



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. MPM/FM/08-ORI/BHU/2018-19

Date: 10.05.2018

To

Mrs Nirupama Das,
Add General Manager (Geo),
Power of Attorney Holder,
M/s Odisha Mining Corporation Ltd,
OMC House, Bhubaneswar - 751001

Sub: Approval of Modification 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(3) of MCR, 2016.

Ref: - i) Your letter No. 5826/OMC/PMC/18 dated 18.04.2018.
ii) This office letter of even no. dated 23.04.2018.
iii) This office letter of even no. dated 23.04.2018 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 of Modification of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on earlier site inspection carried out on 19.01.2018 by Shri Dayanand Upadhyay, Sr. 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 Modification of Mining Plan along with Progressive Mine Closure 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 CD in a single MS Word file (the drawing/plates 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 Modification 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 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 Mining Plan along with Progressive Mine Closure Plan. It may be noted that no extension of time in this regard will be entertained and the Modification of Mining Plan along with Progressive Mine Closure 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 / yours faithfully,

(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional controller of Mines

Copy for kind information and further necessary action Shri Abinash Kumar Sahu, Manager (Mining),
MECON Ltd, Doranda, Ranchi, Jharkhand-834002.

(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional controller of Mines

Scrutiny comments on the Modification of Review of Mining Plan of Sukrangi Chromite Mines over an area of 382.709 Ha of M/s Odisha Mining Corporation Ltd. situated in Dist. Jajpur, Odisha State.

GENERAL:

- I. As per IBM Manual on Appraisal of Mining Plan 2014, the first letter of submission of Draft Mining Plan to be signed by the Lessee/applicant in their letter head in case lessee is an Individual. In case of Partnership Firm by the Managing partner, in case of Company by the Nominated Owner. Certificates / Undertakings are also to be signed by them. However authorized signatory in case of Companies resolved by the Board of Directors specifically can be accepted provided the copy is certified. However it has been observed that consent letter/ undertaking/ certificate has not been signed by nominated owner.
- II. Modification of Mining plan should be replaced with modification of Review of Mining Plan submitted under rule 17(3) as per Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rule 2016 and it should be refer also in text parts. On cover page Qualified person e-mail, Phone number, Mobile number, PIN code and Fax no. should be furnished.
- III. Lease is going to expire on 31.03.2020, further the status of lease in reference to section 8A of MMDR Amendment Act 2015 has not been furnished in introduction chapter.
- IV. The modification of review of mining plan has submitted for the 2018-19. Since the 01 month has been already lapsed for the year 2018-19 therefore proposal should be prospective in nature.
- V. Page-14, Para-3.3(I), the status of actual exploration carried for the year 2017-18 has not been updated. The information of exploration in Form-I & Form-J as per MCDR 2017 should be furnished in remarks column.
- VI. Page-15, Para-3.3(V), location of waste dump proposed and actual have not been furnished according to proposal of approved scheme of mining.
- VII. Page-15, Para-3.5, violation letter issued by IBM and their compliance report has not been updated.
- VIII. All the annexure to be properly indexed/ numbered/ paged and signed by qualified person. All the certificates should bear dated signature.

GEOLOGY:

- I. Page-21, the structural information like strike, dip, dip-direction etc have not been shown. All these information should be reflected on geological plan and section. Further, Ore zone should be depicted on plan and section based on surface exposure, exploration data and threshold value.
- II. Page-24, the details of exploration carried since inception of mining operation till 2017 to be given in tabulated form i.e. year, BH number, Location (Coordinate), nature of BH (Core/DTH), Depth (max-Min), mineralized/non-mineralized, Inclination etc. The relevant forms for intimation of borehole and borehole logs to be submitted as annexures.
- III. Page-25, number of geological sections considered of reserves/resources estimation may be described in brief. The geological sections have not been drawn boundary to boundary as per guidelines of IBM Manual Appraisal MP 2014.
- IV. Page-26, the proposed bore holes have not been described with core/non-core drilling. All the drilled and proposed BH to be depicted on the Geological section along with mRL and its actual and proposed depth for better referencing. The details of the proposed boreholes have to be furnished in following tabular format.

Year	BH no.	Northing	Easting	Collar RL	Core/ RC/ DTH	Meterage	Inclination	Forest/ Diversified forest/non fores	Surface right/ non surface right	Purpose of bore holes

V. The details of total lease area explored under UNFC have to be furnished in the tabular format provided below.

Total Lease Area: Ha						Remarks/ comments including reasons for not carrying out the exploration as per UNFC norms
Item of Information	Lease area explored as per UNFC norms (in Ha) as on dt.....					
	Total lease area = A+B+C+D+E					
	G1 Level	G2 Level	G3 Level	Explored and found non-mineralized with level of exploration (Remarks)	Un-explored lease area	
	A	B	C	D	E	F
Area as per level of exploration						
No. of BH drilled						
No. of BH considered for Resource						
Meterage drilled						
Grid Interval						
Scale of Mapping						
Reserve estimated after above exploration as on dated:						
Remaining Resource after above exploration as on dated:						
Total Reserve / Resource after above exploration as on dated:.....						

- VI. Proposal of the exploration as furnished is inadequate to explore entire area under G1 level of exploration. As per rule 12(4) MCDR, 2017 the entire potentially mineralized area should be under G1 level of exploration. Accordingly proposal of the exploration may be revised. Further proposal of exploration should also be furnished at regular grid interval to prove the non-mineralised area.
- VII. The level of exploration is not depicted on plan, same to depicted as per M(EMC) Rule 2015. The area explored under G1/G2/G3 level under UNFC should be clearly marked on plan. Further the geological section has not depicted with UNFC code 111, 122, 211 etc.
- VIII. The raw input data used for block modeling with survey, collar, assay, no. of bore holes data imported etc should be described. Bore holes display according assay value, generated solid model, block model and block model after applying solid model should be sequence.
- IX. Page-35, the mineral reject generated during mining operation is considered under 211 category is not correct. Further the mineable reserve as depicted on page-36 in not matched with mineable reserve as depicted on previous page.
- X. Reserve and resources is not estimated as per M(EMC) Rule 2015. The depth of the reserve estimation should be upto the direct evidence of the mineralization as indicated in M(EMC) Rule 2015. Accordingly reserve/resources estimation to be revised.
- XI. Section wise resource estimation calculation to be given chrome band wise along average grade etc. Further, ore blocked due to UPL, road, river nallah, electric line and other statutory barriers etc to be given separately.
- XII. A longitudinal vertical section as per MCDR, 2017 needs to be submitted showing different level of exploration and level of intersection of proposed BH. Proposal of exploration to be given in such a manner that entire Ore Body may be explored up to certain level. The assay plan should also be furnished.
- XIII. Proposal of the exploration as furnished is inadequate to explore entire area under G1 level of exploration. As per rule 12(4) MCDR, 2017 the entire potentially mineralized area should be under G1 level of exploration. Accordingly proposal of the exploration may be revised. Further proposal of exploration should also be furnished at regular grid interval to prove the non-mineralised area.
- XIV. 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.

- XV. As per guideline of "IBM manual on appraisal of Mining Plan 2014" at least 10% of total samples to be analyzed in accordance to BIS and reports form NABL accredited/Government Laboratory. Accordingly, the proposal should be given under future exploration programme.
- XVI. Reporting of Mineral Resources in the format prescribed in Part IV-A of Minerals (Evidence of Mineral Contents) Rules, 2015.

MINING:

- I. In present submission the proposed ROM production is 2.3 times more than production proposed in earlier approved scheme of mining. It may be justified.
- II. Page-38, para(b), Insitu tentative excavation, average grade of Cr₂O₃ has not been furnished in table. In summary of yearwise excavation the gradewise bulk density considered should be furnished.
- III. Page-39, proposed method of mining, the table has not been furnished with top mRL, cross section considered etc.
- IV. The excavation details given in the table presented on the page 39 to be supported with detail backup section wise calculation.
- V. 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.
- VI. The detail statement of the existing extent of mechanization along with additional requirement or proposed fleet of machineries to be given in tabulated form.
- VII. Page-42, the sub grade considered 10-30% cr₂O₃ while in text it is mentioned 10-40% Cr₂O₃. It should be rectified.
- VIII. Quantum of production and development may be described with no. of benches, mRL, depth of excavation, direction of advance, location and cross-section considered.
- IX. Bench mRL as shown in development plan should be re-checked with development section.
- X. Conceptual mining plan, cumulative waste generation and top soil generation and protective measures have not been furnished considering the life of mine As per IBM Manual Appraisal MP-2014.
- XI. Ultimate pit limit should be depicted on all relevant plans & sections.

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

- I. The analysis report of serpentine and nickeliferous limonite should be submitted and discussed for their future use on the basis of their physical and chemical properties.
- II. Existing waste dumps may describe with its location along with mRL in text. The top mRL of all above to be depicted clearly on plans.
- III. Details Existing and proposed retaining wall, garland drain, settling tank etc. to be given with their location in terms of length, width and height year wise.
- IV. Further, Build-up of dumps from year to year to be mentioned in text w.r.t. designed capacity of dumps, bottom and top mRL of individual terrace, dump slope, individual terrace height and slope with description of method & manner of disposal of waste should be mentioned.

MINE DRAINAGE

A mine drainage plan to be submitted showing flow direction of the water, location final discharge, arrange of arresting of solid waste etc. Treatment of mine water for hexavalent chromium an Effluent treatment plant should be proposed and described with its capacity and accumulation of water in pit considering water table encountered and average rain fall along with flowchart diagram.

Chapter- "Other":

An organizational chart has not been furnished. Proposed manpower both direct and contractual has to be mentioned in the text.

PROGRESSIVE MINE CLOSURE PLAN

- I. Page-75, the area under existing infrastructure considered 41.8 ha while at the end of plan period it is considered only 6.735 ha. It may be clarified.
- II. Page-75, the amount of financial assurance calculated is not as per rule 27(1) of MCDR-2017. It should be re-calculate and submit accordingly.
- III. Year wise plantation covering number of saplings to be planted, location and area covered may be furnished.
- IV. Updated air, water, noise, ground vibration and soil data with analysis from laboratory done at specified periodicity for last one year to be enclosed.
- V. 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 (General):

- I. The plans and sections submitted do not bear the certificate that --the plans and sections are prepared based on the lease map authenticated by the state government.
- II. All plans and sections shall show a scale of the plan at least twenty five centimeters long and suitably subdivided. All plans & sections prepared shall follow the conventions mentioned under MMR 1961.
- III. Approach road to be shown in key plan. Wind direction may show through wind rose diagram in key plan and environmental plan.
- IV. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager and Mining Geologist.
- V. Magnetic Meridian and date of observation of should be given on all relevant plans.
- VI. Existing and proposed bench mRL to be mentioned in the all plans and sections.
- VII. Safety Zone not shown between A- E Pillar in every plan. There are not need to unnecessary showing khasra plot in every plan, as drawings becomes clumsy.
- VIII. DGPS plan has not been submitted.

Surface Plan:

- I. Surface plan does not match with lease plan. Surface plan needs to be updated and all the drilled BH to be shown.
- II. Few pillars may be correlated with some permanent ground features giving distance and direction. Different land use may be shown with colour codes.
- III. Information of boundary pillars in UTM coordinates as well as in Latitude and longitude of all ML boundary points should be depicted in tabulated form on surface plan. Further, the nomenclature of the grid to be given both the side of the grid.
- IV. Forest & Non forest area, Surface right acquired area etc. should be marked clearly.

Geological Plan & Section:

- I. Data related to strike, dip, dip-direction etc. shown on the geological plans are not clearly shown.
- II. In the Geological Plan UNFC boundaries, explored area, unexplored area, forest area, non-forest area, forest diverted area, drilled boreholes and year wise proposed boreholes in relevant colors to be shown.
- III. The proposed boreholes to be plotted in dotted lines in Geological sections along with Collar Id, RL and proposed closing depth at the bottom of the borehole.
- IV. The index of Geological features should be same in both Geological Plan and Geological sections. Some of the index is missing. It is to be checked.
- V. Geological sections should be drawn boundary to boundary.
- VI. In Geological plan, the contour to be shown over the area wherever it is missed out.

Development plan & Section:

- I. Geological information has not been shown in sections. Position of OB dumps and mineral rejects to shown in sections.
- II. The index should be same in both development Plan and sections. Some of the index is missing. It is to be checked.
- III. Grid as marked in development sections to be shown in plan..
- IV. Existing position of waste dump and proposed dump height is to be marked with mRL.
- V. Yearwise wise progress of waste dump may show clearly with different colour.

Environment plan:

- I. The Environment Plan as prepared should be satisfy the provision as laid down rule 32(5) (b) of MCDR2017.
- II. Surface features of adjacent mine has not been shown in core and buffer zone.
- III. 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.
- IV. Settling ponds are not shown properly. Contours should be shown in core zone.

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.

Reclamation Plan:

Year wise progress of dumping, stacks, afforestation using different colour codes for easy understanding may be shown.

Conceptual plan:

Conceptual sections have not been given. Both transverse and longitudinal sections should be given. 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.
