

CHAPTER – V

EXPLORATION OF MINERAL RESERVES

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CHAPTER V - EXPLORATION OF MINERAL RESERVES

A mining plan indicating the kinds of ore, quantity of reserve, life span of the mine, the programme of annual production and method of disposal of waste etc., is prepared by a Recognised Qualified Personnel (RQP) and submitted for approval to the IBM in respect of major minerals. The mining plan approved by IBM is sent to Government of India for approval and every lessee has to work the mine in accordance with the approved mining plan. Monitoring the implementation of mining plan is to ensure that the mineral reserves are extracted under proper authority. In this chapter we discuss the compliance with procedures for approval and monitoring of mining plans.

5.1 Classification of reserves

The classification according to United Nations Framework for Classification (UNFC) of minerals is a three digit code based system, the economic viability axis representing the first digit, the feasibility axis the second digit and the geologic axis the third digit. The three categories of economic viability have codes 1, 2 and 3 in decreasing order, similarly the three categories of feasibility study have also codes 1, 2 and 3 while the four stages of geological assessment are represented by 4 codes i.e. 1 (detailed exploration), 2 (general exploration), 3 (prospecting) and 4 (reconnaissance). Thus the highest category of resources under UNFC system will have the code (111) and lowest category the code (334). As per this codification, proved reserves are 111, probable reserves are 121 and 122.

5.2 Approval of mining plans

The primary mission of IBM is to promote systematic and scientific development of mineral resources of the country (both onshore and offshore), through regulatory inspections of the mines, approval of mining plans and environment management plans to ensure minimal adverse impact on environment. The audit observations on check of records of IBM are detailed below :

5.2.1 Deficiencies noticed in fixation of annual targets for production of iron ore

As per the amendment (April 2003) to MCD Rules 1988, it is a statutory requirement that all major mineral mine owners have to report their reserves data as per UNFC guidelines. Accordingly, the reserves are classified as proved, probable and possible. In order to ensure that sufficient reserves are available a detailed exploration as envisaged in the UNFC guidelines has to be done. Detailed Exploration involves the detailed three-dimensional delineation of a known deposit achieved through sampling, such as from outcrops, trenches, boreholes, shafts and tunnels. Sampling grids are closely spaced such that size, shape, structure, grade, and other relevant characteristics of the deposit are established with a high degree of accuracy.

We found that no parameters were fixed for fixation of targets of annual production. In some cases proved and probable reserves were taken into account while in some cases proved, probable and possible reserves were taken into

account for fixation of the targets. No system was put in place to ensure systematic and scientific mining operations. A few cases are mentioned below:

➤ The proved reserves for ML 2315 (Trident Minerals, Hospet), were originally shown in the mining plan as 11.02 lakh MT during 2006-07. But the proved reserves were revised (10 January 2008) to 155.65 lakh MT. Further, the annual target fixed initially at 2.84 lakh MT was revised to 10.02 lakh MT. At both occasions the estimates of the reserves were without detailed study, and the target was fixed considering proved, probable and possible reserves.

After this was pointed out by us IBM replied (September 2011) that though the deposit was economically viable, feasibility study was not conducted and documented. This indicated that the mining plans were approved without proper survey and documentation of feasibility and economic viability was not obtained.

➤ As per approved (19 May 2006) mining plan for five years that is from 2006 to 2011 for ML 2290 (V.S.Lad & Sons, Bellary), the IBM accepted a proved reserve of 1.85 crore MT mentioned in the mining plan. It was found that this was based on general assessment and not on detailed exploration and the annual target was fixed considering proved, probable and possible reserves.

After we pointed this out, IBM stated (August 2012) that in recent years annual target was being fixed by considering various factors like existence of proved reserve, capacity of dumping area and the capacity of rural roads, etc. to support their despatch and transportation to consumers.

➤ As per approved (5 February 2004) mining plan for ML 1732 (Trident Mining Company, Hospet), the annual target was approved for one lakh MT based on proved and probable reserves.

IBM confirmed that the target was fixed with reference to proved and probable reserves.

5.2.2 Monitoring disposal of waste

Rule 33 of the MCD Rules 1988 stipulates that the waste rocks/tailings produced during mining shall be stored in separate dumps and should be properly secured to prevent escape of material in harmful quantities which may cause degradation of environment.

5.2.2.1 In ML 2290: V.S.Lad & Sons, Bellary, as against an area of 14.28 Ha¹ required to be provided in the mining plan (2006-11) for dumping 5.71 million MT of waste to a height of 20m (proposed height in the mining scheme) during the

plan period, an area of 2.53 Ha was provided in the mining plan. The mining plan approved on 19 May 2006 by the IBM indicated that viability of waste disposal was not ensured. The inspection team of IBM during inspection

¹ $5710000 \text{ MT} / (20 \text{ m} * \text{Bulk density of } 2 \text{ MT/cum as per mining plan}) = 142750 \text{ sqm}$ equivalent to 14.28 Ha.

reported (September 2008) that the area already covered with dump in the lease area was 22.13 Ha (ten times the approved dump area) which included encroachment of 2.74 Ha of forest area.

Thus, approval of the mining plan in spite of the area proposed in the mining scheme for dumping of overburden which prima facie appeared to be inadequate indicated that due importance was not accorded to waste management. The fact of encroachment of forest land was also not reported by IBM to DMG and to Forest Department.

We reported the case to IBM and they replied that the height of the dumps was maintained at 45m and thereby accommodated the total waste generated. The reply is not correct as the height of the dump waste proposed in the mining plan was only 20m and no modification was either proposed by the lessee nor “*suo motu*” made by IBM while approving mining plan.

5.2.3 Short collection of financial assurance

As per Rule 23F of MCD Rules 1988, an amount of ₹ 25000/ha shall be collected as financial assurance from the lessee for the mining and allied activities subject to a minimum amount of ₹ 2 lakh in respect of ‘A’ category mines. The leaseholder should enhance the amount of financial assurance with the increase in the area of mining and allied activities.

- In ML 2290: V.S.Lad & Sons, Bellary, the financial assurance for the area utilised for the dump was collected for an area of 5.62 Ha whereas IBM during inspection reported that an area of 22.13 Ha was already covered with dump. Evidently, financial

assurance was short-collected by ₹ 4.12 lakh for the balance area of 16.51 Ha.

- In ML 1114: S.B.Minerals, Hospet, an area of 8 Ha approved by IBM for dumping the overburden was falling outside the lease area and was not considered for calculation of financial assurance resulting in non-collection of financial assurance of ₹ 2 lakh. IBM replied that mining activities undertaken outside the mining area do not come under its purview but the proposal in the instant case for dumping outside the lease area was approved to make the document self-contained. Reply is not tenable since the definition of mine as per the MMDR Act includes ‘any area which is temporarily used for mining or storage or waste disposal’.

5.2.4 Submission of monthly and annual returns

As per Rules 45 and 52 of MCD Rules, 1988, every mine shall submit monthly and annual return of the mining activities undertaken to IBM and to the State Government or the competent authority prescribed in this regard. Rule 58 provides that whoever contravenes any of these provisions shall be punishable with imprisonment for a term which may extend up to two years or with a fine up to ₹ 50,000. In cases of continuing contravention, additional fine which may extended up to ₹ 5,000 for every day during which the contravention continues shall also be levied.

It was noticed that out of 2,146 monthly returns due to be received, 1,360 returns were not submitted by the lessees and 509 returns were furnished belatedly. However no action was taken by DMG to ensure compliance or to levy penalty for the

omission. We worked penalty leviable for non-compliance at ₹ 9.35 crore. Further, out of 183 annual returns due to be received, 150 annual returns were not submitted by the lessees and 23 returns were furnished belatedly. The penalty leviable worked out to ₹ 86.50 lakh.

In the absence of such returns, periodical production/closing stock of minerals was also not monitored by the department.

The Department accepted that the accounts were not submitted regularly by the lessees and computer enabled Integrated Lease Management System has been introduced wherein e-returns are to be submitted on line. Further, software is also being developed to issue of notices automatically to such of the lessees who fail to file e-returns within the time limit prescribed.

5.2.5 Inspections by IBM

The IBM inspected 1,163 mines through its MCDR inspection team during the period from 2006-07 to 2010-11. Violations were reported in 219 cases as detailed below:

	2006-07	2007-08	2008-09	2009-10	2010-11	Total
No. of mines proposed to be inspected	226	182	170	228	174	980
No. of mines inspected	288	237	180	233	225	1,163
No. of cases in which violations were noticed	53	31	27	38	70	219
No. of cases in which compliance was submitted	-	-	-	23	49	-
No. of cases pending	-	-	-	15	21	-

(Source: Information furnished by IBM)

The status of compliance in respect of the years from 2006-07 to 2008-09 was not available with IBM and it replied that the same would be furnished after compilation. The non-compliance in respect of the years 2009-10 to 2010-11 ranged from 30 to 40 *per cent*. It was stated that the non-compliance was due to the ban of mining activities in Karnataka by the Hon'ble Supreme Court.

It was noticed in one case (ML 2434: Associated Mining Company, Hospet) that the height of benches was approved as 8 meters in the mining plan. The MCDR team during inspection (Sept 2006) reported that the height of the benches formed in the area of working were 30m and 20m. The lessee was however allowed by IBM to continue mining without taking action to suspend the mining lease until April 2010 when the task force team during inspection ordered for suspension of the lease on the grounds that the height of the benches formed was 30m and 20m as against the approved height of 8m. Reasons for not taking action till April 2010 were not furnished.

5.3 Non-submission of quarry plan in respect of ornamental quarry leases

Rules 16 and 19 of the Granite Conservation and Development Rules, 1999, state that no person shall commence mining operations for granite in any area except in accordance with a mining plan approved by the State Government or any person authorised in this behalf by the Government. Violation of the Rules leads to suspension of all or any of the mining operations and permit continuance of only such operations as may be necessary to restore the conditions in the quarry as envisaged in the mining plan.

On verification of 120 granite quarry leases in three Deputy Director offices², we noticed that quarry plan was not available in these offices in respect of 104 quarry leases. In the absence of quarry plans, it could not be ensured in audit as to how the field offices ensured adherence to the conditions envisaged in quarry plan such as production, environmental safeguards, etc.

We noticed that in respect of two quarry leases³ in Chamarajanagara and Ramanagara as against the approved production of 3,750 cum of granite as per quarry plan for the years 2005-06 to 2010-11, the production of granite was 10,940.734 cum.

The Deputy Director, Ramanagara, stated (January 2012) that no directions were received from the Director to monitor the activities of the lessees as per the quarry plan. The Deputy Director, Chamarajanagara replied that notices were issued to the lessees to furnish quarry plans. The Deputy Director, Tumkur, replied that the quarry plan would be obtained from the lessees.

Regarding exceeding annual production, the Department stated (October 2012) that at present, the annual production is being entered in the computer

² Chamarajanagara, Ramanagara, Tumkur.

³ Sri.K.M. Basavaraj (QL No.778 in Ramanagara), Sri. Jayaprakash (QL No.589 in Chamarajanagara).

and while issuing e-permits, generation of e-permits would stop as soon as the production exceeds the limit.

5.4 Utilisation of Satellite Imagery and field data for assessment of mineral wealth and environmental impact

The following possibilities can be explored for optimising mineral exploration and extraction and to mitigate the ill effects of mining.

Using Remote Sensing Data (RSD), the extent of area that will be affected and the impact on the various natural resources due to taking up of a mining project can be studied prior to the initiation of the project. Such a project was undertaken by NRSA (National Remote Sensing Agency) for identifying distillery sites in Karnataka on the request of Karnataka State Pollution Control Board (KSPCB) and similar models can be worked out for mining projects which will go a long way in identifying the adverse impacts on the environment and mitigating them through planned intervention-

We are of the opinion that Remote Sensing Data coupled with information obtained from Geological Survey of India (GSI) through physical probes, sampling, etc., could be used to fix floor level of quantities and quality of mineral wealth that can be reasonably expected to be extracted from a lease site within a mining plan timeline and revenue expected in terms of royalty. If quantity reported as mined and therefore royalty recovered is less than the floor level quantity, suitable penalties can be fixed to minimise loss to public exchequer and to curtail illegal mining. Physical verification of adherence to the commitments made in the mining plan and periodic review of the activities should be undertaken by the regulatory bodies. Here again the help of satellite imagery can be taken.

The Director during exit conference stated that the issue has already been taken up and efforts are being made to accurately determine the mineral available in the mine with the help of the latest technology. The Department has also initiated action for establishing Mining Exploration and Resource Audit Trust "Khanija".

5.5 Conclusion

We noticed that there were no parameters for fixing of annual target for production of minerals. The areas proposed for dumping the overburden in the mining plan were found inadequate indicating that due importance was not accorded to waste management. The submissions of periodical returns by the lessees were also not monitored by the Department. The status of compliance to the violations noticed by IBM from 2006-07 to 2008-09 was not made available. It was noticed that the lessees were allowed to continue mining operations even in cases where violations were noticed or where the production was more than the approved production.

5.6 Recommendations

The Government may consider putting in place a mechanism to prescribe parameters for fixation of targets of annual production giving due importance to the areas proposed for dumping the overburden in the mining plan so as to discourage unauthorised dumping .