



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/17-ORI/BHU/2017-18

Date: 10.10.2017

To

✓ Shri Pankaj Kumar Satija, General Manager,  
M/s Tata Steel Ltd,  
Nuamundi, Singbhum West,  
Jharkhand- 833217

Sub: Approval of Review of Mining Plan of Khondbondh Iron & Manganese Mine along with Progressive Mine Closure Plan (PMCP), over an area of 978.00 ha in Keonjhar district of Odisha State, submitted by M/s Tata Steel Ltd under Rule 17 of MCR, 2016.

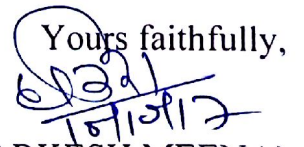
Ref: - i) Your letter No. GM/PL/589/84/17 dated 20.09.2017.  
ii) This office letter of even no. dated 27.09.2017.  
iii) This office letter of even no. dated 27.09.2017 addressed to Director of Mines, Government of Odisha copy endorsed to you.

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 earlier site inspection dated 19.07.2017 by Shri Ramkishan R, 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 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

Scrutiny comments in respect of Review of Mining Plan of Khondbond  
Iron & Manganese Mines of M/s Tata Steel Ltd in district Keonjhar of  
Odisha

Text:

GENERAL

1. In Introduction chapter execution of lease deed details right from the starting to its present should be elaborated. The details regarding EC, CTO and other statutory clearances obtained should also be furnished.
2. The e-mail, phone & fax no. of lessee may furnish on cover page.
3. The document titled should also include the progressive mine closure plan under 23 of MCDR'2017 besides to modification of mining plan under rule 17 of MCR 2016.
4. All annexures & chapters should be properly indexed.
5. In the deviation of all proposed year wise programmes given during last review of mining plan of mining production figure is given for ore and sub grade separately. ROM column should be added by adding ore and sub grade as ROM production. In exploration meterage drilled is deviated so justification may be given for the same.
6. Photographs regarding achievement in afforestation, dump handling etc. should be annexed.
7. The mine is captive or non-captive should be furnished with relevant documents in introduction.
8. Sequence of para as per IBM Manual appraisal MP 2014 has not been covered in text. All the headings and tables as mentioned in the IBM Manual appraisal MP 2014 should be furnished in all chapters in the text.
9. Summary of proposal at a glance may be furnished before "Introduction" chapter covering Exploration, Excavation, Area Utilization, Stacking, Environmental Protective Measures etc."
10. The DGPS coordinates of the lease area should be furnished.
11. The extent and nature of surface right being held by the Lessee to carry out various mining activities be indicated with documentary evidence. The details regarding the forest area permission obtained and applied for diversion may be furnished.
12. "Mineral Conservation and Development Rules 1988" to be replaced with "Mineral Conservation and Development Rules 2017" in the content of

different parts of the text. The reference quoted at MCDR 1988 may be replaced with relevant rules under MCDR, 2017.

### **GEOLOGY AND RESERVE**

13. Final presentation of estimation of reserves / resources by cross section area method or 3d ore body modelling should be clarified. In the estimation of cross section area method area of cross section and area of influence may be mentioned.
14. The details like potentially mineralized area for iron and manganese 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 in accordance with MEMC 2015 rules.
15. Reporting of Mineral Resources in the format prescribed in Part IV-A of Minerals (Evidence of Mineral Contents) Rules, 2015 to be submitted. Recovery factor while estimating the iron ore reserves/ resources from mineralised zone should be dealt with.
16. The potential mineralised area and non-mineralised area is divided without any proper exploration of the entire lease area. So mineralised for both iron and manganese and non-mineralised area should be divided based on the current level of exploration only and area should be furnished with justification of level of exploration. The explored areas with mineralisation, non-mineralisation and unexplored areas should be categorised in to forest rest and non-forest areas and other areas which should also be reflected in relevant plan and sections.
17. The UNFC boundaries as per the present status of exploration under MEMC rules 2015 may be demarcated over the Geological Plan and Sections.
18. In the Geological sections, the UPL and benches should be drawn properly. The UNFC boundary/code may be shown properly. A summary of exploration conducted in the lease area as per UNFC norms should be furnished in the following table. Total mineralised area with forest and non-forest type of land should also be furnished.

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

19. The depth of the proposed boreholes should be adequate enough to justify the lateral and depth extension of the ore zone along and across the section lines up to the end of mineralization considering the geology and nature of ore deposit.
20. The proposal for future exploration program should be furnished in tabular format so that the entire mining lease area should be explored under G1/G2 level of exploration indicating proposed borehole number, section line, coordinates, proposed depth, inclination, year of drilling etc. accordingly the proposal of future exploration programme may be modified.
21. The type of deposit for iron and manganese as per MEMC 2015 rules may be clearly defined like bedded, regular, irregular deposit etc. the strike and dip parameters should be mentioned in the text and relevant plans and sections should be drawn accordingly
22. As per guideline of "IBM manual on appraisal of Mining Plan 2014" at least 10% of total samples to be analysed in accordance to BIS and reports form

NABL accredited/Government Laboratory. Accordingly, the proposal should be given under future exploration programme.

### MINING

23. The proposed and actual development carried out of different pits, quarries for iron and manganese during last five year period should be furnished with information on benches, grid location, mRL etc. In the draft mining review of mining plan submitted names of the pits and quarries are different so correlate the same with justifying the reason.
24. The grade of saleable ore and subgrade ore for iron and manganese ore should be clearly defined and ROM should be of saleable ore plus subgrade ore, so accordingly production tables should be modified.
25. Stripping ratio may be furnished in t/cu.m format.
26. It is proposed to use Pi-7 for storing of slime generated from benefaction plant. So justification may be given with exhaustion of ore body in Pit-7 with showing in relevant plans sections with mRL so that it has reached its UPL. Similarly it for pit-2 also.
27. It is proposed to use OZ-XII for backfilling So justification may be given with exhaustion of ore body in OZ-XII with showing in relevant plans sections with mRL so that it has reached its UPL.
28. It is proposed to use existing pit-Q for water harvesting. So justification may be given with exhaustion of ore body in pit-Q with showing in relevant plans sections with mRL so that it has reached its UPL.
29. Ultimate pit depth is to be mentioned in all the working areas. Grid location of proposed working areas to be given for the proposed period.
30. Quantum of production and development may be described year wise with no. of benches, mRL, depth of excavation, direction of advancement, location and cross-section area considered for both Iron and Manganese ore. The mRL at the end of each review of mining plan period should be mentioned in a tabular format for every pit area proposed with dimensions and no of benches with height and width and grid location for both iron and manganese ore.
31. ROM production of iron ore is proposed to increase from 8 MTPA to 12 MTPA so undertaking should be given so that necessary statutory clearances will be taken to produce the said quantities.
32. The procedure of generated lumps and fines after processing should be dealt in detail like their dispatch and stacking. Protective measures around stacked materials should be furnished. Present quantity of stacked material with its location and stacking parameters should also be furnished for lumps and fines.

33. Geological Section wise of proposed ROM excavation quantity in for very year should be provided. Sections may be equally spaced so that the entire area proposed for excavation may cover.
34. The new beneficiation plant proposed and in progress over the area should be clarified whether it is over mineralised area or non-mineralised area.

#### **Mine Drainage**

35. Considering the proposed waste and subgrade dump mine drainage should be reviewed considering the flow of water.
36. The existing requirement of water for mine operations and processing may be elaborated with quantities.
37. Recovery mentioned during sorting of Manganese ore may be properly justified.

#### **HANDLING OF MINERALS REJECT/ SUB-GRADE AND DISPOSAL OF WASTE**

38. The tables as per IBM Manual appraisal MP 2014 should be furnished.
39. Information on mineralisation or non-mineralisation proved in the underlying area of all the proposed and existing dumps should be furnished.
40. The sub grade mineral for iron ore is mentioned as 50-58 Fe% in page no 90 which may be corrected.
41. Details furnished in table 4.1a in page 90 and 4.2 in page no 93 are not matching. Correct the same. Similar tables should also be furnished for manages ore.
42. Present and 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, grid location and slope with description of method & manner of disposal of waste should be mentioned. Nature of dumps whether temporary or permanent should also be mentioned.
43. Adequate provision for Garland drain, retaining wall and other protective measures as required should be given keeping in view of the proposed dumps to prevent wash-off of material. The given proposals are may not be sufficient so review the same.
44. Undertaking should be given regarding the re-handling of temporary dumps proposed.
45. Processes adopted for upgrading ROM in page no 108 may be furnished.
- #### **PROCESING OF ROM AND MINERAL REJECT**
46. Engineering design details of slime dam proposed to be constructed should be furnished.

### **PROGRESSIVE MINE CLOSURE PLAN**

47. Land use pattern of additional land requirement during review of mining plan period may be provided year wise.
48. Reclamation was not proposed during the review of mining plan period so proper justification may be given.
49. Proposal for reclamation and rehabilitation measures should be furnished considering the proposed area. Area afforestation in Ha is not furnished.
50. It is stated that pit-7, part of pit-2, pit-q and OZ-XII are exhausted of mineral deposit so appropriate reclamation and measures may be proposed.

### **OTHERS**

51. Existing and future employment may be elaborated like mine manager, mining engineer, geologist, skilled and semi- skilled etc.,
52. An organizational chart has to be provided for risk assessment study to whom communication to be made in case of any accident.

### **FINANCIAL ASSURANCE**

53. The area calculated for FA needs to be reviewed once and DWG file needs to be submitted.
54. Financial assurance submitted should be co-terminus with the review of mining plan period. i.e. 2022-23. But the present submitted FA is valid till 31.03.2018.

### **55. FEASIBILITY STUDY REPORT**

56. Feasibility study report should be enclosed considering the Capital cost, Cash-flow forecast, Investment cost, Inflation forecast, Operating cost, Sensitivity studies, RR, IRR, NPV for the project life,

#### **Plates:-**

##### **General:**

57. The extent lease area of the mine should be mentioned in the name plate of all plan and sections. All plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager, Mining Engineer and Mining Geologist as per provisions of MCDR, 2017 and MMR, 1961. All plans & sections prepared should follow the conventions mentioned under MMR 1961.
58. All plans and sections should show a scale a scale of the plan at least twenty five centimeters long and suitably subdivided. True and magnetic north should be depicted in all plans with date and variation.

59. 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.

60. Date of survey should be given on all plans and sections and signature should bear date of signature.

**Surface Plan:**

61. Surface right area should be shown on surface plan. Power transmission lines to be shown in the plan. All boundary pillars coordinate in UTM, Latitude and longitude to be shown in tabulated form on surface plan. Few pillars may be correlated with some permanent ground feature giving distance and direction.

62. Surface plan needs to be updated and all the drilled BH to be shown. Year wise proposed boreholes in relevant colours.

**Geological Plan & Section:**

63. In the Geological Plan and sections UNFC boundaries, UNFC codes, explored area, unexplored area, mineralised area, non-mineralised area should be divided in forest, non forest areas and forest diverted area, drilled boreholes till date and year wise proposed boreholes in relevant colours and legends to be shown.

64. 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.

65. A separate plan called UNFC plan showing the Lease area, Forest-Non-forest and Diverted Forest boundary, UNFC boundaries, Surface right area, explored area, unexplored area, mineralized and non-mineralized area, UPL, already drilled boreholes in black color and year wise proposed boreholes in relevant colors to be submitted.

66. All the already drilled boreholes to be shown in all the relevant plans (Geological Plan, Surface plan, UNFC plan etc) and Geological sections. The year wise proposal for drilling to be shown in different contrasting colour in both plans (Geological Plan, Surface plan, UNFC plan etc) and Geological sections. The year wise colour of the boreholes proposed in Geological plan should match with the plotted proposed boreholes in Geological sections.

67. Data related to strike, dip, dip-direction etc. shown on the geological plans are inadequate. Some more data may be shown to understand the geology of the area.



68. The index of the Geological plan and sections to be revised indicating the index for year wise drilling proposal, mineralized and non-mineralized boundary.

**Development plan and Sections**

69. Development is proposed in pit-7 but development plan & sections not provided. So may be furnished.

70. Each year development proposal for different blocks should be shown separately in different colour. Composite development plan and section to be submitted.

71. The sections may be equally spaced according to the excavation area so that the sections will cover the entire excavation area proposed.

**Dump plan**

72. Dump plan and sections may be provided showing the existing and proposed dumps during review period with all design parameters.

**Conceptual plan**

73. The sub grade dumps and waste dumps at the conceptual stage should be clearly marked with legend / name on the conceptual plan & sections.

**Environment plan**

74. 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.

75. The Environment Plan as prepared should be satisfy the provision as laid down rule 32(5) (b) of MCDR, 2017.

76. The particulars with regard to items (ii), (iv) and (v) of Rule 32(5) (b) should be applicable only up to sixty meters beyond the boundary of lease area. The same should be demarcated in Environment plan.

**Reclamation plan**

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

**ENCLOSURE:**

78. Proper indexing of annexures needs to be done.