this period worked out to 108.66 kgs. of gold valued at Rs. 173.07 lakhs. According to the company, in free milling ore more gold was liberated while in refractory ore the gold which was locked up in impurities, did not get fully liberated. The residual losses, therefore, varied depending upon the characteristics of the ore. However, the Committee wish to point out that since the norms themselves are fixed depending on the composition of the ore-mix planned to be sent to the mills, the continued excess losses over norms cannot be attributed only to the characteristics of the ore. It, therefore, appears to the Committee that either the ratio of two types of ore planned to be sent to the mills at the time of fixing the norms is not adhered to or there is operational inefficiency in the mills. Therefore, in order to rectify the operational inefficiency, the Committee suggest that the free milling and refractory ores should be treated separately in the mills.

15. A Scheme costing Rs. 185 lakhs for improving the recovery of gold in tailings by installation of flotation cell in Nundydroog Mill involving a pay back period of 2 years was approved by the Board in November, 1983. The Committee are constrained to observe that the scheme has been taken up for implementation only now and is likely to be completed by March, 1989. In this connection, the Company has stated that the scheme was initially deferred because of Government decision not to incur expenditure on new schemes as the phasing out of the KGF Mines was under consideration. The Committee see no justification for deferring the scheme. In fact, during evidence the Secretary, Department of Mines stated that this scheme was included in the Sixth Plan and funds made available for it although the priority to be given to the scheme was left to the Company. BGML is also reported to have constructed a building for this purpose at a cost of Rs. 5 lakhs. The Committee take a serious view of the needless delay of more than 4 years in implementation of this scheme, which not only cost the company Rs. 30,000 per day but must also have resulted in cost escalation. The Committee need hardly emphasise that every effort should now be made to complete the scheme in time.

16. The Committee are unhappy to note that the output of ore per manshift (OMS) showed a consistent decline from 0.404 tonnes in 1979-80

to 0.317 tonnes in 1985-86. Apart from the deteriorating working conditions of the mines and rockbursts, the decline in OMS has been attributed by the company to the insufficient experience of the newly recruited supervisors. The Committee are informed that the need for fresh recruitment of supervisors arose since under the provisions of the Metalliferous Mines Regulations, 1961, a person has to qualify a written examination for obtaining the competency certificate for the supervisory grade. The BGML's old workmen who joined as unskilled workers are not able to qualify this written examination due to their low literary level. The Company has, therefore, per force to go in for fresh recruitment of diploma holders who not only take about four years to be trained but leave the company for better opportunities after qualifying the Mine Manager's certificate of competency. Therefore, when supervisors leave the Company, it has to make a fresh recruitment. Thus, on the one hand, the company's experienced workers, in spite of having the requisite experience are deprived of the supervisory cadre, on the other the Company has to make fresh recruitment of supervisors again and again. The Company had to recruit 12 persons in the supervisory cadre in 1983-84, 4 in 1984-85 and 74 in 1987-88. The Committee are inclined to agree with the Company that the system of grant of service certificate on the basis of oral examination may be revived. The Committee, therefore, recommend that the question of exemption of experienced employees of BGML from taking the written tests prescribed by the Director General, Mines Safety should be considered favourably. The Committee would like to be apprised of the decision taken in the matter.

17. Bharat Gold Mines took over from the erstwhile Kolar Gold Mining Undertaking a shop for the manufacture of Tungsten Carbide Tipped (TCT) drill rods and re-tipping of used rods with a rated capacity of 18,000 for new rods and 12,000 for re-tipping on 3 shift basis. The Company uses these rods for captive consumption and also sells them under the brand name 'GOLDRILL'. In May, 1983 the capacity was increased to 84,365 rods on 3 shift basis equivalent to 28,121 rods per annum on single shift basis (including re-tipping). The Committee are dismayed to note that right from 1978-79 to 1986-87 for which figures have been made available to them, the company could never achieve the rated capacity. In fact, after the augmentation of capacity in May, 1983, the production of TCT rods including the retipped rods was only around 21 to 22 thousand which was not even equivalent to the capacity of single shift. The shortfall in production was stated to be due to the initial quality control problem and competition with private sector companies. The production programme of TCT drill rods in BGML was, therefore, made to match the order book position year to year. However, it is disquieting to note that knowing fully well the market constraints faced by BGML, Government continued to grant industrial licences for manufacture of TCT rods to private companies which admittedly adversely affected the turnover of BGML. The Committee cannot resist the impression that the demand and manufacturing capacity of TCT rods available in the country was not taken into account before granting fresh licences for manufacture of these rods. The Committee need hardly stress that BGML should now work out an aggressive marketing strategy to achieve better utilisation of its capacity for manufacture of TCT rods.



18. In order to improve the quality of TCT rods, BGML entered into an agreement with Multiplex Consultants, Pune, for supply of specifications for equipment, plant layout, technical know-how etc. The job which was to be completed by December, 1978 was completed by the consultants only by 1983-84 and the company got ISI certification in September, 1984. The Committee are surprised to find that the agreement with the consultants did not provide for any penalty for delay in completion of the job and hence no penalty could be imposed on the consultants. The Committee are astonished at the BGML's contention that the non-accrual of royalty worth Rs. 1.60 lakhs upto 1983-84 to the consultants was considered adequate penalty for not completing the assigned tasks in time. They feel that the delay in completion of job by the consultants resulted in delay in getting ISI certification by BGML which in turn affected the order book position of the Company. Had the job been completed by the consultants in time, it would have enabled the Company to improve the quality of their product and compete with the private sector companies in the field. The Committee would, therefore, like to know the extent of loss of production of TCT rods due to the delay in execution of the job by the consultants.

19. The Committee are pained to observe that Bharat Gold Mines Ltd. incurred losses since its inception except during 1979-80 and 1980-81 when it made profits to the extent of Rs. 3.52 crores and Rs. 5.68 crores, respectively. The cumulative loss of the company as at the end of 1986-87 stood at Rs. 59.70 crores. From the facts placed before the Committee, they have received an impression that apart from the decline in production of gold and increase in its cost of production, the pricing policy for gold also contributed to the mounting losses.

20. The Committee are informed that the entire gold produced is made over to the Government of India at the IMF price. In addition, subsidy has also been paid to the company according to certain formulae which have been modified from time to time. According to the policy introduced with effect from April, 1984, the subsidy being paid is equivalent to the difference between the IMF price and the price equivalent to the London Metal Exchange (LME) price of the preceding month plus 35 per cent of that or the average Indian Market price of the preceding month, whichever is less. According to BGML, by restricting the prices to the lower of the two, the company has always been at a disadvantage in that the product invariably fetched a lower price than what would have been available in the free market. Had the Company been paid the Indian Market Price since inception, its cumulative losses would have been Rs. 23.66 crores instead of Rs. 59.70 crores as at the end of 1986-87. Not only this, Hutti Gold Mines Ltd., a Karnataka Government undertaking has reportedly been allowed to sell gold at the prevailing Indian prices. As observed by the Chari Committee, this policy placed HGML in a more favourable position over BGML at least till April, 1984 particularly when the former's gold occurrences were comparatively at shallow depths and the cost of production was distinctly lower than in BGML. Accordingly, the Chari Committee had recommended that Bharat Gold Mines Ltd. should be given market price for gold produced by it with immediate effect. The Committee note that it has now been decided by Government, though belatedly, to permit BGML to sell its gold in the open market to the licenced dealers in terms

of procedure prescribed by Gold Control Administrator. The notification for the purpose is reported to be under formulation by the Office of the Gold Control Administrator. The Committee desire that since the decision has already been taken, there should be no delay in formulation of the necessary notification so that it can be implemented from 1988-89 itself.

21. The cost of production of gold per 10 gms. in the Company sharply increased from Rs. 1608 in 1981-82 to Rs. 4299 in 1986-87 i.e. by 167 per cent. The Committee have been informed that apart from salaries and wages; a major factor which contributed towards increase in cost of production was the hike in power tariff by the State Government of Karnataka over the years for the power supplied from Sivasamudram Hydel Station. The power tariff which was 7 paise per unit at the time of formation of the company was gradually raised to 29 paise per unit in 1980-81. Thereafter, there was a steep increase in tariff and in 1987 it was 100 paise per unit. This resulted in increase in cost of power and lighting from Rs. 293 lakhs in 1981-82 to as much as Rs. 565 lakhs in 1986-87. As the financial position of BGML is far from satisfactory, the Committee endorse the views expressed by the Chari Committee that the Karnataka Government should provide relief by not levying higher rate of tariff for the power supplied from the Sivasamudram Station, particularly when the capital costs of this station must have depreciated considerably ever since it was installed as a captive plant for supply of power to the K.G.F. The Committee, therefore, urge that the matter should be taken up seriously and urgently with the Karnataka Government in order to secure a lower rate of power tariff for BGML. At the same time, the Company on its part should continue efforts for reduction of power consumption and bringing down overtime payments.

22. The Committee note that as a cost reduction measure, the Company proposed transfer of certain functions like hospitals, sanitation, town maintenance, canteen and ration depots to the State Government Agencies, so as to reduce heavy burden of its overhead costs but the response from the State Government was not encouraging and they wanted to take up these facilities if sufficient funds were made available to them from Government of India. But according to the Department of Mines, the Government of Karnataka wanted to know the decision on the proposal for phasing out the KGF mines. Now that it has been decided to phase out the KGF mines over a period of seven years, the Committee would urge the Government to follow up the matter with the Government of Karnataka in view of the urgent need for cost reduction in BGML.

23. The Chari Committee had suggested that the Government should treat BGML as the canalising agency and advance necessary Foreign Exchange from its reserves to import 50 to 60 tonnes of gold annually for sale in the open market at the ruling prices, at a pre-determined rate of 10/20 gms. per occasion of wedding etc. According to that Committee not only would this wipe out the losses of BGML, but would also make smuggling of gold a highly uneconomic venture. The Committee have now been informed that a working Group was set up by the Ministry of Finance in May, 1986 to carry out a study on all aspects of the gold policy including amendment of the Gold Control Act, and to make recommendations to the Government. The Committee would like to be apprised of the results of the study particularly in regard to making BGML as the canalising Agency for gold.

24. The Committee are informed that with the progressive exhaustion of reserves in the Kolar Gold Fields, which have been working for over 100 years now, the production of gold has come down from a level of 10 to 17 tonnes per annum in the first four decades of this century to the current level of less than one tonne. The mineable reserves on a cut-off grade of 4 gms. per tonne are now estimated to be 3.54 million tonnes with a recoverable grade of 4.21 gms. per tonne; and the recoverable gold is estimated at 14.92 tonnes. The Committee have gathered an impression that in view of the increasing cost of production, dwindling reserves, low grade of gold recovery and with no new major reserves having been discovered, it is difficult to achieve corporate viability for the company as a predominantly gold mining company. In order to survive as a healthy corporate entity, the company has to go in for diversification in a big way into other activities so as to make its operations viable.

25. The Committee note that of the three mines in KGF area, Mysore Mine has practically been exhausted and is planned to be phased out in the next two years and it is not going to be too long before the Champion Reef and Nundydroog Mines would also meet the same fate. The planning for phasing out of these mines has, therefore, assumed importance. In this connection, Government have informed the Committee that keeping in view all the relevant factors including continuance of the important scientific experiments, being conducted by the Bhaba Atomic Research Centre and Tata Institute of Fundamental Research, displacement of large complement of trained workmen, and non-exploitation of the identified reserves (mainly in Nundydroog Mine and in some richer areas in the deeper levels of Champion Reef Mine), it has been assessed that the optimum period for phasing out the KGF mines would be seven years. During this period it is envisaged to (i) develop certain other gold deposits; (ii) step up diversification programmes of the company in areas of Mine construction and contract works and (iii) gradually absorb the work force rendered surplus from the existing mines in these newer fields of activities envisaged for the company. While there can be no two opinions about the adoption of such multi-pronged strategy for company to achieve economic viability, the Committee would like to point out that at the present rate of extraction, the reserves in the KGF mines are estimated to last for 12 years. Now that the mines are to be phased out in 7 years, it need hardly be stressed that the pace of mining has to be stepped up from the present level. At the same time, the identified but unexploited reserves in Nundydroog and Champion Reef Mines should not be lost sight of. The Committee, therefore, desire that the feasibility of exploiting these reserves before or after the phasing out of the KGF mines (when the company succeeds in achieving a degree of economic viability) should also be worked out.

26. The Committee observe that in order to find new areas outside KGF, detailed exploration is being carried out by Mineral Exploration Corporation Ltd. at Chigargunta in South Kolar, Kempinkote in Hassan District, Gadag in Dharwad District, Bisanatham in Chittoor District, Kolar in Maharashtra and Kunderkocha in Bihar. Of these, while Chigargunta project has already been taken up for construction and production of 250 tonnes of ore per day by 1990-91 is planned, the results of exploration in other areas are yet to be received.

27. The Committee have been informed that as part of diversification activities the company also envisages expansion of Projects and Contracts Division and undertake contract jobs for shaft sinking, drifting and other allied excavation jobs in underground coal mines and non-coal mines. The Committee need hardly emphasise that unless these new exploration schemes and diversification projects are started in time, it may not be possible to develop them fully to synchronise with the phasing out of the KGF mines. The Committee, therefore, recommend that the exploration of the prospective gold bearing areas now underway should be expedited. They also desire that suitable enhancement in capital outlay of BGML sanctioned at Rs. 2110 lakhs for the Seventh Plan should also be considered to enable the company to start these schemes and projects in time.

28. Bharat Gold Mines Ltd. concluded two agreements in regard to the rapid shaft sinking technology with the Tsvetometpromexport (TSMPE), Moscow viz. one in June, 1983 to get 13 of the company's engineers trained in USSR and another in October, 1983 for transfer of technology. This technology is to be used by BGML in the mines of Uranium Corporation of India in Bihar. While 13 engineers of BGML have been imparted on job training by TSMPE between January and June, 1984, the acquisition of technology is still under negotiation and the matter is to be discussed at the highest level. One of the reasons for delay in finalisation of the agreement was stated to be the UCIL's project not being initially cleared by Government. Now that the project has been cleared and is to be completed within 48 months, the Committee desire that the agreement with the Soviet Company should be finalised without any further loss of time so that BGML is able to execute the UCIL's contract within the stipulated time.

29. A project report for modernising the workshops of BGML and diversifying their activities was prepared by National Industrial Development Corporation as far back as in 1973. The Committee are distressed to note that though an updated report was also submitted in October, 1976, it was not before August, 1982 that the Board approved the implementation of the modernisation scheme in two phases. While Phase-I of the scheme was completed only in September, 1986 at a cost of Rs. 171.53 lakhs, Phase-II will again be reviewed on the basis of products identified to be manufactured and on the feasibility reports yet to be submitted by the company. The Committee take a very serious view of the lackadaisical manner in which the issue of modernisation of the workshops has been treated. No less than fifteen years have already elapsed since the project report for the scheme was originally prepared by the NIDC. In view of the importance the diversification and modernisation schemes have assumed in the BGML's context, the Committee cannot but emphasise the need to take up implementation of Phase-II of the modernisation scheme at the earliest.

30. In the context of reduction of high working costs, BGML gradually depleted its manpower to 11,999 by the end of 1978-79. But thereafter recruitments continued to be made and hence even after depletion in strength of around 600 to 900 per year, the present manpower as on 1-4-1987 stands at 11,900. One of the reasons given by the company for additional recruitment of workers was that during 1980-81 when gold prices were ruling high it was planned to re-open areas with leaner ores

for mining and advance action for recruitment was taken. However, the Committee are of the firm opinion that in view of the inconsistency and instability in gold prices, going in for a substantial additional recruitment lacked justification as it was a recurring burden. Moreover, having recruited large additional manpower since 1979-80, the company failed to utilise the manpower effectively to achieve increased ore and gold production as has been brought out in earlier paragraphs. The Committee agree with the observation of the Chari Committee that if only strict control over manpower had been exercised by the company during the past about 10 years, the problems would not have been so serious today.

31. A group set up under the Chairmanship of Cabinet Secretary considered the status of BGML and decided that the staff in the company should be reduced by at least 20 per cent per annum over the next five years and desired the company to submit a detailed plan in this regard. The Company formulated an action plan in November, 1985 and submitted it to the Government. A voluntary retirement scheme formulated by the company was also sent to the Government in November, 1987 and is stated to be under consideration of the Government. The Committee have also been informed that the reduction of manpower either by re-deployment or voluntary retirement of workers or by retrenchment forms part of package of measures which would broadly coincide with the period in which the operations of the KGF mines would be phased out. According to the proposals for redeployment, out of the total strength of workmen of 11,900 as on 1-4-1987 about 2800 would be depleted through retirements etc. by the time KGF mines are phased out in 7 years. Of the remaining 9,100 employees, 6,500 would be redeployed in other mines and activities. This would still leave a surplus of about 1,700 persons. In addition, 840 persons would have to be retained for pumping operations for the special scientific studies, if the same continue beyond 7 years. As regards the surplus personnel, a plan could be considered for engaging them in extracting residual ores from the KGF. In the alternative, they could either avail of the voluntary retirement scheme or be retrenched with the usual compensatory benefits. The Committee desire that the future of such surplus personnel should not be left undecided. With this end in view the voluntary retirement scheme should be finalised soon and it should be ensured that the retrenchment of personnel is kept to the minimum. The feasibility of deployment of surplus officers of BGML in other public sector undertakings, as suggested by the Chari Committee should also be examined seriously.

NEW DELHI ,

April 27, 1988

Vaisakha 7, 1910(S)

VAKKOM PURUSHOTHAMAN

*Chairman,*

*Committee on Public Undertakings.*