



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. MRMP/A/49-ORI/BHU/2020-21

Date: 04.02.2021

सेवामे

Shri Bijay Kumar Das, Director (Production) & Nominated Owner,  
M/s NALCO Ltd,  
Nalco Bhawan, P/1, Nayapalli,  
Bhubaneswar - 751061

विषय: Approval of modification 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 NALCO Ltd under Rule 17(3) of MCR, 2016.

संदर्भ: - i) Your letter No. NBC/D(P)/086 dated 24.12.2020 received on 22.01.2021.  
ii) This office letter of even no. dated 22.01.2021.  
iii) This office letter of even no. dated 22.01.2021 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.

महोदय,

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

You are advised to carry out the necessary modifications in the draft modification of Review of Mining Plan in the light of the contents vide Annexure- I and submit **three (3) firm bound and two (2) soft copies of the document text in USB Pendrive/Flash drive 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 USB Pendrive/Flash drive )** with financial assurance under Rule 27 of MCDR 2017 of the Modification of 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 modification of 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 modified copies of the modification of Review of Mining Plan. It may be noted that no extension of time in this regard will be entertained and the modification of 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.

भवदीय,

(हरकेश मीना)

क्षेत्रीय खान नियंत्रक

प्रतिलिपि सादर सूचनार्थ और आवश्यक कार्रवाई हेतु Shri Chandrabhanu Dash, Geo Consultants Pvt. Ltd., 53, Gobind Prasad (Medical Lane), Infront of Reliance fresh, Bhubaneswar – 751 006.

(हरकेश मीना)

क्षेत्रीय खान नियंत्रक

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

**GENERAL**

1. Company e-mail address, diversified forest area and the date of lease expiry should be furnished on cover page. In introduction chapter reason of modification of review of mining plan should be discussed in brief.
2. The extent and nature of surface right being held by the Lessee to carry out various mining activities to be indicated with documentary evidence.
3. Page 14 &15, details of approved document as furnished in table should depicted with period of approved proposal. The review of earlier approved proposals, the ROM production and excavation of waste etc have not been updated till December 2020. All the updated figures should be furnished.
4. Lessee is a company. Hence, all certificates, undertakings, consent letter etc. should be signed by the nominated owner only. Extract from the minutes of the Board of director meeting with list of Board of Directors, their phone no. address and declaration of nominated Owner to be furnished.
5. The experience certificate of all qualified person should be as per provision of rule 15(b) of MCR 2016. Qualified person address, e-mail, Phone number, Mobile number, PIN code and Fax no. should be furnished on cover page.
6. Sequence of para and its numbering as per IBM Manual appraisal MP 2014 should be covered in text. All the annexure and text to be properly indexed/ numbered/ paged and signed by qualified person. All the certificates/annexures should bear dated signature.

**GEOLOGY AND RESERVE**

7. Page 22, table-A1.4, 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-31, table-A1.6, The details of lease area explored under G1 category and balance unexplored area for further exploration has not been explained. Reserve and resources as furnished in table is also not matched with final table of reserve and resources as furnished at page no.-54. The reserve and resources of earlier approved review of mining plan and further depletion reserve due to ROM production has not been explained.
10. Complete lease area is to be cover under exploration under G1 level upto end of mineralization as per provision of rule 12(4) of MCDR2017. Therefore proposal of exploration is to be given accordingly. Additionally, new core boreholes to be proposed in the location adjacent to existing drilled boreholes that have been either terminated in the ore zone or closed prematurely without intersecting the proposed ore zone in depth. Proposed bore holes should also be depicted in geological sections.
11. 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.
12. In page-52, 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.
13. Page 54, 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.

14. Based on the level of exploration with reference to the threshold value of minerals declared by IBM, table is not furnished as below:

Level of Exploration	Resources in million tons	Grade
G1 - Detailed exploration		
G2 - General Exploration		
G3 - Prospecting		
G4- Reconnaissance		

15. The method of resource estimation should be discussed in details along with parameter like, ellipsoid dimensions, minimum and maximum compositing sample length, block size, minimum and maximum sample considered for block estimation, Maximum search distance in horizontal and vertical plan. 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 backup calculation of resource estimation.
16. As per IBM Manual appraisal MP 2014, the table of calculation of reserve/resource estimation considering cross-section has not been furnished. The scale of geological plan and geological section as submitted are different.

### MINING

17. Page-57, existing method of mining should be described with production capacity, machineries used, height of existing benches etc. The dimension of existing pit/block should be furnished in following table.

Name of pit/Block	Location	Length	Breadth	Depth	Top mRL	Bottom mRL	No. of benches in ore/No. of benches in OB	Pit slope	Area backfilled	Area reclaimed & rehabilitated

18. It has been proposed to enhancement of production capacity 3.15MTPA bauxite ore. Therefore requirement enhancement of ROM production is to be justified in light of existing plant capacity of alumina refinery and further proposed enhancement of plant capacity if any.
19. Sequence of paragraph and its numbering has not been covered in chronicle order as per IBM Manual Appraisal MP 2014. Proposed method of mining should be furnished in light of development plan i.e production capacity, nos. of pits proposed for production, waste dump and other designing parameters to be discussed.
20. Page-62, Para (b), it has been observed 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.
21. In table of year wise tentative excavation the ROM production already carried out in 2020-21 till date should be furnished in bullet notes to justify the total annual capacity as proposed. The recovery percentage considering 100% should be justified.
22. Tentative excavation has not been furnished quarry wise i.e north part(area-1) and south part (area-2). The use aluminous laterite ore should be discussed.
23. The quantity of tentative excavation as furnished in table- A 2.1 are not matched with the quantity of tentative excavation as furnished in table- A2.5, A2.6, A2.7, A2.8. It should be re-checked and corrected.
24. Page-72, 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.
25. Before backfilling of the quarry as proposed should be ensured the exhaustion of ore body in terms of their depth & extension in the interest of mineral conservation.
26. 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.

27. In conceptual mining plan, life of the mine is not correctly furnished considering the present production capacity. Cumulative waste generation and its utilization for backfilling and protective measures should be furnished properly. In pursuant to the order dated 14.01.2020 passed by MoM, GoI, consequent up on the order dated 08.01.2020 of the Hon'ble Apex Court passed in W.P.(C) No. 114/2014, the lessee shall carryout "re-grassing in mining area after closure of mines". Accordingly it should be discussed during conceptual period

#### MINE DRAINAGE

28. 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

29. 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.
30. 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.
31. 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

32. Page-105, Para-8.1, Baseline information of the lease area has not been described as per guidelines. Further, base line information to be furnished for surrounding 500 meter form lease boundary.
33. 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.
34. Year wise plantation covering number of saplings to be planted, location and area covered may be furnished.
35. Updated air, water, noise, ground vibration and soil data with analysis from laboratory done at specified periodicity for last one year to be enclosed.
36. 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:-

37. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager and Mining Geologist. The date of observation of magnetic meridian and its declination is to be shown in relevant plans.
38. The plans and sections submitted should bear the certificate that --the plans and sections are prepared based on the lease map authenticated by the state government. All plans and sections shall show a scale of the plan at least twenty five centimeters long and suitably subdivided.
39. Key plan as submitted is be demarcated with the boundaries of all villages and towns with their population, forests with tree density, approach road to lease area. Existing and proposed bench mRL to be mentioned in the all plans and sections. The UPL should be shown in red colour in all relevant plans and sections.
40. **Surface Plan:** Few pillars may be correlated with some permanent ground features giving distance and direction. Virgin area to be shown by contours and spot RL in surface plan. Forest & Non forest area, Surface right acquired area etc. should be marked clearly.
41. **Geological Plan & Section:** Geo-structural information like strike, dip, dip-direction, fault, fold and plunge etc. may be depicted on geological plan and section for better geological understanding of the lease area. Further, litho units and ore zone should be depicted on plan and section based on surface exposure, exploration data. 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 RL in vertical plane should be marked both side in sections.

42. **Development plans and Sections:** Development sections not matched with plan. The litho units i.e top soil, OB and ore zone are not furnished clearly. Benches are not shown clearly. The sections of backfilled area year to year basis with RL in different colour codes should be furnished. The grid lines in development plan & section has not been marked.
43. **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.
44. **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.
45. **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.
46. **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