



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/37-ORI/BHU/2018-19

Date: 28.12.2018

To

The Managing Director & Nominated Owner,  
M/s Odisha Mining Corporation Ltd.  
OMC House, Bhubaneswar- 751001

Sub: Approval of Review of Mining Plan of Sukrangi Chromite Mine along with Progressive Mine Closure Plan (PMCP), over an area of 382.709 ha in Jajpur district of Odisha State, submitted by M/s Odisha Mining Corporation Ltd under Rule 17 of MCR, 2016.

- Ref: - i) Your letter No. 18259/OMC/PMC/18 dated 12.12.2018.  
ii) This office letter of even no. dated 13.12.2018.  
iii) This office letter of even no. dated 13.12.2018 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 Review of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on site inspection dated 19.12.2018 by Shri Dilip Jain, Junior Mining Geologist & Shri A K Pany, Assistant Mining Engineer. 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 Abinash Kumar Sahu, MECON Ltd, RM & Mining Section, P.o – Doranda, Ranchi - 834002.

  
(HARKESH MEENA)  
Regional controller of Mines

**SCRUTINY COMMENTS ON REVIEW OF MINING PLAN ALONG WITH PROGRESSIVE MINE CLOSURE  
PLAN OF SUKRANGI CHROMITE MINE OF M/s OMC LTD.**

- General:** Sequence of paragraph and its numbering as per IBM Manual Appraisal Mining Plan 2014 has not been covered in text. All the headings as mentioned in the IBM Manual Appraisal MP 2014 (hereinafter referred as format) should be furnished in all chapters in the text. All the updated information to be furnished.
- All the text, tables and annexures to be properly indexed/ numbered/ paged and signed by qualified person. Correct table reference number to be mentioned at all relevant places. All the certificates/annexures should bear dated signature.
- Para 3.1: The details in tabulated form to be given for approved MP/SOM/RMP etc. Para 3.2: information to be furnished in tabulated form. Para 3.3: Review of proposal to be carried out for last approved entire scheme period. In review of mine development and exploitation, it is to be clearly indicated the proposal of ROM, Ore, Sub-grade etc. and achievement.
- Geology and Exploration:** The term 'subgrade ore' may be replaced with "Mineral Rejects". The term "Low grade Ore" etc. are incorrect and should be replaced with relevant terminology as "Ore" and "Mineral Reject". Need to define "Ore/Saleable Ore" and "Mineral reject" with respect to Cut off grade and threshold value of Chromite and the same should be used at all relevant places. Necessary corrections to be done in text/tables/calculations etc.
- Local Geology:** The summarized information of the chrome bands present within the lease area should be submitted in the following tabular format.

Number of Regional Chrome Ore bands present within the lease area	Name of the Regional Chrome ore Band present within the lease area	Local nomenclature of the Regional Ore band within the lease area	Summarized information of the Chrome ore bands present within the lease area																	
			Location (Quarry Name/Pit) etc.	Length of the Chrome Ore band	Width of Chrome ore band	Explored depth (in mRL)	Level of Exploration as per UNFC of the Chrome Ore Bands	Strike, direction, Dip direction and dip amount	Present UPL (in mRL) for Opencast method of mining	Nature of Chrome Ore band (Physical description)	Chemical analysis of Chrome Ore band	Gangue minerals associated with Chrome ore band	Control of mineralization	Associated Lithology						

- The name of the prospecting agency should be rechecked and corrected. 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, agency involved in exploration etc. have not been furnished in tabular format.
- Page 25: The name of prospecting and exploration agency has not been given for the exploration carried out recently.
- Page 26 & 27: Information on chemical analysis has been given. However, relevant annexure number has not been mentioned in the text.
- Para e(ii): In addition to the information provided, The information of drilled BH to be submitted as per following form:

S.No.	Year	BH Id	Eastin g	Northin g	Collar RL	Inclination	Nature of BH	BH depth	No. of samples	Remark
1			UTM	UTM	mRL					

- Para e (iii): Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established has not been justified. Check analysis of atleast 10% of samples analyzed from third party NABL accredited for assessing the acceptable levels of accuracy have not been justified. Further,

the scope of accreditation of NABL laboratory has not been enclosed and chemical analysis report attached as annexure -17 has not been justified with respect to scope of accreditation.

11. The information of total number of samples generated and collected and number of samples analyzed to be given in the tabulated form. Further, the details in tabulated form for samples analysed form NABL laboratory to be given.
12. Para e(iv): The expenditure information to be detailed and relevant document as a evidence to be enclosed.
13. Under future exploration program, the proposal of exploration furnished seems to be insufficient to explore potentially mineralised/lease area. Further, proposal of exploration to be given in such a manner that ore body to be explored upto a certain mRL at least in G2 level of exploration. Accordingly proposal of exploration to be revised. All the proposed BH to be depicted on the geological sections.
14. Para (J): The section wise calculation of geological resources to be furnished. And out of geological resource, minable resource calculation to be furnished. The details of resource blocked under different statutory barriers to be furnished separately.
15. Resources and Reserves within the lease may be arrived after applying results feasibility/prefeasibility study and economic evaluation of deposit based on various factors such as: a) Mining method, Recovery factor, mining losses, processing loss etc.) Cutoff grade, threshold value, Mineral reject grade & quantity, Ultimate pit depth proposed, Mineral/ ore blocked dues to benches, barriers, pillars, road, railway, river, nala, reservoir, electric line and other statutory barriers etc. under forest, sanctuaries etc. where necessary permissions are not available have not been described.
16. Mineral Resources estimated have not been furnished in the following format

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

17. The boundaries of different level of exploration have not been depicted as per the provision of MEMC Rules 2015. Accordingly necessary modification in relevant tables to be carried out. .
18. Proper justification has not been furnished for Bulk density considered for Ore and Mineral reject part of ROM. Also, Justification of UNFC categories for reserve and resources estimated have not been furnished. Need to do necessary corrections at all places.
19. **Mining:** The extent of the existing quarry mentioned is not matching with the plan. The year wise tentative excavation proposal to be given in the specified table of the format. The chrome grade of the production for ROM, Ore, and MR to be given. Bulk density details of proposed production including waste to be mentioned.
20. Para C: The year wise detail calculation of tentative excavation both in terms of section wise and RL wise showing name of the ore band/quarry, cross sectional area, volume, bulk density considered, tonnage etc. for Ore, Mineral Reject and OB to be furnished in tabular format. further, year wise details of the number of benches to be developed in ore and waste, direction of advancement of faces, bench slope angle and quarry slope, top and bottom mRL, bench geometry etc. to be furnished.
21. Para II: The details of the dump to be re-handled needs to be furnished as per specified table of the format in addition to the purpose of re-handling, extent of re-handling, the grade of the re-handling material etc.
22. Page 49: the coordinates of pit development and waste dumping mentioned in the tables is not matching with the development plan and dump plan respectively. Check and rectify. The quantity of OB dumping to be mentioned in the table. All proposed feature for a particular year to be depicted on to development plan of that particular year including quarry development, waste dumping, proposal of retaining wall and garland drain, extent of development/dumping etc.

23. In Conceptual Mine plan following to be discussed in detail: The quantum total excavation, Total waste generation and its disposal, total quantity Sub-grade generation and its beneficiation/utilization, ultimate extent of the pits, waste dumps and its dimensions, availability of waste material for back filling, the depth/level of backfilling, environment protective measures required, area (pit, waste dump, waste land etc.) available of reclamation & rehabilitation, method of reclamation and rehabilitation, manpower and equipment requirement, Proposal of any expansion, etc. Post mining land use to be given as per standards.
24. **Mine Drainage:** Minimum and maximum depth of water table in the form of mRL based on observations from nearby wells and water bodies to be given in tabulated form indicating quarry name, UPL mRL, Proposed minimum and maximum working mRL during plan period, minimum and maximum water table mRL.
25. It seems that a substantial amount of rain water supposed to be passed from the lease area. Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged. Accordingly, a mine drainage plan to be submitted showing flow direction of the water, pumping arrangement, location final discharge, arrangement of arresting of solid waste etc.
26. Information on annual rain fall, catchments area, and likely quantity of rain water to flow through the lease area, arrangement for arresting solid wash off etc. has not been furnished. The details of water drawn from external source and arrangement of its recycling may be given for domestic and industrial purpose separately. Source of external water to be mentioned, if any. Water balance chart to be submitted.
27. **Stacking of Mineral Reject/Sub-grade and Disposal of Waste:** Briefly describe the nature and quantity of top soil, overburden / waste and Mineral Reject to be disposed off. The table presented on page 59 to be revised as per following format:

Year	Pit	Disposal of Top Soil (CuM)		Disposal of waste		Disposal of Minera reject	
		Re-use/Spreading	Storage	Backfilling	Storage	Blending	Storage

28. It is observed that a fresh area has been proposed for waste dumping. Before bring in the utilization of such area to be proved non-mineralised. The details of the proposed and drilled BH to prove such area as a non-mineralised to be indicate. And the proposed dumping area to be utilized only after competition of exploration programme. Accordingly proposal may be given.
29. The year wise grid reference of prosed waste dumping to be given. An area to be ear marked for stacking/stocking of ore and MR and same to be depicted on relevant plan. The details of prosed protective measures like retaining wall, garland drain, plantation etc. to be furnished as discussed during the field visit.
30. **Processing of ROM and Mineral Reject:** The details of existing processing practice and plant within lease area to be given. Accordingly, entire chapter to be revised.
31. **Others:** Proposed manpower both direct and contractual has to be mentioned in the text. The details of highly skilled, skilled, semi-skilled, un-skilled to be furnished.
32. **Progressive Mine Closure Plan: Para 8.1:** Base line information has not been furnished in detailed. Same to be furnished as discussed during field visit. Updated air, water, noise, ground vibration and soil data analysis from NABL laboratory for at least one year to be enclosed.
33. Para 8.2: Environmental Impact Assessment has not been carried out in detail. Needs to revise and submit as per the format.
34. Para 8.3: The location and schedule of environment monitoring station to be submitted in relevant part of the text. The proposal of retaining wall, garland drain, plantation, settling tank etc. to be furnished as discussed during field visit.

35. Page 78: Information in respect of retaining wall and garland drain, check dam etc. to be furnished in the table under others.
  36. **PLATES (General):** The relevant information of the plan to be highlighted i.e. Geological information to be highlighted in geological plan. Accordingly all the plans to be revised. UPL to be shown in relevant plans with red colour.
  37. Show the true north or the magnetic meridian and the date of the later in all the plans. All plans and sections should comply with the provisions of Rule 32 of MCDR 2017. All plans and sections should be signed with date by Qualified Person. Along with local grid coordinates, UTM grid line should also be provided. Date of survey should be given on plan and sections.
  38. **Key Plan:** The key plan should incorporate all features as mentioned Rule 32 5 (a) of MCDR 2017 like village boundary, tree density and all features should be shown in index as well. Approach road to lease area should be shown in key plan. The Latitude/longitude of the extreme ML pillar coordinates should be marked in key plan. Common boundary leases to be shown.
  39. **Surface Plan:** Few boundary pillars should be correlated with some permanent ground features giving distance and bearing/direction. Nomenclature of the existing waste and mineral reject dumps to be furnished clearly.
  40. **Geological Plan & Section:** All the lithology within and outside the UPL to be shown in the Geological sections. Necessary corrections to be done in all the sections. The index of Geological features should be same in both Geological Plan and all the Geological sections. Longitudinal vertical section to be revised as discussed during field visit.
  41. All proposed and drilled BH to be shown on the geological plan, section and longitudinal vertical section.
  42. **Development plan & Section:** Development section should be drawn on same scale as Geological section and on same section line. Development sections also to be shown in 100m section interval. Proposed and existing bench mRL to be mentioned in sections and plan. UNFC codes should be shown in development sections. Composite development plan and section to be submitted.
  43. **Dump plan & section:** The location of waste dumping could not be assessed from the plan, hence, entire lease area to be shown in index, showing enlarged area of proposed dumping. Year wise dumping to be shown with proposed terrace mRL and different color code. The existing dump to be shown with different code. The index of the dump section should be properly shown showing the year wise buildup proposal. All Geological information to be reflected in development plan and sections
  44. **Environment plan:** The Environment Plan as prepared should be satisfy the provision as laid down rule 32 (5) (b) of MCDR'2017. Air, water and noise monitoring stations to be shown in the plan.
  45. **Reclamation plan:** The plan needs to be revised in view of proposals to be made in PMCP. Existing and proposed features to be shown clearly on the plan. The details of the proposed features to be depicted in tabulated form.
  46. **FA plan:** Financial assurance plan to be revised as discussed during the field. The area degraded due to mining and allied activity to be incorporated in the calculation. The existing and proposed land degrading to be shown clearly and highlighted.
  47. **Annexures:** The copy of all violation letters and its compliance to be submitted.
  48. The copy of all the chemical analysis report to be enclosed. A legible copy of photo id of nominated owner to be submitted.
  49. Copy of from I and J as per MCDR, 2017 to be enclosed for all drilled bore holes.
  50. From copy of incorporation it is observed that the name and style of the company is M/s The Orissa Mining Corporation Limited. However, on cover page and other place of the document name and style of the company is mentioned as Odisha Mining Corporation Limited. Check and rectify.
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