

Scrutiny comments in respect of Review of Mining Plan of Panchpatmali Bauxite Mine, M/s NALCO in district Rayagada & Koraput, odisha

Text:

GENERAL

1. As present submission is review of Mining Plan, hence, on cover page instead of Scheme of Mining only "Review of Mining Plan" to be mentioned. Accordingly in text & certificates submitted needs to be corrected.
2. On cover page it is mentioned Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule 2015 which may be corrected as Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule 2016.
3. List of tables, plates and annexure have not been enclosed with text.
4. Para2(b), page-10 the DGPS co-ordinates are not readable.
5. Para3.1, page-11, details of approved Mining Plan/SOM may be furnished in tabular form.

GEOLOGY AND RESERVE

6. It is mentioned on page 21 that, the percentage of the various minerals presented in bauxite are established and details of same has been given in next page. The method of such establishment to be discuses in text part along with documentary evidence.
7. A consolidated table to be given for exploration already carried out in entire lease.
8. A fresh estimation of reserve and resource is required. Estimation based on considering only depletion is not accepted.
9. It is observed that mineral resource is estimated using Geo-Mining Software. The method of resource estimation should be discussed in details along with parameter like, ellipsoid dimensions, minimum and maximum composing sample length, block size, minimum and maximum sample considered for block estimation, Maximum search distance in horizontal and vertical plan, range, nugget effect etc. Else software logic be given in detail. Further, all the parameter considered as well as all input to the software should be described in detail with software generated calculation.
10. As per approved document the resource of Bauxite was estimated as 159.38 million tonnes, whereas, in present submission same is mentioned as 150.44 million tonnes. Verify and rectify.
11. As per "Appraisal of Mining Plan format-2014, section wise estimation calculation for reserve and resource is required. Hence, needs to be submitted.

12. Few samples from different part of the lease area to be analysed for OB/laterite in respect of Al₂O₃, R-silica, T-silica, P₂O₅ etc. and report to be submitted in present submission. Location of same to be shown on geo-plan.
13. On page 38 Aluminous laterite is mentioned as Minalable Overburden and on same page same is mentioned as reserve. Need to be justified.
14. The detail of correlation made between reactive silica and non-reactive silica to be given with document evidence.
15. Details of All exploration boreholes reported carried out must be given in the form of standard borehole logs in annexure with summary. All details of exploration carried out as enclosed should be certified by the concerned geologist of the mine.
16. Check BHs should be proposed in non-potential resource area.
17. Documentary proof for bulk density/ T.F. considered for reserve/resource estimation may be submitted. It should be from NABL accredited lab. or Govt. lab.

MINING

18. On the basis of Amendment MM (D&R) Act 2015 the mining lease extended by Govt. of Odisha upto the period of 31.03.2020 only vide letter no. 10370/SM Bhubaneswar, dated 16.10.2015 while proposal for mining has been given upto the period of 2021-22. The proposal may be modified accordingly and restricted upto the lease period only.
19. A surface right acquired for only 941.70 ha area which may be clearly marked on surface plan and development plan and mining activity may be restricted to that area only.
20. Consent to operate has not been enclosed with annexure.
21. Para 2(a), page-44, the existing and proposed method of mining may describe properly with existing capacity of mine of plant feed grade, capacity of machinery, pit size etc.
22. The tentative excavation as proposed has not been furnished with cross-section.
23. Para 2(d)(ii), page-18, quantum of production and development may be described yearwise with no. of benches, mRL, depth of excavation, direction of advance, location and cross-section considered.
24. The detail section wise backup calculation of proposed excavation of Bauxite, Mineral reject, top soil etc. to be given along with development sections.
25. In Conceptual Mine plan the details about total excavation, Disposal of waste, Sub-grade generation and its beneficiation/utilization, mine development, manpower and equipment requirement, conceptual exploration, land degradation, waste required and its availability for back filling the ultimate pit, depth of the back filling, reclamation and rehabilitation, Proposal of any expansion, etc. showing on a plan with few relevant sections to be given.

26. Blasting is not dealt with properly and blasting parameters has been considered for 2m bench height for top bench only. Optimum Charge per delay to be considered based on blast induced vibration study; accordingly most suitable drilling & blasting design along with initiation/firing pattern should be proposed.

MINE DRAINAGE

27. This chapter is not dealt with properly. Mine is situated at high altitude, having hilly & undulating terrain with large catchment area and, substantial quantity of rain water measured to flow through the lease area. Moreover, many villages, agricultural land, nalas, water course etc. are present at lower level near to lease area. However, adequate rainwater management plan i.e. drainage plan along with arrangement for arresting solid wash off is not incorporating with engineering details & material to be used for its erection/construction.

28. Adequate rainwater management plan i.e. drainage plan along with arrangement for arresting solid wash off should be prepared by an institute of repute, incorporating engineering details & material to be used for its erection/construction. Proposals as per their recommendation should be incorporated in this document in view of environmental protection.

HANDLING OF MINERALS REJECT/ SUB-GRADE AND DISPOSAL OF WASTE

29. The backfilling of OB/Aluminous laterite in mine out area to be proposed only after leveling of mine out area. It should also be proposed to maintain the Grade, Quantity, plan and section of the back filled area for future reference.

30. A separate plan showing year wise back filling proposal along with relevant sections to be submitted. The section wise details like proposed backfilling bottom mRL, top mRL, quantity of backfilling etc. may be given.

PROGRESSIVE MINE CLOSURE PLAN

31. Back filling proposal has not been explained properly. Exhausted area to be backfilled by OB/Waste to be specified with mRL and area on year to year basis with description of the method & manner of disposal of waste.

32. Environmental Base line information & EIA : It should be clarified that base line data collected & assessment done by which agency, period of data collection & assessment and whether it is conforming to the norms of MoEF.

33. Para 11.2 : mitigation measures of impacts associated with mining i.e. mainly related to air, water, noise, vibration, land, aesthetics etc. are not given. The same to be elaborated.

34. In Para "Risk Assessment", risk analysis of different mining operations and safety management plan needs to be given.

FEASIBILITY STUDY REPORT

35. In the UNFC feasibility study: Economic evaluation of the project is not carried out properly; following important parameters are not dealt with:-
- Assessment of IRR (Internal Rate of Return) and NPV for the project life.
 - IRR based on operating cost, reclamation/ rehabilitation cost, closure cost and other important parameters as per UNFC guidelines for the life of the project on the basis of ore body geometry, i.e., depth, width, length etc. as estimated and considered for reserve/ resource estimate.
 - Cash flow statement for the period considered for assessment of IRR.
 - Sensitivity analysis on cash flow due to market changes, i.e., cost of operation, sale price etc.

Plates:-

General:

36. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager, Mining Engineer and Mining Geologist as per provisions of Rule 30 of MCDR, 1988 and Rule 66 of MMR, 1961.
37. Wind direction may be shown through wind rose diagram at the top right corner of the relevant plans.
38. Approach road to ML area to be shown in all relevant plan and sections.
39. Forest area, Non Forest area, Surface right acquired area etc. should be marked clearly over all Map/Plan & Surface plan.
40. Color code given for different features in plans and sections to be same. Further, Contour value to be shown in all the plans invariably.
41. Date of observation of Magnetic Meridian should be given on all relevant plans.
42. **Surface Plan:** Forest/non-forest/private land to be shown clearly. Further, no bauxite zone, conveyor belt, contour are not indexed. Proposed, Five year excavation block to be depicted on surface plan.
43. All boundary pillars coordinates in UTM, Latitude and longitude to be shown in tabulated form on surface plan. Few pillars may be correlated with some permanent ground feature giving distance and direction.
44. **Geological Plan & Section:** Geological section has not been submitted, it should be submitted. As resource has been estimated based on the Surpac software, hence, geological section to be provided of the software.
45. A separate BH plan may be submitted showing UNFC boundary (G1, G2 etc.), Proposed BH, Drilled BH, Geology of the area, Section line, Grid, Existing quarry, Safety Zone etc. for better geological understanding.
46. Spot mRL to be mentioned in backfilled area.

47. The grades mentioned in sections are not legible at places, verify and rectify. Further, Bauxite Zone is not indexed in sections. Direction along which geological section have been drawn to be depicted on the sections. Bauxite Zone may be hatched for better understanding.
48. **Development plans and Sections:** Development section has not been submitted with Development Plan. ORE, OB and Top Soil excavation and proposed backfilling to be shown in different color. Proposed and existing Bench mRL to be shown. Existing backfilled area to be indexed. Direction of section to be marked along with the sections has been created. Font Size of the BH title may be reduced as it is overlapping at places. Contour value has not depicted in development plans.
49. The proposed and existing environment protective measures to be shown in environment plan. The drainage pattern of the lease area also to be shown on the plan. The flow direction of the water also to be shown.
50. FA Plan: FA table may be depicted on FA plan.

ENCLOSURE:

51. Photo id and signature proof submitted in respect of Nominated owner is obscure, a legible copy same to be submitted.
52. Letter of competent authority for working in Broken up area to be enclosed.
53. Few photograph of the Boundary pillars, present land use to be attached.
54. Details like Name, residential and correspondence address, email address, contact number etc. of all the Directors of the company to be submitted.