



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/12-ORI/BHU/2020-21

Date: 17.08.2020

सेवामे

Shri Vivek Gupta, Director (RM&L) & Nominated Owner,
M/s Steel Authority of India Ltd,
Ispat Bhawan, Lodhi Road,
New Delhi-110003

विषय: Approval of modification of Review of Mining Plan of Bolani Iron Ore Mine along with Progressive Mine Closure Plan (PMCP), over an area of 1321.45 ha in Keonjhar district of Odisha State, submitted by M/s Steel Authority of India Ltd under Rule 17(3) of MCR, 2016.

संदर्भ: - i) Your letter No. SAIL/DRML/2020-21/1432 dated 02.07.2020 received on 27.07.2020.
ii) This office letter of even no. dated 27.07.2020.
iii) This office letter of even no. dated 27.07.2020 addressed to the Director of Mines, Govt. of Odisha, copy endorsed to you.

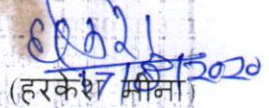
महोदय,

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 based on earlier site inspection carried out on 08.03.2020 by Shri S R Mazumdar, 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 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.

भवदीयः


(हरकेश मिश्रा)

क्षेत्रीय खान नियंत्रक

प्रतिलिपि सादर सूचनार्थ और आवश्यक कार्रवाई हेतु Ms Sujata Suman, Center for Engineering & Technology, M/s Steel Authority of India Ltd, 4th Floor, RDCIS Lab Building, Po-Doranda, Ranchi-834002.

(हरकेश मीना)

क्षेत्रीय खान नियंत्रक

Scrutiny comments on examination of Modification of Review of Mining Plan with PMCP of Bolani Ore Mines over an area of 1321.45 Ha in Keonjhar District of Odisha State of M/s SAIL

GENERAL POINTS:

1. Sequence of paragraph, tabular formats etc. and its numbering as per IBM Manual Appraisal MP 2014 has not been covered in text.
2. All the text, tables and annexures have not been properly indexed/ numbered/ paged and signed by qualified person. List of annexures along with page numbers, list of plates etc. have not been submitted in the respective volumes of annexure and plates. The content of the cover page is not as per format specified in the IBM appraisal of MP 2014. Necessary to do necessary corrections.
3. In page no.4-8, the reason for modification in detail w.r.t dump mining for excavation of old dump fines, sale of dump fines/subgrade fines, fresh fines, proposal for pelletization etc. in line with the orders issued from Ministry of Mines, Govt of India, Department of Steel & Mines, Govt of Odisha and subsequent directives issued in minutes of meeting held in state government from time to time in chronological order describing quantity of sale of such material, period of sale etc. along with statutory clearances required for the same/or in place have not been described in detail. The directives for modification of the mining plan etc. have not been mentioned. Need to do necessary corrections.
4. In page 10, under para 1 (a), in address, the email ids, phone no and fax no of the lease holder have not been mentioned.
5. In page 13-15, the DGPS surveyed lease boundary coordinates should be mentioned. Need to do necessary corrections.
6. In Para 3.1. details to be furnished in following tabulated format since execution of mining lease.

Sl. No	Mining Plan / Review of Mining Plan etc.	Area (in Ha)	Submitted under Rule	Approval Letter No. & Date	Period of proposal

7. In Para 3.3. the review for the period 2015-16 to 2019-20 has not been furnished along with reason for deviation. Need to furnish the same.
8. In Para 3.6, Reason for modification with all justification has not been mentioned. Need to furnish the same.

Geology and Exploration

9. In the table in page 38, the lease area explored and resources estimated as on date.... has not been mentioned. In Remarks column, proposal submitted for covering G1 level of exploration over entire lease area has not been furnished. Need to do necessary corrections.
10. In para I, the reference of rule 12 (3) need not be mentioned. The proposal should be submitted under rule 12(4) of MCDR 2017. Need to do necessary corrections.
11. In page 21, the table showing status of exploration under UNFC should be recalculated as per Part II point no.4 of MEMC Rules 2015. The justification for area considered for G1/G2/G3 etc. should be given w.r.t MEMC rules 2015. Revised UNFC boundaries have to be drawn. Necessary corrections to be done at all relevant places of the document (text and in plates).
12. The future exploration program to be revised incorporating the followings.
 - a) 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 ore zone in depth those qualifying for delineation of G1/G2 area.
 - b) As per MEMC Rules 2015, check analysis of at least 10% of samples may be analyzed from third party NABL accredited/or department of science & technology (DST) / BIS recognized laboratories or government laboratories for assessing the acceptable levels of accuracy. Accordingly, the proposal should be given under future exploration program.
13. In page 70, in parameters considered for resource/reserve estimation, the parameters mentioned in IBM appraisal of mining Plan 2014 have not been considered. Cutoff grade of ROM and mineral reject/subgrade grade has not been specified. Product cutoff grade as mentioned is incorrect. Bulk density of ore, mineral reject and waste from NABL accredited laboratory should be furnished. Ultimate pit depth proposed, recovery factor with justification have not been furnished. Need to do necessary corrections.
14. Reserves and resources have not been estimated as per the provision of MEMC Rules, 2015. The method of estimation has not been mentioned and described. Reserve and resources up to the threshold value should be estimated. Reserves and Resources between threshold value and Cut of grade and above cutoff grade under different UNFC codes have not been furnished in table in page 86

along with detail calculation. Reserves and resources have not been furnished in the format given in IBM appraisal of mining Plan 2014. Need to do necessary corrections.

MINING

15. Under Chapter 2 (A), the brief description of the existing as well as proposed method for excavation with all design parameters indicating on plans /sections have not been mentioned that includes ROM production per annum, separate description of drilling, blasting, loading and hauling etc. The description of the existing Waste dumps/Mineral Reject dump/ fines or lump stocks in the following table to be furnished.

Existing Waste Dumps:

Sl. No	Area	Waste dump nomenclature	Location in UTM coordinates	Length (max) in m	Breadth (max) in m	Area occupied		Volume	Quantity in (Tonnes)	Grade
						(m ²)	(ha)			

Existing Mineral Reject Dumps:

Sl. No	Area	Mineral Reject dump nomenclature	Location in UTM coordinates	Length (max) in m	Breadth (max) in m	Area occupied		Volume	Quantity in (Tonnes)	Grade
						(m ²)	(ha)			

Existing stocks of lump/fines:

Sl. No	Area	Size of lump/fines	Location in UTM coordinates	Quantity (MT)	Grade (Fe%)

Existing stack of old dump fines with reference of joint inspection report

Sl. No	Name of the dump	Location in UTM coordinates	Type of Ore	Volume in cubic meter	Tonnage Factor	Quantity (in tones)

16. In many places in the text the grade of old fines dump has been mentioned supported with chemical analysis report from NABL accredited laboratory. How this grade is justified when it has been clearly mentioned in the orders/minutes of meetings from Govt. that there exists multiple grades fines whose quality/grade cannot be ascertain at this point of time and further grade of old dump fines has not been furnished in the joint inspection report as well. Need to do necessary corrections.
17. In page no 91-41; the table showing insitu tentative excavation figs should be furnished in both Cubic meter and in tones in separate tables. The insitu excavation figures have not been furnished in the format specified in IBM appraisal of Mining plan 2014. The stripping ratio has not been furnished. Need to do necessary corrections.
18. In the table in page 86, there is no quantity of mineral reject estimated under reserve category of 111, 121 & 122 but insitu excavation proposal the quantity of mineral reject generation has been estimated, which is incorrect and should be justified. Further, the recovery of ore and mineral reject part of ROM has not been justified. The stripping ratio figures are significantly different in different years and in different tables. Need to recheck and correct the stripping ratio. Need to do necessary corrections.
19. The excavation proposal should be given in the following format separately for each year.

Particular for the year:.....	
Bench Geometry	Height (in m)
	Width (in m)
	Individual bench slope angle
Road Design	Gradient of Haul Road
	Ramp gradient
	Berm Height
Quarry Development	Location of Development
	Sections considered for development
	Benches considered for development with RL
	Length of proposed benches (in m)
	Direction of advancement
	Dimension of the quarry at the end of the year including existing benches
	Overall quarry slope angle
Production of Saleable ore (in MT)	

	Generation of Mineral rejects ore from quarry (in MT)	
	Production of ROM (Ore +Mineral Reject) in MT	
	Total Generation of waste (in MT)	

20. The year wise stacking of subgrade ROM has not been explained and justified. Need to do necessary corrections.
21. Section wise and RI wise year wise calculation of excavation proposal of Ore, Mineral reject and Waste (OB/SB/IB) have not been furnished showing section number, RL considered, cross-sectional area, length of influence, volume, Bulk density and tonnage and recovery factor. Necessary calculation should be shown in tabular format.
22. Dump re-handling (for the purpose of recovery of mineral) should be submitted in format specified in IBM Appraisal of MP 2014. Mining of old dump fines has not been explained scientifically w.r.t bench height, width, equipment with their capacity etc. proposed for deployment for excavation etc. with year wise target production quantity, while meeting the purpose and requirement of dump mining within the approved orders from Central and State Government, statutory approvals required or in place, directives given in minutes of meetings held at state government etc., for mining of old dump fines, sale of subgrade material to domestic end user or for pelletisation with quantity specification as per existing approvals and directives from central and state government. Further, it's not clarified whether it's considered as part of ROM or not. Hence, the total ROM quantity should be mentioned accordingly. The protective measures required for dump mining, protection of environment etc. has not been described. Need to do necessary corrections.
23. Sectional method of calculation of old dump fines quantity for excavation for dump mining supported with plans and sections have not been submitted. Need to do necessary corrections.
24. The sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc. has not been mentioned. The information on proving the area for barrenness (devoid of ore through exploration) and outside the UPL should be properly described. The area wise existing and proposed waste dump, its name/nomenclature and locations in UTM coordinates should be furnished in tabular format. Proper justification should be given for requirement of new waste dumping sites along with site specific justification for the new waste dump locations selected and proposed for dumping at all the locations. Justifications should be supported with plans and sections.
25. The existing mineral reject dump and the proposed mineral reject dump with their location, capacity, storage etc should be furnished in tabulated format. Proper justification should be given for requirement of new mineral reject dumps along with site specific justification for the new mineral reject dump selected and proposed for dumping of mineral reject at all the locations.
26. The unit of measurement (cum/tones) should be clearly mentioned for dump waste quantity and should clearly specify dumping to take place either in existing waste dump or in proposed new waste dump. All the figs have to be rechecked and corrected.

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

27. The proposed dumping ground within the lease area be proved for absence of mineral and be outside the UPL. The area proposed for overburden dumping shall be proved for its non-mineralization through exploration. Accordingly, the priority of drilling has to be proposed so that the area is proved to be barren before overburden dumping. The same should also be described under the paragraph. Necessary modification to be done in the text accordingly.
28. Waste dumping proposal should be modified as per the format specified below. The year wise buildup of dump should be described.

Year	Total waste to generation (in m3)	Dump No	New Proposed dump or existing old dump	Location of disposal with UTM coordinates	Average height of the dump (in m)	Area to be dumped (in m2)	RL up to which dumping to be done	No of terrace	Terrace height	Slope of the terrace

29. No wet processing should be proposed as the slime dam is situated outside the lease area. No slime quantity should be furnished neither its proposal for slime handling should be mentioned in the modification submitted. There should not be any proposal outside the mining lease area. Need to do necessary corrections at all related places in the document.
30. The content of Chapter 5- USE OF MINERAL AND MINERAL REJECT and Chapter 6 PROCESSING OF ROM AND MINERAL REJECT of "IBM appraisal of mining plan 2014" has not been addressed properly. The dry processing of ROM in current situation when wet processing is not in place has not been addressed. Further, in "use of mineral" chapter, the use of fines for pelletisation has not been

described in line with orders issued for the same from Ministry of Mines, Govt of India and Department of Steel & Mines, Govt of Odisha etc. The Quality parameters of iron ore fines and lumps required by captive steel plants/ pellet industry etc. have not been justified with signed copies of quality specification from end use industry. Need to do necessary corrections.

ANNEXURES

- i) Form I and Form J of boreholes as per MCDR 2017 have not been submitted.
- ii) All the orders from Ministry of Mines, State Government and Minutes of Meeting held at state government regarding sale of subgrade mineral from old dump fines, sale of fresh fines, pelletization of fines etc. as referred in orders submitted in annexure, period of approval for such sale and quantity etc. have not been submitted. Need to submit all relevant orders as annexure to the document.
- iii) All the annexures as mentioned in the list of annexures have not been submitted. Need to submit all annexures.
- iv) Copies of analysis report from NABL accredited laboratory has not been furnished.
- v) Valid copies of bank guarantee should be submitted.
- vi) Copies of Statutory clearances

PLATES (General):

- i) Show a scale of the plan at least twenty-five centimeters long and suitably sub-divided;
- ii) The conventions provided under the Metalliferous Mines Regulations, 1961, shall be used in preparing all plans and sections
- iii) All plans and sections should comply with the provisions of Rule 32 of MCDR 2017.
- iv) 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.
- v) All plans and sections should be signed with date by Qualified Person.
- vi) Along with local grid coordinates, UTM coordinates should also be provided in the grid lines and latitude/longitude coordinates should be mentioned adjacent to boundary pillars in all plans and sections.
- vii) The UPL has to be redrawn based on provision of UNFC boundaries as per MEMC Rules 2015 and should be shown in red color in all relevant plans and sections.
- viii) The proposed bench mRL to be mentioned in the all plans and sections.
- ix) Date of survey should be given on plan and sections and the same should be signed by with date.
- x) Grid Lines to be shown in all sections - Geological Sections, Development Sections, Conceptual sections, Dump sections etc.
- xi) The lithology should be shown in all relevant sections.
- xii) Date of observation of Magnetic meridian should be shown in all plans.

Key Plan:

- i) The key plan should incorporate all features as mentioned Rule 32 5 (a) of MCDR 2017 and all features should be shown in index as well.
- ii) Approach road to lease area should be shown in key plan.
- iii) The Latitude/longitude of the extreme ML pillar coordinates should be marked in key plan.

Surface Plan:

- i) UTM coordinates to be mentioned along with local coordinates along the grid lines.
- ii) The features shown in the index is not distinguishably shown in the plan. Diverted forest area to be shown in the plan as well as marked in the index of the map. The UPL should be shown over the plan and in index. Necessary corrections to be done.
- iii) Few boundary pillars should be correlated with some permanent ground features giving distance and bearing/direction.
- iv) Nomenclature of the existing waste and mineral reject dumps along with fines stack, Old dump fines etc. should be mentioned.

Geological Plan & Section:

- i) In the Geological plan, the UTM coordinates should be mentioned along with local coordinates along the grid lines.
- ii) Geological Plan should be updated with revised boreholes proposal as mentioned under future exploration program.

- iii) The redefined UNFC boundaries and UPL along with UNFC code should be prominently shown in Geological Plan and sections.
- iv) All the lithology within and outside the UPL to be shown in the Geological sections. Necessary corrections to be done in all the sections.
- v) Geological sections should be revised. Particularly the resources/reserves should not be projected in the section if it is not proved through borehole. Necessary corrections to be done in Geological sections, calculations, text, tables etc.
- vi) The proposed boreholes to be plotted in dotted lines in Geological sections along with proposed borehole number, RL and proposed closing depth at the bottom of the borehole. The year wise proposal for drilling to be shown in different contrasting color in both Geological Plan and Geological sections. The year wise color of the boreholes proposed in Geological plan should match with the plotted proposed boreholes in Geological sections.
- vii) The index of Geological features should be same in both Geological Plan and all the Geological sections.
- viii) In Geological Plan, longitudinal section line to be shown and a longitudinal section to be submitted.
- ix) The color of the UPL should be same in all plans and sections. In the Geological sections, the revised UPL and benches should be drawn properly.
- x) The blank area shown in geological sections above UPL should be filled with relevant lithogy.

Development plan & Section:

- i) Quarry name, existing and proposed waste dump, mineral reject dumps etc. to be shown in the development plans and sections.
- ii) The lithology of the area should be clearly shown in year wise development plan and sections in the area proposed for development.
- iii) Each year development proposal for different blocks should be shown separately in different color. The UPL may be redefined and benching pattern to be made in all development plans and sections. The UPL should be shown in Red color which should contrast to the year wise development proposal color shown in development plan and sections.
- iv) The RL of the benches should be clearly shown in year wise development plan and sections.
- v) The profile of development sections should match with the contour of the respective plans.
- vi) In the development sections the blank portion within the UPL should be properly defined with lithology. Necessary corrections to be done at all relevant places.
- vii) UNFC codes should be shown in development sections.


Old Dump Mining: Plan and sections showing section no etc. have not been submitted.

Dump plan & section:

- i) Separate dump plan and sections should be submitted showing the year wise buildup of dump along the section with RL. The index of the dump section should be properly shown showing the year wise buildup proposal.
- ii) The grid coordinates should be shown in the X-axis of the dump sections.

Environment plan:

- i) The Environment Plan as prepared should be satisfy the provision as laid down rule 32 (5) (b) of MCDR'2017.
- ii) The proposed environment protective measures to be shown in environment plan. The drainage pattern of the lease area also to be shown on the plan.
- iii) Air, water and noise monitoring stations to be shown in the plan.


 (Sudip Ranjan Mazumdar)
 Senior Mining Geologist