



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/07-ORI/BHU/2020-21

Date: 09.07.2020

सेवामे

Shri T V Narendran,
Managing Director & Nominated Owner,
M/s Tata Steel Ltd,
At/P.o- Jamsedpur,
Dist – East Singbhum,
Jharkhand – 831001

विषय: Approval of Review of Mining Plan of Tringipahar Iron & Mn. Mine along with Progressive Mine Closure Plan (PMCP), over an area of 643.710 ha in Keonjhar district of Odisha State, submitted by M/s Tata Steel Ltd under Rule 17 of MCR, 2016.

- संदर्भ: - i) Your letter No. MGM/P&E/422/20 dated 12.06.2020 received on 22.06.2020.
ii) This office letter of even no. dated 22.06.2020.
iii) This office letter of even no. dated 22.06.2020 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 08.07.2020 by Shri G. C. Sethi, Deputy Controller of Mines 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,
(हरकेश सीना) 2020
क्षेत्रीय खान नियंत्रक

Copy for kind information and further necessary action to Shri Sabyasachi Mishra, M/s Tata Steel Ltd, At/PO- Bichakundi, Dist- Keonjhar , Odisha-758034.

(हरकेश मीना)

क्षेत्रीय खान नियंत्रक

SCRUTINY COMMENTS ON EXAMINATION OF REVIEW OF MINING PLAN & PROGRESSIVE MINE CLOSURE PLAN FOR TIRINGPAHAR IRON & MANGANESE MINE OF M/S TATA STEEL LTD., OVER AN EXTENT OF 643.710 HECTARES, LOCATED IN GURUDA, PALASA(KHA), KHANDABANDH & JARIBAHAL VILLAGES, UNDER CHAMPUA SUB-DIVISION OF KEONJHAR DISTRICT OF ODISHA STATE, SUBMITTED UNDER RULE 17(2) OF MCR, 2016 AND & 23 OF MCDR, 2017

1. The sequence of paragraph and its numbering as per IBM Manual Appraisal MP 2014 has not been covered in text. All the headings as mentioned in the IBM Manual Appraisal MP 2014 should be furnished in all chapters in the text.
2. All the annexure, text and tables in the text have not been properly nomenclature/indexed/ numbered/ paged and signed by qualified person. For example, the reference of annexure no.36 as mentioned in the text does not match with the corresponding annexure in list of annexure. Need to do the necessary corrections at all relevant places.
3. Content of the cover page is not as per the format specified in IBM appraisal of Mining Plan 2014. For example under the name of mine, reference of supplementary lease deed is mentioned which is incorrect, with reference to total lease area, the area in forest is not mentioned, period and expiry date of lease is not mentioned etc. Need to do all necessary corrections.
4. As per rule 31 (4) of MCDR 2017, plans and sections have not been updated on quarterly basis, as in current draft submission, the plans and sections have been submitted based on survey dated 01.01.2020. Need to do submit plans and sections based on survey as on 01.04.2020. All the tables where figures have been furnished as on 01.01.2020 needs to be recalculated and updated with figures as on 01.04.2020. Need to do necessary corrections at all relevant places in the text and plates annexures and in Mine feasibility report.
5. In the Introduction chapter and in mine feasibility report, only the current status of all existing statutory clearances should be mentioned. For example in page 6, under status of environmental clearances, the second and third paragraph is not relevant and should be omitted from all places in the document.. Need to do necessary corrections at all relevant place.
6. In Page 10, the period/expiry date of lease is incorrect should be rechecked and corrected. Need to do necessary corrections at all relevant places.
7. In Para 2(b), the details of the entire lease area over 643.71 Ha need in a separate table along with already furnished information. Need to do necessary corrections.
8. In table 2.2, the DGPS surveyed UTM coordinates of the lease pillars have not been furnished along with latitude and longitude of lease pillars. It is not mentioned whether the coordinates of the corners of the lease boundary pillars furnished is for the area intended to retain or original lease area. Need to furnish the same.
9. In the Environment clearance, it is mentioned that EC has been granted for the Manganese ore production of 85000 tones. It is not mentioned that EC has been granted for only ore production of 85000 tones above 25% Mn. As per Gazette notification dated 25th April 2018 for threshold value of minerals, the threshold value of Manganese is Mn 10% (min). So in view of threshold value of mineral for Mn and also as per format specified in IBM manual of 2014, the mineral reject / subgrade part is also part of ROM production. So Total ROM Proposal for Mn and Iron ore includes Ore and Mineral reject/subgrade respectively. Need to furnish the review of last five year production proposal accordingly i.e. 2015-16 to 2019-20 and also proposing production proposal for next five years i.e. 2020-21 to 2024-25. Need to do necessary corrections at all places in the document.
10. In Para 3.3, the review of entire financial year 2019-20 have not been done. The review the compliance of exploration proposal for 2019-20 need to be furnished. Further, the block wise proposal for exploration and actual compliance has not been mentioned. Need to do recheck and make necessary corrections at all relevant places. In the review of ROM Production, ore and mineral reject/subgrade have not been furnished separately with reason for deviations, if any. Production considered only production of saleable ore is incorrect. Compliance of all PMCP proposals including reclamation has not been furnished. Block wise reclamation proposal and its compliance have not been submitted. In table 3.6, land use pattern as on 01.04.2020 have not been furnished. Need to do necessary corrections.

Part A: Geology and Exploration:

11. In para 1(c), Local geology of the lease area need to be discussed and younging direction of lithological sequence need to be furnished. Need to do necessary corrections.
12. The details of already drilled boreholes need to be furnished in the following tabulated format.

Year of drilling	Borehole No	Coordinates		Borehole Collar RL	Bottom Lithology	Closing Depth (in meter)
		Northing	Easting			

13. The details of sample analysis of boreholes drilled during the period 2015-16 to 2019-20 need to be furnished along with already furnished information. Details of sample collected and analyzed, justifying 10% of check sample analysis from third party NABL accredited laboratory need to be furnished in tabulated format. Need to do necessary corrections.
14. Para 1 (f), 1 (g) and 1 (h) have not been described in details as per IBM Appraisal of Mining Plan 2014. Need to do necessary corrections.
15. In table 1.5, the lease area of Guruda block explored under G1, G2, G3 and G4 have not been justified as per Exploration Norms for different types of deposits mentioned in Part III of MEMC Rules, 2015. Further, it is observed that area under G3 and G4 may be converted under unexplored area. Further, exploration status of Tiringpahar Block and Joruri Block has not been furnished in separate table. The exploration status of the lease area of all the blocks as on 01.04.2020 has not been furnished. Need to do necessary corrections.
16. In Para 1 (i), under future exploration program, the paragraph "most of the manganese ore bodies.....carrying out exploration" need to be omitted. The future exploration program should be modified as per following points.
 - a) New boreholes have not been proposed where the existing boreholes have been terminated prematurely in ore zone (i.e. above 10% Mn or above 45% Fe respectively) to intersect entire thickness of ore body at depth and to close the boreholes in waste zone. Need to propose new boreholes in such locations.
 - b) As on 01.04.2020, the intended to retain lease area of 464 Ha is not fully explored under G2 level of exploration and therefore full demarcation of potentially mineralized and non-mineralized area is not available. As per Rule 12 (4) of MCDR 2017, G1 level of exploration over potentially mineralized area under the mining lease has to be completed by 2021-22. Therefore G1 level of exploration need to be proposed over entire area proposed to be retained in Guruda block in grid pattern as per exploration norms specified for minerals in Part III of MEMC Rules, 2015 to be completed by 2021-22 except those area already explored in G1 level. Any such above area after completion of G2 level of exploration as per UNFC in grid pattern if found fully non-mineralized (i.e. boreholes samples having Mn% and Fe% less than threshold value declared by IBM), then such potentially non-mineralized area may not be proved further for G1 level of exploration. However, if the analysis of such boreholes samples has Mn and Fe value above threshold value for minerals declared by IBM than such area should be proved for G1 level of exploration as per proposal. Need to modify the exploration proposal accordingly.
 - c) The depth of the proposed boreholes should be justified considering the occurrence of ore body at depth both along and across the section lines.

The details of the proposed boreholes may be furnished in following tabulated format.

Block Name	Year of drilling	Section No	Proposed BH no	Core / RC/ DTH	North ing	Easti ng	Coll ar RL	Boreh ole Inclina tion	Propos ed Depth	Forest area/ Non forest area/ diverted forest area	Area having surface right/ non-surface right area

17. In Para 1 (j), the boreholes considered for reserve/resource estimation has not been mentioned also not justifying whether all the boreholes drilled till 2019-20 have been considered for resource estimation or not. The Ultimate pit depth proposed is not defined etc. Need to do necessary corrections.
18. Mineral resources and reserves have not been estimated based of survey of mine face position dated 01.04.2020. Need to justify the ultimate pit limit proposed and reserves and resources should be reestimated as per the provision of MEMC Rules, 2015.
19. Thereafter, information in table 1.4a and table 1.4b should be recalculated and combined in a separate table showing resources having grade more than 10% Mn. Similarly, information in table 1.4c and 1.4d should be combined showing resources having grade more than 45% Fe. Apart from Guruda block, resources in all other blocks i.e. Tiringpahar and Joruri blocks have not been show. Total reserve and resource of entire lease are of 643.71 Ha have not been furnished. Need to do necessary corrections.
20. The reserves and resources should be calculated based on 01.04.2020 instead of updating the same. Calculation of reserves and resources of iron and manganese ore under various categories of UNFC separately for ore and mineral reject grade have not been submitted for all the three blocks namely Guruda, Joruri and Tiringpahar block. UPL have not been drawn properly. UPL have not been drawn properly. Refer geological sections and eliminate the sudden spikes in UPL and necessary modifications to be done. The benching pattern is not proper at places. UPL may be modified considering the statutory barriers etc. as applicable. In the table 1.10 a and 1.10b, the reserves and resources of ore and mineral reject along with grade under various categories of UNFC have not

been furnished as on 01.04.2020. Need to do necessary corrections and furnish the required information as mentioned.

Part B: Mining

21. In Para 4 (a), nature of waste and mineral reject describing the lithology have not been mentioned. Need to furnish the same.
22. In page 53, the statement "grade wise conversion factor...." mentioned is not justified with supporting documents. Need to submit the supporting document.
23. As mentioned in page 53, the mineral reject fines are generated during manual processing of ROM. Therefore, recovery of ore and mineral reject part of ROM should only be considered. In the test report in annexure 33, the grade of lump (+6mm to -75 mm) and Mineral reject (-6mm) is not mentioned. Need to do necessary corrections. In table 2.3 and table 2.4, the recovery factor of ore and mineral reject part of ROM should be considered accordingly. Need to do necessary corrections.
24. In table 2.6, 4.3 etc. there is some calculation error in calculation of average grade for Mn Ore, Mn Ore Mineral reject and Mn Ore ROM. The same should be rechecked and corrected.
25. In page 60, the paragraph in which it is mentioned that during the plan period the recovery may reduce from 85% to 40 % is not correct as therefore the statement should be omitted. Further, the reference of annexure no 36 as report for recovery is incorrect and should be corrected with correct annexure reference no at all relevant places in the document.
26. In page 60, under para c, the content of paragraph related to EC is not relevant and should be omitted. Need to omit the same from all relevant places in the document.
27. In Para 2. A (e), the sites for disposal of overburden/waste have not been mentioned. It is not described whether the existing and the proposed waste dumping sites are outside or within ultimate pit limit. The proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL. Need to describe in detail.

Mine Feasibility Report:

- a) In the mine feasibility report submitted, the details of the items such as Geology (structure, size, shape, Mineral content, grade, density, reserve/resource quantity and quality, Geology of area, detailed exploration, closed spaced drilling, ore body modeling, bulk samples for beneficiation, geotechnical and ground water & surface waters studies) and Mining (Mining plan, mine recoveries and efficiencies, equipment selection, manpower requirement.) have not been described in detail along with others. Further, it has been mentioned in under Infrastructure in paragraph labour supply and skill that there is no increase in production which is incorrect as proposal has been submitted for production enhancement. Need to do necessary corrections at all relevant places.
 - b) In table, the average vale of manganese ore between grade 10-25% Mn has not been considered. Need to do necessary corrections and justify the same.
 - c) In para 2, the production schedule is furnished for only saleable ore whereas production for ROM has not been considered including mineral reject grade. Need to correct and justify the same.
 - d) In table 1, the recovery of different grade of manganese ore is not mentioned. It is not justified how the year wise production quantity of different grade of ore has been arrived in table 5. Need to furnish the recovery (%) of different grade of Manganese ore supported by time series data of previous five years. Need to do necessary corrections.
 - e) It has been proposed in chapter 4 and also at relevant places that mineral reject/subgrade between grade 10% to 25% Mn will be stacked and only saleable ore having +25% Mn is considered for production and use. Once mineral reject/subgrade is stacked, the year wise production of mineral rejects from 90% of saleable ore production (Mn: >25%) is not justified. Is this is mineral reject quantity or any other grade of ore? Need to do necessary corrections in all related tables and in calculations.
 - f) In the market sensitivity study why the revenue generation from mineral rejects have not been considered when the quantity is considered as part of saleable ore production. Had it been considered the IRR would be much more? Need to recalculate IRR and do necessary corrections at all relevant places.
28. In the use of mineral chapter, Grade specification of Mn ore for production of silico-manganese alloy mentioned is 32-40% Mn. In the table 2.6, the average ROM grade of Mn (including Ore and Mineral reject) during the year 2020-21, 2021-22 and 2022-23 is 34.44%, 35.69% and 33.04 % Mn respectively which is above the cutoff grade. In view of having end use of mineral reject part of ROM, the stacking of mineral reject is not justified. The total ROM quantity (including Ore and Mineral reject) have not been considered for usage. From mineral conservation point of

view, the stacking of mineral reject part of ROM is thus not justified and should be considered for processing/production. Need to do relevant changes in development plan and sections, production scheduling etc. at all related places (text, tables) in the document. Need to do relevant changes in development plan and sections, production scheduling etc. at all related places (text, tables) in the document for consumption of all grade of ore above the cutoff grade determined by lessee. Need to do necessary corrections.

29. **3. Mine drainage:**

30. In Para 3 (b), the max and min depth of working both current and proposed pits should be given in following tabulated format.

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

4. Stacking of mineral reject /sub grade material and disposal of waste:

31. In Para 4 (a), the location of storage of top soil, mineral reject Mn ore and Mineral reject Iron Ore and also the location of site for disposal of overburden/waste has not been mentioned. In table no. 4.5, the total quantity of mineral reject of Mn ore proposed for storage does not match with the total mineral reject generation. Need to do necessary corrections.

32. In Para 4 (b), the location of proposed and existing waste dumping sites have not been mentioned. It is not mentioned whether the waste dumping sites are outside or within ultimate pit limit. The paragraph is not addressed /described as per the content mentioned in IBM appraisal of mining plan 2014. Need to do necessary corrections.

5. Use of Mineral and Mineral Reject

33. In para 5(a), necessary supporting documents justifying the change in ore specification of ferro alloy plant has not been furnished.

6. Processing of ROM and Mineral Rejects

34. In Para 6(a), the proposed year of mechanized processing of Manganese ore has not been mentioned. The specified product recovery has not been addressed in the recovery of ore and mineral reject production and its subsequent handling. The details of beneficiation study furnished along with tentative flow sheet have not been supported by authenticate test reports. Need to furnish the same.

35. In Para 6(b), the processing procedure showing the recovery of chemical grade, High grade, Medium grade, Low grade, subgrade etc. as mentioned in mine feasibility report based on supporting evidences have not been furnished. Need to furnish necessary details in material balance chart with supporting evidences.

36. In page 121, it is mentioned that it is proposed to start wet beneficiation method but details of such proposed wet beneficiation has not been furnished such as year wise processing / beneficiation of the ROM or Mineral Reject, nature of processing / beneficiation. There is no indication of size and grade of feed material and concentrate (finished marketable product), recovery etc. Need to do necessary correction.

8. Progressive Mine Closure Plan

37. The compliance of PMCP proposal i.e. planed vs. actual for the period 2015-16 to 2019-20 should be shown under para 3.3 only. Need to do necessary corrections with reason for deviation, if any.

38. In table 8.13, the break-up of areas in the Mining Lease for calculation of Financial Assurance is not as per the heads mentioned in the format specified in IBM manual for appraisal of MP 2014. The area put on use at the start of plan period should be as on 01.04.2020.

39. All the tables where figures have been furnished as on 01.01.2020 needs to be updated with figures as on 01.04.2020. Need to do necessary corrections at all relevant places in the text and plates.

40. The copies of valid bank guarantees till 31.03.2025 need to be submitted. The details of bank guarantee submitted should be furnished in the following tabulated format.

Sl. No	Bank Guarantee No	Issuing Bank	Bank Guarantee Amount	Validity of Bank Guarantee

The extent of area put to use in different counts during the ensuing review of mining plan period should be rechecked and financial assurance may also be computed accordingly

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. As per rule 31 (4) of MCDR 2017, plans and sections have not been updated on quarterly basis. The plans and sections have been submitted based on survey dated 01.01.2020. Need to do submit plans and sections based on survey as on 01.04.2020. Need to do necessary corrections.
3. Refer Annexure-31: Permission has been granted to prepare surface plan and geological plan in a scale of 1:5000 with condition that part surface plan and part geological plan should be prepared in a scale of 1: 1000. In view of above condition, part surface plan and part geological plan and part geological section of the area intend to retain need to be submitted in scale of 1: 1000. Need to do necessary corrections.
4. The color index of surface right area shown in legend does not match with color shown in plan. Need to do necessary corrections.
5. UPL need to be shown in Geological plan and sections, development plan and sections, dump plan and sections and all relevant plans and sections. Need to recheck and correct.
6. **Surface Plan:** The Surface Plan should be prepared to satisfy the provision as laid down rule 32 (1) (a) of MCDR'2017. The DGPS surveyed latitude-longitude and UTM coordinates of all the boundary pillars are not legible. Need to do necessary corrections.

7. Geological Plan & Section:

- (i) Geological Plan and Sections over entire lease area of 643 Ha prepared on natural scale from boundary to boundary have not been submitted.
- (ii) Geological Plan and sections of Guruda, Tiringpahar and Joruri block in 1:1000 scale have not been submitted. Need to submit the same.
- (iii) The Geological Plan should be prepared to satisfy the provision as laid down rule 32 (1) (b), (c) and (d) of MCDR'2017
- (iv) In surface geological plan (DWG 6A), demarcation of area explored under G1, G2, G3, G4, potentially mineral area, UPL is not clear/legible as it is very sketchy. Need to simplify the hatching patterns so that the demarcation is clear. Having submitted no justification of G3 and G4 area, it may be converted to unexplored area. Exploration status of area applied for surrender has not been shown. Need to do necessary corrections.
- (v) The index of iron ore (+58% Fe) and Mineral reject iron ore (45-58% Fe) need to rechecked and corrected. Similarly, for Mn ore+25% Mn and 10-25% Mn. The zone of ore and mineral reject is not distinctly different. Need to do necessary corrections.
- (vi) The area proposed to retain and area proposed to be surrendered be demarcated in Geological plan and sections. The colour of proposed boreholes and already drilled borehole is not distinctly different. Need to do necessary corrections.

8. Development plan & Section:

- (i) Development plan and sections should be revised based on updated geological map and sections as on 01.04.2020.
- (ii) Development plan and section have not been submitted in 1:1000 scale. Need to do necessary corrections.
- (iii) Backfilling should be proposed over non-mineralized area. Hence, sub-surface lithology has not been shown in the sections proposed for back-filling. Need to do necessary corrections.
- (iv) The proposed and existing bench mRL to be shown clearly over year wise development plan and sections.
- (v) In case of development along the common boundary, geological information (lithology, boreholes etc.) have not been furnished in development plan and sections in both sides of common boundary. Need to do necessary corrections.
- (vi) 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.
- (vii) Year-wise development plan and section should be separately submitted on same scale.

9. Environment plan:

The environment plan has not been prepared as per the provision laid down in rule 32 (5) (b) of MCDR'2017. The contours within 60m of lease boundary have not been shown as per rules. Need to do necessary corrections.

10. **Reclamation plan:**

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

11. **Financial Assurance Plan:**

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

ANNEXURES:

1. The indexing of Form-K with page no. need to be done and its list should be enclosed in the annexure for tracing of borehole logs.
2. Relevant document as annexure to the statement made in page 22 that "online application in Form C has been submitted for exploration in forest land" has not been submitted. Need to submit the same.
3. Few photographs showing Land use of the lease area of all three blocks, environmental status of the area need to be submitted.
4. Copies of valid bank guarantees need to be submitted.

Semaqedan
09/12/2020
(Sudip Ranjan Mazumdar)
Senior Mining Geologist

Alw
09.07.2020
(G.C.Sethi)
Deputy Controller of Mines