

Discrepancies observed in the Modification in the Approved Mining Plan of Wadegaon Manganese Mine (Area-2.49 Hect.) of Shri Shakeel Ahmed Aqueel Hussain, located in Tehsil Ramtek, Distt. Nagpur (Maharashtra), submitted under Rule 17(3) of MCR, 2016 jointly inspected by the undersigned on 09/05/2017

Field Observations:

1. Boundary Pillars need to be erected as per CCOM Cir. 2/2010 (addendum).
2. Working is in the close proximity of canal passing in the vicinity of southern lease boundary. Thus suitable distance as per Rule 12(d) of MCR'2016 should be maintained to avoid any damage to public infrastructure. Blocked resources and other proposals should be modified accordingly.
3. Underground workings through the means of shaft are proposed in the area and shaft location is very close to a water logged pit in the south-eastern boundary of the lease area. Thus suitable precautions should be taken to avoid any danger to public safety. Also, suitable permissions should be obtained from DGMS prior to going for underground method of mining.

Text and Plates:

1.0 General and Review of Mining plan:

1. PMCP is an integrated part of Mining Plan. Thus cover page should be revised accordingly. On the cover, instead of 'Modification' period, 'proposal' period should be mentioned.
2. Purpose of submission of the document should be clearly mentioned in the introduction.
3. Date of expiry of lease period as mentioned on cover and other relevant places in the document should be corrected as per lease deed (As per lease deed, lease has been granted for a period of twenty years from 19/01/2007).
4. Copy of Environment Clearance and letter of approval for last document needs to be enclosed.
5. Name of the lessee should be mentioned as per the executed lease deed. Further, as per registration under rule 45 of MCDR'2017 and as per the executed lease deed, status of the lessee is 'Individual' whereas in the document it has been mentioned as 'propriety firm'. Thus suitable correction is required.
6. On page no. 1, second para, the document is mentioned as second modification for the area whereas as per information on page no 10, it is first modification. Thus the statement should be suitably corrected.
7. As per the information given on page no 1 under 'Infrastructure', drinking water is available at half km in village Wadegaon. Drinking water facility should be available at mine site. Thus suitable proposals should be made in site services.
8. Mine code should be corrected on page no. 8. Further, under land schedule, type of land should be clearly mentioned and status of surface rights should be given in case of private land.
9. Under item 5.1 (i) on page no. 11, full details of boreholes drilled in the last 5 years period should be given alongwith expenditure incurred in the exploration activities.
10. As mentioned under 5.10 on page no. 12, top soil dump has not been shown on the plates. Also, as per 5.12 and 5.15, no settling pond or retaining wall/garland drain along the dumps is there in the lease area. Only one water logged pit was seen during site inspection. Under 5.16 and 5.17, actual work done should be mentioned.
11. No work has been carried out for want of Environment clearance. Thus suitable information should be mentioned under item 5.23.

12. RLs and contour levels for the area as shown in all the plates are incorrect and should be suitably corrected.

2.0 Geology and Reserves:

1. Areas under G1/G2/G3/G4/non-mineralized area should be mentioned in a table.
2. Reporting of reserves/resources should be done giving the position of reserves/resources in the approved Mining Plan, then deducting the depletion of reserves due to production during the proposal period of the approved Mining Plan, then addition due to exploration (if any) and finally re-classification as per the Mineral (Evidence of Mineral Content) Rules'2015.
3. Future exploration proposals should be made in accordance with Rule 12 of MCDR'2017. Core bore holes should be proposed under future exploration program.
4. Under chapter 5.0, bearing of angular borehole is to be mentioned with direction. Details of borehole no CBH-1 i.e. intersection depth of Mn, thickness of ore zone and total depth etc is to be furnished in the table, similarly in borehole no CHB-3 thickness of ore zone and total depth drilled is to be corrected. Types of boreholes drilled are to specified (Core/DTH).
5. Under chapter 6, it is mentioned on page no 17 that exploratory drilling has been carried out recently to establish the existence of ore deposit. The details of these boreholes are to be furnished, similarly under local geology strike and dip of the formation is to be furnished.
6. Table furnished on page no 11 and on page 19 regarding details of boreholes drilled are not matching. Needs correction.
7. Under chapter 4, on page no 20, bulk density mentioned as 3.0 whereas bulk density considered for estimation of reserves/resources taken as 3.5. Needs correction.
8. The estimation of reserves for float ore are to be elaborated i.e. no of trenches made, their size and analysis from NABL are to be furnished. Float ore zone needs to be clearly marked on the plates.
9. Under para 6.9, it is mentioned that the strike length of ore body is 180m, whereas it noticed during the field visit that the entire ore body as proved by boreholes is under the surface/water logged pit. The actual strike length of the ore body is to be furnished based on the borehole data. Similarly under the same heading threshold limit considered is shown as -10%. Whereas as per IBM threshold limit it should be +10% .Needs corrections.
10. Reserves/resources calculation table is to be recasted, based on the two cross sections drawn i.e. A1-A2 and A3- A4 only. It should include cross section no, area of influence, area calculated by planimeter / AUTOCAD, volume, B.D and tonnage.
11. Under chapter 6.0, estimated reserves/resources in last approved MP/SOM as on 1/5/2015 is mentioned as on 1./4.2012. Similarly the figure given against 111 category is to be corrected as per table given on page no 23.
12. Since there was no mining activity during the last scheme of mining. The reserves/resources given in 2012-2017 SOM are enhanced in the present document. The details regarding the enhancement of reserves/resources are to be furnished.
13. Summary of ore reserves/resources furnished is to be corrected on page no 23 and 24.
14. On page no 37, life of mine calculation is to be furnished by taking into consideration to total reserves (111+121/122) and average production.
15. Under '6.4.1 Topography' on page no. 15, Elevations mentioned are not as per Key Plan enclosed and should be suitably corrected.
16. As per item 6.6 on page no. 17, pit depth is 10-15 m whereas on the plates, it has been shown as maximum 5-6 m. Thus it should be suitably corrected and proposals should be suitably modified accordingly. Also, 3 bore are drilled in the lease area but here it is mentioned that 7 bore holes are drilled. Thus suitable correction is required to be done.

17. True thickness considered is incorrect as given in the table on page no. 19. Intersection lengths as mentioned on page no. 11 and 19 are mismatch. As per the intersection length in the boreholes given on page no. 11, true thickness for BH-2 should be 2.39 m ($2.40\text{m intersection length} \times \cos 5^\circ$) and for BH-3, it should be 3.864 m ($4\text{m intersection length} \times \cos 15^\circ$). Thus it should be suitably corrected and estimation should be discussed accordingly.
18. As per item 6.9.2 on page no. 20, no vertical influence is acceptable for considering reserves. Thus suitable corrections should be made in the document.
19. Pit Limits, UNFC categories should be marked on the Geological plan and sections.
20. Level-wise reserves for underground mining proposals should be estimated and mentioned in the text.
21. Grade should be mentioned in the reporting of resources on page no. 23.
22. Bore hole logs should be enclosed for all bore holes drilled.
23. From the analysis report enclosed, it is not clear whether it is for dump, float or for in-situ. Thus suitable sample analysis alongwith location of the sample should be enclosed. Analysis for sub-grade and mineral rejects should also be enclosed.
24. Why no resources counted in the eastern extension of the ore-body within the lease area? No working proposals are made for the part and are being left. Considering conservation aspect, suitable resources for the part should be estimated and considered under working proposals. Accordingly corrections should be made in the document/plates.
25. Feasibility study report is irrelevant pertaining to the details given in the document. Thus a fresh feasibility report should be submitted as per the Mineral (Evidence of Mineral Content) Rules'2015 covering cash flow analysis as per the extent of mechanization for underground and open cast both (for capital expenditure). For operating cost, open cast, and underground should be dealt separately and defining feasibility by comparing with the revenues as per the available reserves.
26. Resources blocked in the shaft support pillar, if any, needs to be shown on the plates and discussed in the text.
27. Resources blocked (float ore) within the 50 m influence of public road should be shown on the plates and mentioned in the text. Proposals should be modified accordingly.
28. Copy of letter regarding submission of Form –J is to be enclosed. (now changed to form I).
29. Photographs of boreholes cores are to be enclosed.

3.0 Mining:

1. Details of all existing dumps should be given (as shown on the plan) alongwith type of dump-top soil/ waste/ rejects/ sub-grade & active/dead/stabilized.
2. Existing and proposed area for various mining activities should be shown on the Financial Assurance Area Plan distinctly.
3. Under item 7.1 (a) on page no. 26 and as per the extent of mechanization, mine should be under Category-‘A’. Thus suitable corrections should be made on the cover and FA amount should be modified accordingly.
4. As per page no. 33, B.D. for ore is 3.5 T/CuM and for waste/OB, it is 2 T/CuM. In such case, why charge density and usage of explosive is more for waste/OB and less for ore?
5. Under the details of blasting, initiation system has been mentioned as NONEL and detonation is mentioned as electric detonator. Either it should be non-electric or electric but both have been mentioned. Thus suitable correction is required.
6. Opencast/underground proposals for eastern extension of ore body within the lease area should be incorporated in the document. Instead of leaving 45 m barrier, 50 m barrier

should be left in the southern part under the influence of canal. Thus the proposals should be modified.

7. Depth persistency has been proved upto 20 m from collar RL of the bore hole (BH-3: refer geological sections). But underground proposals are made upto approximately 56 m depth. Without proving reserves beyond 20 m depth from surface how far these proposals have been made? Proposals should be limited upto known/proved depth of mineral in the lease area.
8. On page no. 31, there is a difference of 1296 T of ore in the estimation and proposals. It should be kept uniform.
9. On page no. 31, sub-grade and mineral rejects each are mentioned as 5% of the ROM, but in the table (b) on page no. 32, 5% is mentioned as sub-grade/mineral rejects and 5% as waste? And B.D. for both components have been kept same as 3.0?
10. Sum of total waste should be corrected in table (a) on page no. 32.
11. Under item 7.2, it is not clear whether details are given for dump development or for in-situ working. Further, details for float dump and in-situ- all need to be given with full details of benches etc.
12. For float ore, as per page no. 21, total sub-grade available is 150 T and rejects are 150 T. But on page no. 35, total sub-grade proposed to be generated is 450 T and mineral rejects 450 T. Suitable correction is required. Similar correction should be done for dump proposals also.
13. In the table (c) on page no. 35, 90% of the ROM/recovered ore from dump is clean ore, 5% is sub-grade and 5% is mineral rejects, then how come waste is also mentioned?
14. Detailed working proposals for float ore and dump should be given separately indication material to be handled (for float ore giving excavation area/ depth and for dump giving volume of material), ROM for float and recovered mineral from dump then clean ore recovery/sub-grade/mineral rejects. In the process, management of waste generated (total material handled - ROM/recovered mineral) needs to be discussed in the relevant chapters.
15. Float ore working should be shown on year-wise development and production plan and sections alongwith RLs for workings. Dump working should also be shown as per the area proposed to be handled.
16. Proposal for backfilling (as shown in the plates) should also be included.
17. UPL for opencast should be reviewed and correction should be made, if any.
18. Extent of development, production etc. in the proposal period as well as upto conceptual period should be mentioned clearly showing year-wise levels in the text as well as relevant plates.
19. Conceptual Plan and sections should be drawn showing position of mine at the end of mine-life period. As per the details given on page no. 39, the plates should be modified.
20. On page no. 40 in the table for proposed underground development and production, figures are given for one shaft only whereas two shafts are proposed. Total volume given for one shaft is incorrect and should be:
Volume of development through shaft= $\pi R^2 h$
Where, $\pi=22/7$
R= Radius of the shaft (1.75m)
H= Depth of the shaft (70 m)
Thus, Volume of development through shaft= $\pi \times (1.75)^2 \times 70$ cuM
= 673.75 CuM
For both shafts= 673.75 X 2 cuM
= 1347.5 cuM
Therefore, the table needs correction.
21. For underground workings, L-section and Transverse section, both sections need to be drawn.
22. Being a category 'A' mine, separate year-wise development and production plans should be submitted showing dynamic position of workings, dumps plantation etc.

23. Shaft sinking hasn't started yet and is to be done in the first two years of the proposal period. But shaft sinking has not been discussed. Thus shaft sinking needs to be discussed in detail giving a brief feasibility study for the need and location of shafts. Expenditure towards this underground development needs to be studied against revenues expected and thus method of entry should be designed. Resources blocked/recovered from shaft may be informed.
24. Production in the shaft sinking, if any, should be mentioned in the text.
25. Prior to going for underground, a geotechnical study should be done. To ensure conservation of mineral and optimum recovery, suitable design parameters for stopes and pillars (crown/sill/rib/shaft pillar/post pillar etc) should be adopted.
26. In the year-wise production details for underground workings, proposed number of stopes to be developed / exploited in the proposal period and their location should be mentioned.
27. Proposed production from underground may be further sub-divided into: mineral production during underground development and production from stopes.
28. No working should be proposed beyond W-1 and W-4 on either side of the underground developments.
29. Method of mining for underground workings needs to be discussed. Whether the stope shall be filled by sand (sand stowing) post recovery of mineral from the underground? No detail has been given in the text regarding all these aspects.
30. Extent of mechanization for underground should be given. It has been mentioned on page no. 43 under item 8.9 that other than hoisting through winzes, there will be no mechanization. But details for pumps (hydraulic/electric), drills etc. and hoisting mechanism for shaft has not been given.
31. Management of sub-grade material generated (blending or stacking) should be discussed. A table should be given in stacking of sub-grade mineral indicating quantum of mineral available in the dumps as on date, proposed quantum of material to be handled year-wise, proposed quantum of material recharged/dumped due to generation of sub-grade and cumulative available as on date.
32. Underground waste management has not been discussed. It should be given in a tabular form mentioning generation of waste, underground filling (if any) and management of rest quantum of generated waste.
33. One composite table should be given for five years development and production.
34. For underground workings a 'water endangerment plan' should also be submitted.
35. As per item 12.1, no surface area has been shown for beneficiation in the plates.
36. Being a category 'A' mine, a full time mining engineer and a full time geologist should be employed and not a part time (page no. 50).

4.0 Progressive Mine Closure Plan:

1. Details for underground water also need to be discussed alongwith surface water.
2. The period of FA is already expired on 15/12/2011 and it was submitted for 'B' category mine. But as the mine falls under Category 'A', therefore, fresh FA as per Rule 27(1) of MCDR'2017 shall be submitted immediately alongwith modified copies.
3. A water balance chart should be enclosed and should be discussed in the text. Amount of water re-circulated/ recharged should also be informed. Suitable permissions for ground water withdrawal, if any, should be enclosed.
4. Under 14.6 on page no. 54, backfilling of mined out pit has been mentioned but the same has not been discussed in the mining or other relevant chapters?
5. Settling tanks as shown in the plates should be discussed alongwith dimensions and quantum of water cleaned and other details.
6. Garland drain and retaining wall should be proposed to be constructed along the toe of the dumps and should be shown on the plates.

7. Environmental monitoring of various parameters should be proposed as per MoEF clearance and monitoring stations should be shown on relevant plates.
8. SDF: this should be added under PMCP details and a brief note about mine with special emphasis on SDF should be given here alongwith suitable supporting documents like expenditure done towards SDF and CSR, future SDF/CSR proposals, Star Rating of the Mine etc., if any.

5.0 Plates:

1. All the plates should bear the reference of the document under submission.
2. Date of survey has not been mentioned in the plates.
3. Various plates are not upto the scale. Thus corrections should be done and plates should be made up to the scale prescribed in the MCDR'2017.
4. Location plan needs to be submitted.
5. Geological Plan and Sections: Plate no V, The topographical contours shown on the plan varies from 93 to 106m. But as noticed from the key map, the topographical contour in the area varies from in between 285 to 300m. Need correction on the plate, as well as on all other plans/sections of the document.
6. Plate no V, Ore body projection is to be shown based on the borehole data. The same is to be corrected.
7. Plate no VA, on all the cross sections from A1-A2 to A3-A4. The projections of ore body are shown up to the surface level but as noticed during the field visit that there are no outcrops of ore body. Needs correction/justification for the same.
8. Environment Plan: Environment plan submitted is incorrect and it should be submitted as per the provisions of Rule 32(5) (b) of MCDR'2017 showing details for 60m and 500 m radius.
9. Reclamation Plan: year-wise activities under progressive closure should be marked on the plan.
10. Financial Assurance Plan: Area put to use at the start of SOM period and area required during the 5-years period should be shown distinctly on the plates and land use table should be shown on the plate for the calculation of FA.

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