



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/17-ORI/BHU/2020-21

Date: 19.07.2021

TO,

Chitta Ranjan Ray, Nominated Owner,

M/s IMFA Ltd., IMFA Building, Rasulgarh,

Bhubaneswar, District- Khurda, Odisha- 751010

Sub: Approval of Modification of Review of Mining Plan under Rule 17(3) of MCR, 2016 of Mahagiri Chromite Mine of M/s IMFA Limited over an area of 73.777 ha. situated in Jajpur district of Odisha.

Reference :i) Your Letter No. KLCM/IBM/91/2021 dated 25.06.2021 received on 01.07.2021.

ii) This office letter of even No. dated 01.07.2021.

iii) This office letter of even no. dated 01.07.2021 addressed to Director of Mines, Government of Odisha Copy endorsed to you.

Sir,

This has reference to the letter cited above on the subject. The draft Modification of Review of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on site inspection dated 09.07.2021 by Shri Sanjeeb Kumar Mohapatra, Senior Mining Geologist. 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 Pen drive in a single MS Word file (the drawing/plates should be submitted in Auto CAD compatible format or JPG format in resolution of 100 x 100 pixels on same Pen 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 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

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.

Yours faithfully,


(HARKESH MEENA)

Regional Controller of Mines

Copy for kind information and further necessary action to Shri B.N.Das , Mining Engineer & Shri Suresh Prusty, Geologist, Mahagiri Mine, M/s IMFA Ltd., IMFA Building, Bomikhal, Rasulgarh, Bhubaneswar, Odisha- 751010. sd/ ✓

(HARKESH MEENA)

Regional Controller of Mines

Scrutiny comments on examination of Modification of Review of Mining Plan of Mahagiri Chromite Mine over an area of 73.777 Ha in Jajpur District of Odisha State of M/s Indian Metals & Ferro Alloys limited

GENERAL:

1. On cover page, the forest diversified area, email id of qualified persons and their address are to be furnished on cover page.
2. In introduction chapter, the details about company, location of plants and its capacity and details of use of mineral have not been furnished. The reason of modification should also be furnished in brief in introduction chapter.
3. Page-1, under 3rd para, it is to be only mentioned that lessee will proceed for obtaining revised environment clearance in light of enhancement of production capacity.
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. Page 9-10, Para-3.3 (A).(B) & (C), in the review of earlier approved proposal, the ROM production and excavation of waste etc have not updated for the year 2021-21 till last month. It should be updated and furnished accordingly.
6. The experience of qualified person should be clearly stated in supervisory capacity in the field of mining as per provision of rule 15(b) of Minerals (Other than Atomic and Hydro Carbons of Energy Minerals) Concession Rules, 2016.
7. Sequence of para and its numbering as per IBM Manual appraisal MP 2014 should be covered in text. All the headings as mentioned in the IBM Manual appraisal MP 2014 should be furnished in all chapters in the 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:

8. In page 20, 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. The borehole logs of all the previous drilled boreholes should enclosed with document as annexure.
9. Page-22, the details of the sample analysis indicating type of sample should be given in tabulated format and nos. of sample analysis from NABL/Govt. lab out of total sample should be furnished along with annexure.
10. The G1 and G2/G3 boundary of ore body at depth has not been defined as per the provision of MEMC Rules, 2015 (refer Part II, Point No 4). Necessary modifications to be done at all relevant places in the document like reserve resource estimation, plans and section etc.
11. The proposal for exploration under future exploration program is inadequate. The proposal may be modified to the extent that it should clearly indicate the level (in mrl) to which G2/G3 level is to be converted to G1 level in mrl for both the ore bodies. The proposed boreholes should be in grid pattern for G1 level of exploration as per exploration norms specified in MEMC Rules, 2015. The details of year wise boreholes proposed may be furnished in the format tabulated below.

Year of drilling	Section No	Proposed Borehole No	UTM Coordinate		Collar mRL	Bottom mRL	Proposed Borehole Depth	Angle of drilling	Direction of drilling (Azimuth)	Type of drill hole (Core/RC / DTH)	Purpose of Borehole
			Northing	Easting							

12. Geological sections are to be drawn boundary to boundary as per guidelines of IBM Manual appraisal MP 2014. Boundary line and safety zone have not been clearly marked in geological sections. Surface features like existing dump etc are not shown in sections. A separate longitudinal vertical section is to be submitted along with bore holes data and furnishing with proper UNFC codes.
13. The method of reserve estimation may be further elaborated and justified w.r.t recovery factor, Bulk density, Length of influence, nos. cross sections and bore holes considered in reserve and resource estimation. Necessary supporting documents to be furnished with respect to bulk density and recovery factor.
14. The sections wise and level wise calculation to arrive the reserve and resources are to be furnished with proper UNFC codes and proper justifications.
15. The section wise enhancement of reserve and resources considering the bore holes drilled for the year 2020-21 should be furnished and it should be distinctly shown in geological sections of better interpretation.
16. The reserve and resources as furnished are not in chronological order. It should be described with proper sequencing i.e reserve and resources in earlier approved document then total depletion after ROM production and balance reserve as on date. Further the enhancement of reserve and resources based on the new bore drilling should be furnished in separate table with cumulative reserve and resources as on date.
17. Based on the level of exploration with reference to the threshold value of minerals declared by IBM, the resources is to be furnished as below:

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

MINING:

18. Page-56, in existing method of mining, the number of ore band encountered and their nomenclature & width, present capacity, size of the open pit in terms of their length, width & depth with RL and area reclaimed and rehabilitated by backfilling and plantation are to be furnished.
19. In earlier approved review of mining plan, dated 14/11/2019 it was proposed to backfill the open pit by OB/waste from Mahagiri mines and Sukinda mines and same proposal is carry forward in the instant document. The utilization of OB/waste from Sukinda mines for backfilling was subject to condition to obtain statutory clearance from State Govt. and from other concerned authority, Therefore any statutory clearance if obtained in this regard, it is to be furnished.
20. Page-59, the year wise backfilling from 2021-22 to 2024-25 of opencast mine as depicted in table is not furnished with top and bottom RL, area covered etc. The backfilling proposal is to be addressed properly with area covered year wise and reclamation and rehabilitation proposed by plantation.
21. Page-66, Justification should be furnished for location of entry points to the mines viz., decline and shaft etc. as per the study report and RL of collar of entry points in relation to higher flood level.
22. Page-69, Based on the scientific study conducted, the size of stopes along with crown pillar & sill pillar, sequence of stoping & backfilling and other proposed design parameters should be described. The stage wise sequence of backfilling should be furnished in text and shown in longitudinal and transverse sections.
23. Page-71-74, in proposed year wise/ level wise extent of development, the proposal of vertical developments are to be furnished with RL. The calculation of quantity of ore and waste in development and stopes to be mined out are not furnished considering the length, width, height and recovery factor. Therefore year wise quantity of ROM production is not justified. Considering all the parameters section wise/level wise calculation ore and waste should be furnished.

24. Page-75, The reinforcement of underground development/excavations like drives, cross cuts, shafts, decline, stope blocks etc. should be elaborated in detail under strata control. The SSR (systematic support rules) as per MMR 1961 should be furnished in a summarized form and the document should be enclosed as annexure. The geotechnical study reports related to the strata control should also be enclosed as annexure.
25. In Blast hole stoping method of mining it should be ensure that the longitudinal stopes are to developed cover the entire width of ore body. Therefore longitudinal stopes should be proposed in such way that entire width of ore body should be covered for maximum recovery of ore in view of conservation of mineral.
26. In Subsidence management, instrument used, monitoring points to be marked on plan, frequency subsidence monitoring, monitoring to be properly recorded have to be proposed. Further in safety aspects it is to be elaborated the 7.5m safety barrier along mine lease boundary and whether there is any presence of old working/water logged areas within the area or within 60m distance from boundary.
27. Conceptual Mine planning upto the end of lease period taking into consideration the present available reserves and resources describing the ROM excavation, Disposal of waste, stowing/backfilling, surface subsidence, reclamation and rehabilitation showing on a plan with few relevant sections.
28. 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:-

29. The U/g water treatment plant Effluent treatment plant are to be described with its capacity and accumulation of water in pit considering water table encountered and average rain fall. The flowchart of treatment plant of hexavalent chromium should be furnished.
30. Provision of sump in underground is to be proposed in such a way that less interference to the ore body, which leads to less dilution of hexavalent chromium. The pumping arrangement and management of underground water, surface runoff etc. is to be described in detail. Need to do necessary correction.

STACKING OF MINERAL REJECT/SUB GRADE AND DISPOSAL OF WASTE:

31. All along the processing yard and stack yard, the proposal for construction of retaining wall, garland drain may furnish year wise in different color codes in terms of their length width and height.
32. The analysis report of serpentine and nickeliferrous limonite should be submitted and discussed for their future use on the basis of their physical and chemical properties.

PROGRESSIVE MINE CLOSURE PLAN:

33. Page-111 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.
34. Page-123, in Surface Subsidence, instruments used for monitoring and their locations are to be discussed in text and it is to be marked in plan.
35. Page-127, In summary of PMCP table, year-wise proposal as furnished in table under item void backfilling for stopes and open pit are not matched as the figure furnished in text. It should be re-checked and corrected.
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. Mitigation measures of impacts associated with mining i.e. mainly related to air, water, noise, vibration, land, aesthetics etc. are to be elaborated.

FEASIBILITY REPORT:

37. The content of feasibility/pre-feasibility report and analysis of economic viability of the project is not described in detailed as per rule 16 and Part-V of MEMC Rule 2015. The economic viability of the project should be supported with NPV, IRR, Payback period by cash flow chart with cost involved in environmental and others protective measures and clearances, operational cost, administrative cost, infrastructure, royalty, NMET, DMF, closure cost etc.

PLATES (General):

1. 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.
2. 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.
3. The CCOM circular no.2/2010 and its addendum should be implemented. KML file of existing quarry/waste dump/land use are to be submitted. All the plan and sections should be made in UTM grid.
4. Key plan as submitted is to be demarcated with the boundaries of all villages and towns with their population, forests with tree density, approach road to lease area. The UPL should be shown in red colour in all relevant plans and sections.
5. Surface Plan: In surface plan, the existing features i.e shaft, decline etc are to be shown distinctly. The backfilled area is not clearly shown. The Surface Plan should be prepared to satisfy the provision as laid down under rule 32 (1) (a) of MCDR'2017.. Forest & Non forest area, Surface right acquired area etc. should be marked clearly.
6. Geological Plan & Section: Data related to strike, dip, dip-direction etc. shown clearly on the geological plan. In the Geological Plan UNFC boundaries G1, G2..., explored area, unexplored area, drilled boreholes and year wise proposed boreholes to be shown in relevant colors. In sections UNFC codes have not been furnished as per Minerals Evidence of Mineral Contents Rules 2015. All the drilled bore holes are to be marked in sections and litho units should be matched with bore hole logs. Geological sections are to be drawn boundary to boundary. Profile of geological sections should be corrected with existing surface feature.
7. Development plan & Section: Longitudinal sections are to be updated with stopes developed and backfilled. Sequence of year wise proposed stoping and backfilling should be marked clearly with clear color contrast. Transverse sections are shown clearly with mined out stopes and proposed development and stopes with different color.
8. Environment plan: The Environment Plan as prepared should satisfy the provision as laid down rule 32(5) (b) of MCDR2017. The drainage pattern of the lease area, contours in core zone and surface structure in buffer zone should be shown.
9. Conceptual plan: Conceptual plan may be prepared considering mineralization as revealed from the borehole logs. Direction of run off from the area based on surface contours may be shown on the plan and the sections.

ANNEXURES

- i) All the reports related to Geotechnical investigation for optimization of stoping parameters & design of support system for underground operation justifying proposed stoping parameter should be enclosed.
- ii) The chemical analysis from NABL certified laboratory or Government Laboratory has not been enclosed.
- iii) Bulk density study reports from NABL accredited laboratory have not been submitted.
- iv) The borehole logs in Form J (erstwhile Form K) of MCDR 2017 should be submitted.