



भारत सरकार GOVERNMENT OF INDIA
खान मंत्रालय MINISTRY OF MINES
भारतीय खान ब्यूरो INDIAN BUREAU OF MINES
क्षेत्रीय खान नियंत्रक के कार्यालय
OFFICE OF THE REGIONAL CONTROLLER OF MINES



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No. MS/FM/30-ORI/BHU/2018-19

Date: 15.10.2018

To

Shri Vinkatesan Balasubramanyam,
Director (Production) & Nominated Owner,
M/s National Aluminium Company Ltd,
NALCO Bhawan, P/1. Nayapalli,
Bhubaneswar, Odisha- 751013

Sub: Approval of Review of Mining Plan of Panchpatmali (South Block) Bauxite Mine along with Progressive Mine Closure Plan (PMCP), over an area of 528.262 ha in Koraput district of Odisha State, submitted by M/s National Aluminium Company Ltd under Rule 17 (2) of MCR, 2016.

Ref: - i) Your letter No. NBC/D(P)/155 dated 29.09.2018 received on 05.10.2018.
ii) This office letter of even no. dated 05.10.2018.
iii) This office letter of even no. dated 05.10.2018 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.

Sir,

This has reference to the letter cited above on the subject. The draft Review of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on site inspection dated 09.10.2018 by Shri Dayanand Upadhyay, Senior Assistant Controller of Mines. The deficiencies observed are enclosed herewith as Annexure I.

You are advised to carry out the necessary modifications in the draft Review of Mining Plan in the light of the contents vide Annexure 1 and submit **three (3) firm bound and two (2) soft copies of the document text in CD in a single MS Word file (the drawing/plates should be submitted in Auto CAD compatible format or JPG format in resolution of 100x100 pixels on same CD)** with financial assurance under Rule 27 of MCDR 2017 of the Review of Mining Plan within **15 (Fifteen)** days from the date of issue of this letter, for further necessary action. If the total page of annexures exceeds 50 (Fifty) then it should be submitted as separate volume. But reference of these annexures must appear in the Review of Mining Plan document. The plates are also to be submitted in separate volume.

The para-wise clarifications and the manner in which the deficiencies are attended should invariably be given while forwarding the final copies of the Review of Mining Plan. It may be noted that no extension of time in this regard will be entertained and the Review of Mining Plan will be considered for rejection if not submitted within above due date. It may also be noted that if the deficiencies are not attended completely, the submission would be liable for rejection without further correspondence.

Yours faithfully,

(HARKESH MEENA)

Regional controller of Mines

Copy for kind information and further necessary action to Shri Chandrabhanu Das, Geo Consultants Pvt. Ltd, 853, Gobind Prasad (Medical Lane), Mahavir Nagar, Laxmisagar, Bhubaneswar - 751006.

(HARKESH MEENA)
Regional controller of Mines



Scrutiny comments in respect of Review of Mining Plan of Panchpatmali (South Block) Bauxite Mine, Area-528.262 ha, M/s NALCO in district Koraput, odisha

GENERAL

1. As present submission is review of Mining Plan, hence, on cover page instead of rule 17(2) submitted under rule 17(1) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule 2016 to be mentioned. Accordingly text & certificates submitted needs to be corrected.
2. Qualified person and Company address, e-mail, phone and fax no. should be furnished on cover page.
3. The extent and nature of surface right being held by the Lessee to carry out various mining activities to be indicated with documentary evidence.
4. Para-3.3.3, page-15, yearwise waste generation against the proposal is furnished nil. It should be re-checked.
5. Para-3.6, page-17, the reason of modification of mining plan is not justifiable as the document is submitted under review of mining plan.
6. All the annexure to be properly indexed/ numbered/ paged and signed by qualified person. All the certificates should bear dated signature.

GEOLOGY AND RESERVE

7. Page 23, table-A1.4 & A1.5, the details of already drilled bore holes indicating drilling type (Core/RC/DTH), Coordinates, Bore Hole numbers, Borehole diameter, spacing, inclination, collar RL, bore hole closing depth etc. should be given in tabulated format.
8. Details of all boreholes carried out must be given in the form of standard borehole logs in annexure with summary. Exploration carried out should be corroborated with documentary evidence in respect of name of agency, order for the work, cost involved, and payment details by the lessee etc. with copy of form J & K maintained as per erstwhile rule 47 & 48 of MCDR. All details of exploration carried out as enclosed should be certified by the concerned geologist of the mine.
9. Page-24, table-A1.6, The details of total lease area explored under G1/G2/G3 category and balance unexplored area has not been furnished correctly.
10. The details like potentially mineralized area and its extent (coordinate in WGS 84), potentially mineralized area explored (in forest and non-forest area, Govt. land, Pvt. land etc.), remaining area, proposal of exploration to explore remaining potentially mineralized area to be given with justification of adequacy.
11. Page-24, Para-(iii), the details of the sample analysis indicating type of sample should be given in tabulated format.
12. The UNFC boundaries as per the present status of exploration under MEMC rules 2015 should be demarcated over the Geological Plan and Sections. The lithology shown in the borehole log should match with the lithology shown in geological sections. Number of bores holes considered for reserves/resource estimation should be furnished as per bore hole logs.
13. In page-.27, Para-(k), the method of reserve estimation may be further elaborated and justified with supporting documents w.r.t recovery factor, Bulk density and, Length of influence considered, cut off grade and average grade in reserve and resource estimation.
14. Page-28, table-A1.10, the updated mineable reserve as furnished after depletion of annual production is not matched with the production of ROM reported by lessee in annual return for the year 2017-18.
15. Page 30, the reserve and resources as furnished in tabular form are not as per MEMC rules 2015. The reserve and resources as furnished has not been supported with the step wise sequence as Geological reserve should be converted into mineable reserve after depletion of blocked mineral resources then mineable reserve should be derived with saleable and sub grade mineral. The resource furnished under 221 categories should also be justified.
16. The table of calculation of reserve/resource estimation considering cross-section has not been furnished.
17. The revised threshold value also prescribes mineral content for Aluminous Laterite i.e. +20% Al₂O₃. It is observed that a thick capping of Aluminous Laterite (+20% Al₂O₃) is present below soil cover. The

same should be estimated as Mineral Resource under UNFC. Few sample analysis of OB/laterite in respect of Al₂O₃, T-silica, P₂O₅ etc. to be submitted in present submission.

18. The scale of geological plan and geological section as submitted are different. The data of bore holes log has not been submitted therefore the information as furnished and reserve and resources estimation has not been verified
19. Reporting of Mineral Resources in the format prescribed in Part IV-A of Minerals (Evidence of Mineral Contents) Rules, 2015 to be submitted.
20. Chemical Analysis Report of BHs samples should be enclosed from NABL Accredited laboratory or Govt. lab. as per guideline of "IBM manual on appraisal of Mining Plan-2014". *Entire mineralized area should be analyzed meter wise with 10% of check samples. (At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited/other government laboratory).* NABL Accreditation certificate of laboratory from where Chemical Analysis of BH samples carried out, should also be enclosed.

MINING

21. On the basis of Amendment MM (D&R) Act 2015 the supplementary lease executed on December 2015 is valid upto 31/03/2020 while proposal for mining has been given upto the period of 2019-20 to 2023-24. It has been observed that lease period has been extended upto 19/07/2029 by State Govt. vide letter no. IV(BX) SM-03/11, dated 12/01/2018 but supplementary lease deed has not been executed till date. It may be clarified.
22. Page 32-34, para-2.0, the existing method of mining has not been described properly. The dimension of existing pit/block, length, width, depth, top RL, bottom RL, location, no. of benches in ore & OB should be furnished.
23. Page-35, mining of bauxite has been described with deep holes blasting while during field discussion from management of NALCO they have explained that no drilling and blasting will be carried out and OB ore will be excavated by excavator and ripper dozer combination. It should be re-checked and rectified accordingly.
24. Page-36, Para (b), it has been observed during field inspection that a top soil cover lying above the aluminous laterite zone but in table top soil calculation has not been furnished. It should be re-checked and rectify.
25. Table-A2.1, the average grade of aluminous laterite and bauxite ore has not been furnished.
26. The site of temporary storage of top soil & OB, mineral storage should be marked on development plan and other relevant plans.
27. Page-38-39, proposed mining operation has not been described with top and bottom RL, haul road, and yearwise sequence of backfilling.
28. Page-43, Para (e), Describe briefly the layout of mine workings, pit road layout, the layout of faces and sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc.
29. Page-43(a), yearwise calculation of ore & OB as furnished in table is not matched with development section. Some of the sections as shown in plan are not considered for calculation of ore/OB. The terminology of sections is differed in text and development plan.
30. Before backfilling of the quarry as proposed it should be ensured the exhaustion of ore body in terms of their depth & extension in the interest of mineral conservation.
31. Back filling proposal has not been explained properly. It should be insured that sequence of backfilling should be same as per original sequence of the litho units occurring in lease area. Exhausted area to be backfilled specified with mRL and year to year basis.
32. Conceptual mining plan, cumulative waste generation and backfilling and protective measures should be furnished properly. Restoration of safety zone, dead dump and slope of the dump may describe properly.

MINE DRAINAGE

33. 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. However, adequate rainwater management plan i.e. drainage plan along with arrangement for arresting solid wash off has not been furnished

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

34. The backfilling of OB/Aluminous laterite in mine out area to be proposed only after leveling of mine out area. It is should also proposed to maintain the Grade, Quantity, plan and section of the back filled area for future reference in the interest of conservations of minerals.
35. A plan showing year wise back filling proposal and its location 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.
36. The site of temporary storage of top soil & OB and mineral stack should be proposed with retaining wall and garland drain

PROGRESSIVE MINE CLOSURE PLAN

37. Page-92, Para-8.3, 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.
38. Page-94, table-8.7, the yearwise excavation area as furnished in tabular form is not matched. It should be re-checked and corrected. A sequence should be followed of yearwise mined out area and area matured for reclamation and rehabilitation with proposals.
39. Para-8.3.2, it is described that there is no top soil generation but during field inspection it has been observed that there is top soil cover lying above the aluminous laterite.
40. Page-98, Para-8.6, in FA table column-c, it has been mentioned that area used under top soil is nil. However during field visit top soil storage has been observed. Therefore amount of financial assurance should be calculated accordingly as per rule 27(1) of MCDR-2017 and should be submitted accordingly.
41. Year wise plantation covering number of saplings to be planted, location and area covered may be furnished.
42. Updated air, water, noise, ground vibration and soil data with analysis from laboratory done at specified periodicity for last one year to be enclosed.
43. Under impact on land, cumulative land degradation at present, at the end of proposal period and at the end of conceptual period may be given referring to conceptual mining plan given in scheme of mining.

Plates:-

44. An authenticated lease plan signed with District Collector has not been submitted. Location of the lease area as marked in plan has shown with different colour in index.
45. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager, Mining Engineer and Mining Geologist.
46. Wind direction may be shown through wind rose diagram at the top right corner of the relevant plans.
47. Forest area, Non Forest area, Surface right acquired area etc. should be marked clearly in Surface plan & Geological plan.
48. Color code given for different features in plans and sections to be same. Further, Contour value to be shown in all the plans invariably. Some the index are missing. It should be re-checked.
49. **Surface Plan:** Scale has not been furnished. Forest/non-forest/private land to be shown clearly. Few pillars may be correlated with some permanent ground features giving distance and bearing/direction. Top and bottom RL of Pits shown in Surface Plan should be mentioned. UTM coordinates to be mentioned along with local coordinates along the grid lines.
50. **Geological Plan & Section:** It has been observed during field that the geological information has not been furnished correctly in geological plan. The structural information like strike, dip, dip-direction etc has not been shown. Further, litho units and ore zone should be depicted on plan and section based on

surface exposure, exploration data. All these information should be reflected on geological plan and section. The geological plan and section are prepared on different scale and both are not matched to each other. The UNFC has not been clearly demarcated on plan & sections. The geological profile at bottom of ore zones as per bore holes data has not been shown. The mineralize and non-mineralized area should marked clearly. The grid lines have not been marked in plan and sections.

- 51. Development plans and Sections:** Scale of development plan and sections has not been correctly furnished. Development sections not matched with plan. The litho units i.e top soil, OB and ore zone are not furnished correctly. Benches are not shown clearly. The development sections of complete developed area have not been furnished. The sections of backfilled area year to year basis with RL in different colour codes have not been furnished. The grid lines in development plan & section has not been marked.
- 52. Reclamation Plan:** Year wise proposal of backfilling, top soil storage, site of temporary OB dump, mineral storage, retaining wall and garland drain and afforestation using different colour codes for easy understanding should be furnished.
- 53. Environment plan:** The Environment Plan as prepared should be satisfy the provision as laid down rule 32(5) (b) of MCDR2017. Air, water and noise monitoring stations to be shown in the plan. Predominant wind direction may be shown with Wind rose diagram in key plan The proposed and existing environment protective measures to be shown.
- 54. Conceptual plan:** Conceptual plan and section should be prepared up to the end of lease period taking into consideration the present available reserves and resources describing the excavation, recovery of ROM, Disposal of waste, backfilling of voids, reclamation and rehabilitation etc. Hence, necessary correction should be done in conceptual plan and section. One longitudinal section may also be submitted.
- 55. Financial Assurance Area Plan:** Broken up area specifically which are taken to FA account should properly demarcate with solid hatch with different colors. In the Financial Assurance plan area of each individual land i.e. land degradation due to mining activity and processing unit etc. at the end of plan period may be shown separately on this plan with highlighted boundaries and different colour codes for FA calculation