



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. RMP/A/20-ORI/BHU/2019-20

Date: 24.10.2019

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 Review of Mining Plan of Bolani Iron & Mn Mine along with Progressive Mine Closure Plan (PMCP), over an area of 1586.36 ha in Keonjhar district of Odisha State, submitted by M/s Steel Authority of India Ltd under Rule 17 of MCR, 2016.

- संदर्भ: - i) Your letter No. SAIL/DRMI/2019-20/250 dated 13.09.2019 received on 30.09.2019.  
ii) This office letter of even no. dated 30.09.2019.  
iii) This office letter of even no. dated 30.09.2019 addressed to Director of Mines, Government of Odisha copy endorsed to you.

महोदय,

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 carried out on 21.10.2019 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 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.

भवदीय,  
24/10/19  
(हरकेश मीना)  
क्षेत्रीय खान नियंत्रक

Copy for kind information and further necessary action to Shri K S Sawarni, Shri Ravi Ranjan, Center for Engineering & Technology, M/s Steel Authority of India Ltd, 4<sup>th</sup> Floor, RDCIS Lab Building, Po-Doranda, Ranchi-834002.

(हरकेश मीना)

क्षेत्रीय खान नियंत्रक

DPA

**Scrutiny comment on Review of Mining Plan including PMCP of Bolani Manganese and Iron Mine of M/s Steel Authority of India Limited over an area of 1586.36 Ha in Keonjhar district of Odisha**

**GENERAL:**

1. Sequence of paragraph, formats and its numbering as per IBM Manual Appraisal MP 2014 has not been covered in text. All the headings, formats as mentioned in the IBM Manual Appraisal MP 2014 should be furnished in all chapters in the text.
2. The mine is non-working and the supplementary lease deed over an area of 1586.36 Ha extended has not been executed. Therefore subsistence of validity of lease along with relevant documents should be submitted.
3. DGPS surveyed lease map over 1586.36 Ha certified by competent authority of state government should be submitted.
4. The date of expiry of 2<sup>nd</sup> RML and expiry of lease period as per Mineral (Mining by Government Company) rules, 2015 should be rechecked and corrected.
5. All the proposal for processing, beneficiation, loading, disposal of tailings etc. generated from adjacent lease of 5.1 sq. miles should not be the part of the mining plan of 6.9 sq. mile lease and should be omitted. Need to do necessary correction at all places in the document.
6. In para 1 (a), the name and address for correspondence of nominated owner with contact details such as telephone no, fax no, email id etc. have not been furnished along with information submitted. Need to submit the same.
7. All the categories/grade of Ore above cutoff grade should be termed as "Ore" and between threshold value and cutoff grade as "Mineral Reject". The term "subgrade" should be replaced by "mineral rejects". Necessary corrections to be done at all places in text, table and plates.
8. The tables have not been numbered and index of list of tables have not been furnished.
9. The information furnished under Para 3 should be in Para 3(1). In Para 3.1, the date of approved mining plan/review of mining plan should be given in tabulated format.

Sl. No	Mining Plan / Review of Mining Plan etc.	Submitted Under (Rule Reference)	Approval Letter No. & Date	Period	Valid up to

10. In Para 3.3, review of earlier approved proposal in respect of exploration, excavation, reclamation, environment etc. furnished is incorrect. Further, review have not been given year wise from 2015-16 to 2019-20 (up to Sep'2019) along with reason for deviation. Need to do necessary corrections.

**PART-A: (1). GEOLOGY AND EXPLORATION:**

11. As discussed during field inspection, the lease area explored under different category of UNFC norms is incorrect and should be recalculated as per the provision of Part II point no.4 and part III of Minerals (Evidence of Mineral Contents) Rules, 2015 (MEMC Rules, 21015). The area considered under G4 level of exploration is incorrect to the extent that only the area identified having enhanced mineral potential through geophysical prospecting should only be considered under G4 category of UNFC per the provision of MEMC Rules, 2015. The justification for area considered for G1/G2/G3/G4 etc. have not been furnished as per the provision of MEMC Rules'2015. Necessary corrections to be done at all relevant places of the document and resource estimation.
12. The refence of stratigraphy under regional geology has not been mentioned. The younging direction of the stratigraphy has not been shown with arrow mark. The stratigraphy under local geology should be rechecked as basement not mentioned and also the younging direction of the stratigraphy has not been shown with arrow mark.
13. The information of already drilled BH to be submitted as per following format:



**Existing Waste Dumps/Mineral reject dumps/stacks:**

Name of the waste dump/ mineral reject dump	Location (Grid)		Top RL (in m)	Bottom RL (in m)	No of terrace	Area Occupied (in Ha)
	Northing	Easting				

23. Details of existing fines stacks indicating its location (in UTM coordinate), quantity etc. should be furnished in tabulated format.
24. Justification of equipment should be based on maximum excavation quantity to be handled in five year excavation proposal. Information of existing and proposed machineries with capacity should be proposed. Necessary correction in the calculation need to be done.
25. In Para 2.A (b) (1), the total of in-situ excavation figs have not been furnished in the format specified in IBM appraisal of MP 2014 both in cum and in tones in separate table.
26. The proposed production planning for next five years from "334" UNFC category of geological resources is incorrect as production planning should be from estimated reserves under 111, 121 & 122 category of UNFC only. Further, the areas above the UPL should not be shown as blank and should be filled with relevant lithology. Lithology should be shown in development plan and sections. Need to do necessary correction at all relevant places.
27. The detail Section wise, RL wise re-calculation of excavation of OB/IB/waste, Ore, Mineral reject to be furnished by cross sectional method over redefined geological section, UPL after complying scrutiny point no. 10 & 26 etc. to be done along with others. Need to do necessary correction and update at relevant places.
28. Year wise development and production plan should be furnished in the following tabulated format.

Particular for the year...		
Bench Geometry	Height (in m)	
	Width (in m)	
	Individual bench slope angle	
Quarry Development	Location (Quarry Name)	
	Extent of Development (in UTM coordinate)	
	Sections considered for development	
	Number of benches	
	Benches considered for development with RL	
	Top RL	
	Bottom RL	
	Direction of advancement	
	Dimension of the quarry at the end of the year including existing benches	
	Area occupied (in sq. m)	
	Overall quarry slope angle	
	Production of 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 cum)		

**3. MINE DRAINAGE:**

29. In para 3 (b), the max and min depth of working should be given in following tabulated format.

Name of the Quarry	At the end of plan period (mRL)		At the end of conceptual period (mRL)	
	Top	Bottom	Top	Bottom

#### 4.0 STACKING OF MINERAL REJECT /SUB GRADE MATERIAL AND DISPOSAL OF WASTE

30. The details of existing fines stack and waste dumps should be rechecked and corrected.
31. Justification of proposed waste dumping sites w.r.t to status of exploration, non-mineralization and outside the UPL have not been furnished. Dump plan and sections should be modified to the extent that sub surface lithology has not been shown.
32. Proposal for beneficiation in the adjacent lease area of 5.1 sq. miles is not permissible. Hence, proposal may be modified accordingly.
33. The proposal for dumping may be given in tabulated format as shown below: 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. The method of waste dumping should be in retreating manner. The year wise buildup of dump should be described.

Year	Waste to be dumped (in m3)	Dump No	Location of dumping (coordinates)	Proposed area (m2)	Proposed dumping mRL.	No of terrace proposed.	Individual Terrace height	Slope of the terrace

34. Existing as well as proposed protective measures like retaining wall, garland drain, check dams etc., should be furnished in tabular format with details of location, length, dimensions etc., a separate table should be given showing the year wise construction of retaining wall, garland drain and settling tank having specific proposal. Details of year wise proposal for construction of retaining wall, garland drain, settling tank etc. to be given with their location. Proposal for protective measures have not been submitted around mineral reject dumps and waste dumps.
35. The mineral should be exhausted before start of backfilling. Necessary proposal should be submitted, The proposal for backfilling should be justified through plans and sections showing sub surface lithology, BH logs etc. Need to do necessary corrections.

#### PROCESSING OF ROM AND MINERAL REJECTS:

36. A material balance chart with a flow sheet or schematic diagram of the processing procedure indicating feed, product, recovery, and its grade at each stage of proposed processing within the lease area only should be furnished. The processing facilities limited within the lease area should be described only. The tailings generated due to washing at adjacent ML of 5.1 sq. miles or 1321.45 Ha should not be disposed within the lease area of 6.9 sq. miles or 1586.36 Ha. Need to modify processing proposal accordingly in all relevant text part of the document.
37. Information furnished in Para 6 (d) is not relevant to the context and therefore should be omitted. Need to do necessary correction.

#### OTHERS:

38. Information in respect to the existing and proposed manpower right from management level to unskilled labor both on role and contractual has to be mentioned separately in the text.

#### PROGRESSIVE MINE CLOSURE PLAN:

39. The air, water and noise monitoring stations and their frequency of monitoring have not been furnished in tabulated format. All water discharge points from lease area to external should be monitored. Accordingly, monitoring proposal to be submitted. Further, Gap plantation along the safety zone should be furnished.
40. All the paragraphs should be addressed in detail under PMCP chapter as per IBM Manual Appraisal MP 2014. The present land use pattern should be furnished as per the format of FA table of different heads.

41. In FA table the different heads should be kept as per the format specified in IBM manual appraisal 2014. The area under different heads of FA table should be properly shown in different hatching with present area and additional area in FA plan.
42. In para 8.6, the consideration of 9.624 Ha area as fully reclaimed and rehabilitated is incorrect and should be part of net area considered for FA calculation. Accordingly financial assurance should be recalculated as per provision of rule 27 of MCDR 2017. The required amount of valid bank guarantee should be submitted. Need to do necessary corrections.

**PLATES (GENERAL):**

1. Magnetic Meridian and date of observation should be given on all relevant plans. Date of survey should be given on all plans and sections and signature should bear date of signature. All plans & sections prepared should follow the conventions mentioned under MMR 1961. All plans and sections shall show a scale a scale of the plan at least twenty five centimeters long and suitably subdivided. 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. The index should be kept same in all the plans and sections.
2. All plans and sections to be submitted in UTM grid. The orientation of plans and sections as per UTM North should be rechecked and corrected.
3. **KEY PLAN:** The key plan should incorporate all features as mentioned Rule 32 5 (a) of MCDR 2017. The approach road to the lease area, 5 Km boundary and wind rose diagram etc. has not been shown.
4. Lease plan, DGPS surveyed lease map over 1586.36 Ha certified by competent authority of state government should be submitted.
5. **SURFACE PLAN:**
  - (i) Forest, Non-forest and surface right area to be shown in surface plan. The Surface Plan should be prepared to satisfy the provision as laid down rule 32 (1) (a) of MCDR'2017.
  - (ii) The DGPS surveyed latitude-longitude and UTM coordinates of all the boundary pillars have not been furnished in tabulated format. The plan should be updated based on the recent survey. Nomenclature of waste dumps and mineral reject dumps have not been shown.
  - (iii) The features within the lease area should only be shown in surface plan. Extension of waste dump, fines stack outside the lease area should be removed. Nomenclature of dumps are not legible.
6. **GEOLOGICAL PLAN & SECTION:**
  - (i) Part Geological plan and sections to be shown in 1: 2000 scale. The lithology of the unexplored lease area should be rechecked and corrected. Potentially mineralized area should be marked over geological plan. Revised borehole proposal should be shown after complying scrutiny point no 13. Need to do necessary correction.
  - (ii) Cross section lines with nomenclature have not been shown on the geological plan. The Geological Plan should be prepared to satisfy the provision as laid down rule 32 (1) (b), (c) and (d) of MCDR'2017
  - (iii) Scientific correlation of geological section has not been done as per the provision of MEMC, Rules 2015. In Geological plan and sections, the areas shown as blank should be filled with relevant lithology. UNFC codes, UPL should be shown in Geological sections.
7. **DEVELOPMENT PLAN & SECTION:**
  - (i) Development plan and sections should be revised based on updated geological map and sections. Existing and proposed OB an mineral rejects dumps should be shown. The nomenclature of the dumps should be done.
  - (ii) Index of the UPL shown in plan and section and those shown in index is different.
  - (iii) The proposed and existing bench mRL to be shown clearly over year wise development plan and sections.

- (iv) Geological information (lithology) has not been furnished on the area proposed for development in year wise development plan and sections. Plan and section should be drawn on same scale on 1: 2000.
- (v) Existing and proposed protective measures and plantation should be shown in different colors around all waste dumps and mineral reject dumps. Index of safety zone boundary and surface right area should have distinct color.
- (vi) Year-wise development plan and section should be separately submitted on same scale. Color index of the year wise proposal should be modified as discussed in during field inspection.

**8. DUMP PLAN AND SECTION**

- (i) Dump plan and sections should be modified to the extent that sub surface lithology has not been shown. Dumping proposal should be outside the UPL and in barren area. Section showing reclamation of mined out pit through backfilling should be submitted with due justification of exhaust of minerals.

**9. ENVIRONMENT PLAN:**

The environment plan has not been prepared as per the provision laid down in rule 32 (5) (b) of MCDR'2017. Adjacent lease boundaries within 500m of lease boundary have not been shown.

**10. RECLAMATION PLAN:**

Existing and proposed protective measures and plantation should be shown in different colors along all waste dumps and mineral reject dumps. Backfilling proposal should be shown clearly. Index of safety zone boundary and surface right area should have distinct color.

**11. FINANCIAL ASSURANCE AREA PLAN:**

The area degraded due to mining and allied activity and waste dump sites to be considered in FA calculation. The existing area and additional area under different heads should be shown properly under different colored hatching.

**ANNEXURES:**

1. Few photographs showing Land use of the lease area, environmental status of the area have not been furnished.
2. Chemical analysis report from govt Laboratory or third party NABL laboratory should be submitted certifying the grade of existing waste dump and mineral stacks as furnished in page no 79 & 80. Identity and address proof of lessee should be furnished.
3. Details of Qualified person like experience and qualification as per provision of rule 15 of MCR 2016 should be furnished.
4. Copy of quality of air, water, soil, noise and other environmental a parameters monitoring report of the last year should be enclosed.
5. All the annexure to be properly numbered/paged and relevant annexure to be signed by qualified person etc. It is observed that many of the annexures are not legible. A legible copy of same to be enclosed. The details of all the BH to be annexed year wise BH wise. The lithology of the borehole logs should match with the lithology shown in Geological sections.
6. Copy of valid bank guarantee has not been enclosed.
7. Few photographs showing Land use of the lease area, environmental status of the area have not been enclosed.
8. Copies of Form J and Form K of all drilled boreholes have not been submitted.
9. The chemical analysis results of borehole samples from NABL accredited laboratory have not been submitted.
10. NABL accreditation certificate of the laboratory has not been furnished.
11. Indexing of borehole logs with page numbers have not been done in sequence

(Sudip Ranjan Mazumdar)  
Senior Mining Geologist