



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. MPM/OTFM/26-ORI/BHU/2017-18

Date: 07.02.2018

To

✓ Shri Shiv Kumar Jain,  
Managing Director & nominated Owner,  
M/s Mishrilall Mines Pvt Ltd,  
Mineral House, 27A, Camac Street,  
Kolkata- 700016

Sub: Approval of Modification of Mining Plan of Saruabil Chromite Mine along with Progressive Mine Closure Plan (PMCP), over an area of 246.858 ha in Jajpur district of Odisha State, submitted by M/s Mishrilall Mines Pvt Ltd under Rule 17(3) of MCR, 2016.

Ref: - i) Your letter No. Nil dated 15.01.2018.  
ii) This office letter of even no. dated 19.01.2018.  
iii) This office letter of even no. dated 19.01.2018 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 of Modification of Mining Plan along with Progressive Mine Closure Plan (PMCP) has been examined in this office based on site inspection carried out on 29.01.2018 by Shri Dayanand Upadhyay, Sr. Assistant Controller of Mines & Shri Dilip Jain, Junior 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 Mining Plan along with Progressive Mine Closure 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 CD in a single MS Word file (the drawing/plates 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 Modification 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 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 Mining Plan along with Progressive Mine Closure Plan. It may be noted that no extension of time in this regard will be entertained and the Modification of Mining Plan along with Progressive Mine Closure 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 / yours faithfully,

  
(HARKESH MEENA)

क्षेत्रीय खान नियंत्रक / Regional controller of Mines

**Scrutiny comment on Modification of Mining Plan including PMCP in respect of SARUBIL Chromite Mine of M/s MISRILALL Mines Pvt. Ltd. in Jajpur district of Odisha State.**

**Date of Inspection: 29/01/2018**

**1. General:**

1. On cover page Mining Lease Number/TC Number/Lease Number if any, along with registration number as allocated by IBM under rule 45 of MCDR, 2017 needs to be mentioned. Further, e-mail, phone number, fax number of the lessee may be furnished on cover page. Further, summary of the proposals to be given before the introduction page.
2. At some places lease renewal area is mentioned as 259.00 Ha, which is more than the original lease area i.e. 246.858 ha. Check and rectify.
3. The coordinate boundary pillars may also be given in UTM. Further, UTM or WGS84 grid as per DGPS map may also be super-imposed in relevant plans for better comprehension.
4. The review in respect of the year 2017-18 to be given. Further, the details of violation pointed out by IBM and its compliance is not given for the entire review period i.e. 2014-15 to 2017-18. Check and rectify.
5. Para 3.5: The reason of suspension/closure to be mentioned. The documentary evidence to be given in respect of the closure and opening of the mines.
6. Para 3.6: The reason and justification for Modification of Mining plan is not given.
7. The details of the lease area (forest and non-forest etc.) to be given as per table given in the IBM manual on appraisal of mining plan 2014.
8. CCOM circular number 2/2010 and its addendum regarding geo-reference mining lease map and ML boundary pillars to be implemented.

**2. Geology and Exploration:**

9. The stratigraphic succession given on the page 16 and 17 should include the name of the author by whom the stratigraphic succession along with the year in which stratigraphic succession has been given.
10. Page 21: The table presented on the page should also include the details of surface RL along with the level of exploration (RL) based on the drilled BH. Further, at places the length of the Ore body Strike and dip direction mentioned in the table does not match with the geo plan at places. Check and rectify.
11. Page 22: The details of the exploration carried out mentioned do not match with the details mentioned in last approved document. Check and justification to be given for any change. As per table, a total of 61BH have been drilled in the lease area, however, on geological plan more than 61 BH have been depicted, Check and rectify.
12. During inspection it is observed that the few exploratory BH have been drilled in the year 2017, however, detail of same is not given in the instant document. Further, documentary evidence i.r.o. exploration carried out and expenditure for the year 2017 to be given.
13. The cut-off grade and threshold value to be indicated. Accordingly, the mineral below cut-off grade and above threshold value to be termed as Mineral reject instead of low grade.
14. Page 23: A total of 2284.76 meterage of drilling has been mentioned, however, same is not matches with the table presented on previous page.
15. As per guideline of "IBM manual on appraisal of Mining Plan 2014" at least 10% of total samples to be analyzed in accordance to BIS and reports form NABL accredited/Government Laboratory. Accordingly, BH wise sample submitted to above laboratory to be given and 10% of total samples to be analyzed from NABL accredited/Government Laboratory.
16. Page 24: As the lease period is going to expire by 2020 and as per MMDR, Act same will be auctioned. Hence, the proposal of exploration to be given in the first year of plan period.

Accordingly modify the proposal. Further, details of exploration to be given in accordance to the land schedule i.e. forest/non-forest/diverted forest/surface right area etc. The details of individual proposed BH to be given in following format:

Sl.No	Year	BH No	Northing	Easting	Collar RL	Core/RC/DTH	Metage	Inclination	Forest/Non-Forest/ diverted Forest	Surface Right/ Non-Surface	Purpose of BH
1	2018-19	PBH 01									
2	2018-19	PBH02									

At the end of the table cumulative number of proposed BH in forest area, non-forest area, diverted forest area, Surface right area and non -surface right area to be given.

17. Proposal of the exploration given seems to be inadequate to explore entire lease area under G1 level of exploration. Accordingly proposal of the exploration may be revised to explore entire potentially mineralized area under G1 level of exploration as per rule 12(4) MCDR, 2017.
18. The details of the proposed BH to be given in the tabulated form comprising Year, BH number, coordinate of proposed BH, nature of BH (Core/DTH), Inclination of BH, proposed depth, land type (forest/non-forest/diverted forest/surface right), Grid interval etc. Coordinate of proposed BH may also be given in UTM.
19. The level of the exploration is not depicted on the plan, same to be depicted as per the M(EMC) rule 2015. Further, Chromite Resource is not estimated as per M(EMC) rule 2015. The depth of the reserve estimation should be upto the direct evidence of the mineralization as indicated in M(EMC) rule 2015. Accordingly, resource estimation to be revised considering M(EMC) rule 2015. Accordingly, table presented on page 25 to be revised.
20. Section wise resource estimation calculation to be given chrome band wise along with average grad etc. Further, Mineral/ ore blocked dues to benches, UPL, barriers, pillars, road, railway, river, nala, reservoir, electric line and other statutory barriers etc, under forest, sanctuaries and non-forest etc. to be given separately.
21. A longitudinal vertical section as per MCDR, 2017 needs to be submitted showing different level of exploration and level of intersection of proposed BH. Proposal of exploration to be given in such manners that entire/all chrome Ore Body may be explored up to certain level.

#### **MINING:**

22. Page-37, Para-5.1, the details of number of benches in ore & OB, bench height, width, slope and gradient of haul road should be furnished. In the text quarry-E is mentioned which is not shown in surface plan.
23. Page-39, it is mentioned that quarry-A, B & C will be developed to achieved the proposed production while proposal has also been given in quarry-D only.
24. Page-40, year wise development proposal has not been furnished with bench mRL, cross section and cross-sectional area considered.
25. Page-41 & 42, Para-5.1.2, insitu tentative excavation has not been furnished with cutoff grade and bulk density of different grade of Cr2O3.
26. The excavation proposal is to be given considering the grade of ore obtained from different quarries in such a way that overall grade of ore by blending with high grade would be marketable in the interest of mineral conservation.
27. Quantum of production and development may be described year wise with no. of benches, mRL, depth of excavation, direction of advance, location and cross-section considered.
28. Page-38, the waste dumps are numbered from 1 to 11. However, in some cases two dumps are merged into one dump and now 7 nos. of dump at present. Therefore, all the dumps are to be renamed serially from 1 to 7.
29. Page-38, there are 04 nos. of nickel-ferrous dumps in the lease area. The small three dumps to be merged with the large dump i.e. Dump – C & D. Proposal should be given accordingly.
30. The ore stacks are made in the lease area in scattered manner therefore a stackyard should be proposed in such a way that the entire ore stack kept at one place and protected with retaining wall.

31. The production proposal is 0.35 million tonne as per previous approved scheme of mining. However in present submission the excavation of ROM is proposed 0.80 million tonne. However, justification for enhancement of chrome ore for the year 2018-19 and 2019-20 has not been furnished. The ROM production of chromite for the year 2016-17 & 2017-18(till date) is 0.136MT & 0.129MT respectively which are much lesser than proposed production of approved scheme of mining. The average grade of the quarry A, B & C is varying from 45 to 55 % Cr<sub>2</sub>O<sub>3</sub>, while, average grade of the quarry D is about 40% Cr<sub>2</sub>O<sub>3</sub>. Further the production of ore from quarry A & D has not been carried out as proposed in approved scheme of mining for optimum recovery of grade. Kept above in view since the mines are going to expire in 2020 and final closure plan is due in credit further enhancement of production is not justifiable. The proposal should be modified accordingly.
32. Page 51 and 61: Proposal of backfilling of quarry A has been envisaged in current document. It is observed that the Chrome bend exist in the quarry is yet to fully explore. In view of that proposal of backfilling is not permissible..
33. Conceptual mining plan, cumulative waste generation and top soil generation and protective measures have not been furnished considering the life of mine As per IBM Manual Appraisal MP-2014.
34. The UPL has not been marked correctly considering the overall pit slope angle, stripping ratio and depth of mineralization.
35. **Mine Drainage:** Effluent treatment plant has not been described with its capacity and accumulation of water in pit considering water table encountered and average rain fall. The flowchart of ETP and treatment of hexavalent chromium should be furnished.
36. Durin inspection it has been observed that a new ETP is under construction. Therefore its details to be furnished including layout of the mine water pipe line and disposal of the treated water.
37. Form text it is observed that a substantial amount of rain water supposed to be passed from the lease area. Hence, a mine drainage plan to be submitted showing flow direction of the water, location final discharge, arrange of arresting of solid waste etc.
38. The details of water drawn from external source and arrangement of its recycling may be given for domestic and industrial purpose.
39. A proposal for settling pond is to be given and all the rain water from the waste dumps to be diverted to the settling pond.

#### **4. Stacking of Mineral Reject/Sub-grade and Disposal of Waste:**

40. Para 7.1: It is mentioned that there will be no mineral reject generation during plan period. However, proposal of Mineral reject generation having grade between 10 to 40% Cr<sub>2</sub>O has been given. Check and rectify accordingly.
41. The extent/location of the proposed dumps to be given also to be mentioned whether within UPL or not. Also give the details of the existing dumps (top soil, waste dump, mineral reject dump) within the lease area in tabulated form comprising dump number, designed capacity, present quantity, remaining quantity, bottom RL and top RL.
42. The analysis report of serpentine and nickeliferrous limonite should be submitted and discussed for their future use on the basis of their physical and chemical properties. Further, a detail programme for dump analysis to be given to assess the quality and quantity of all waste dumps.
43. The waste dump extension in southern part as proposed is falls under UPL of quarry-D. Therefore waste dump proposal may be modified keeping in view of UPL.
44. Existing and proposed environmental protective works carried out and to be carried out around waste dumps should be given in quantified terms with design details and materials to be used for its construction. Proposal for retaining wall and garland drain around the nickel-ferrous dumps and other Existing waste dumps should be given. Details existing and proposed retaining wall, garland drain, settling tank etc. to be given with their location in terms of length, width and height year wise. Proposal of maintenance of all existing retaining wall, garland drain, settling pond and check dam to be given.

45. Further, Build-up of dumps from year to year to be given in tabulated manner considering designed capacity of dumps, bottom and top mRL of individual terrace, dump slope, individual terrace height and slope. The proposal of dumping has been given forwarding manner, which is not acceptable and same should be given retreating manner.

#### **6. Use of Mineral and Mineral Reject:**

46. The physical specification as described by end-user industry to be given.

#### **7. Processing of ROM and Mineral Reject:**

47. The chemical analysis of existing tailing material to be carried out. The detail chemical analysis report of the tailing along with the sample location on surface plan to be submitted.

48. Para 9.3: The details of tailings in respect of disposal, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailings dam etc . has not been discussed in detail.

49. Para9.4: Specify the quantity of chemical to be used in processing plan or ETP. Further, in Para 9.6: The details of water requirement year wise for domestic and industrial purpose and sources of supply of water, disposal of water and extent of recycling. Water balance chart may be given.

#### **8. Others:**

50. An organizational chart has not been furnished. Proposed manpower both direct and contractual has to be mentioned in the text.

#### **9. Progressive Mine Closure Plan:**

51. The lease is expiring in 31<sup>st</sup> March 2020, there for PMCP submitted in instant document should in line with the FMCP.

52. Para 11.1.2: The report of the environment monitoring has to enclosed and reference of same to be mentioned. Updated air, water, noise, ground vibration and soil data with analysis from laboratory done at specified periodicity for last one year to be enclosed.

53. The amount of financial assurance calculated is not as per rule 27(1) of MCDR-2017. It should be re-calculated and submitted accordingly. The area considered for financial assurance does not match with the area covered under mining as furnished in the annual return. Further, the degraded area near D-quarry is not considered. The same is to be checked and all the degraded area should be considered for calculation of the FA.

54. Provision of sump at the bottom of quarry is to be proposed and all the quarry water drained to the same in such a way that less interference to the ore body, which leads to less dilution of hexavalent chromium.

55. Year wise plantation covering number of saplings to be planted, location and area covered may be furnished. It is observed many of terraces of the existing dump is matured and there is no proposal of further waste dumping. Hence, a massive planation proposal on matured area may be given for early rehabilitation of matured area. Accordingly proposal of plantation, coir matting/geo textile etc may be revised/given. Gap plantation is also required, proposal of gap plantation to be given as discussed during site visit.

56. Under impact on land, cumulative land degradation at present, at the end of proposal period and at the end of conceptual period may be given referring to conceptual mining plan given in scheme of mining.

57. The location and schedule of environment protective measure of noise to be given in text. It is advised that most of the plantation work to be completed in year 2018-19 only. The year 2019-20 should be for post care maintenance only. Accordingly proposal may be revised.

#### **10. Feasibility Study Report**

58. Feasibility assessment report should be prepared and submitted as per UNFC guideline considering all technical and economic parameters along with guideline as per CCOM circular 1/2006 and 4/2009 considering all technical, financial and economic parameters described in UNFC guideline and or as per parameter described in M(EMC) rule 2015.

59. The economic evaluation has not carried out properly. Cost of production (COP), Cost-Benefit analysis and financial appraisal needs to be carried out based on real time data.

## **8. Plates:**

60. General: All the latest plan and section to be submitted (by the end of Dec 2017). Accordingly all the tables may be modified. The date of survey to be mentioned in all the plans and sections.
61. Relevant plans and sections should be signed with date by certified Surveyor, Qualified Person, Mine Manager and Mining Geologist.
62. Magnetic Meridian and date of observation of should be given on all relevant plans. Further, the UPL should be shown in red colour in all relevant plans and sections.
63. Key Plan: The approach road to lease area has not shown. Further, Authenticated lease plan to be submitted.
64. **Surface Plan:** Forest/non-forest/diverted forest/private land to be shown clearly. Some area between WD 10 and Quarry -D, which has been degraded have not been depicted in plan. Further, All the sections should have present and proposed bench mRL.
65. Few pillars may be correlated with some permanent ground features giving distance and direction. Different land use may be shown with colour codes.
66. Information of boundary pillars in UTM coordinates as well as in Latitude and longitude of all ML boundary points should be depicted in tabulated form on surface plan. Further, the nomenclature of the grid to be given both the side of the grid.
67. **Geological Plan & Section:** Geological plan has been prepared without considering drilled BH and exposed litho unit in the lease area. Complete recast of the geological plan and section is required considering exposed lito unit and drilled BH data. The name of regional chrome bands of the lease area to be indicated on the plan.
68. Geological plan does not illustrate geological feature of the area such as lithology, orientation of ore zone, structural information like strike, dip, dip-direction etc. All these information should be reflected on geological plan and section. From geological section it is observed that laterite has been shown either side of the Ore body, however, during field visit same was observed to be as weathered ultrabasic rock or serpentine rock. Check and rectify.
69. Section to be prepared from boundary to boundary. Further, few more geological sections to be prepared as discussed during field visit above and below section AA'A", NN' respectively. All the proposed BH to be shown on Geo-section along with collar mRL, BH id and proposed depth at the end. The index in geological plan and section should be same and index for proposed BH should be differ from drilled BH. Geological information as per drilled BH to be depicted on sections. UNFC code to be depicted on sections.
70. **Development plan & Section:** The index should be same in both development Plan and sections. Some of the index is missing. It is to be checked.
71. Existing position of waste dump and proposed dump height is to be marked with mRL.
72. A centralized location of mineral stack yard to be proposed instead of various locations. Further, location of newly ETP under construction has not shown in relevant plan.
73. It is observed at few places bench RL is not matching with development plan. Hence, recheck all the development section
74. **Environment plan:** The Environment Plan as prepared should be satisfy the provision as laid down rule 32(5) (b) of MCDR2017. Surface features of adjacent mine has not been shown in core and buffer zone.
75. **Reclamation plan:** all the proposed features in PMCP to be depicted year wise in the plan. The color code for existing and proposed feature should be different. Accordingly, reclamation plan to be revised. All the proposed features in tabulated manner may be depicted on the plan.
76. **Financial Assurance Area Plan:** During inspection it is observed that financial assurance has not been estimated correctly. About 1.50 Ha area near to Quarry D and waste dump WD-10 has

been observed as degraded land, however, same has not considered for FA calculation. Hence, actual degraded and to be degrade area due to mining and allied activity to be considered for financial calculation. Accordingly FA plan and table may be revised. Further, in the Financial Assurance plan area of each individual land i.e. land degradation due to mining activity and processing unit etc. at the end of plan period may be shown separately on this plan with highlighted boundaries and different colour codes for FA calculation.

77. **Conceptual plan:** Conceptual plan may be prepared considering mineralization as revealed from the borehole logs. One longitudinal section may also be submitted showing conceptual limit. Direction of run off from the area based on surface contours may be shown on the plan and the sections.

**9. Enclosures:**

78. A fresh certified list of all the directors of the company to be enclosed along with undertaking of their working in other firms. Form 32 in respect of all the directors to be enclosed. Signature and address proof of managing director and QP to be enclosed.

79. Certificate from the lessee should also include: The information furnished in the Modification of Mining Plan and Progressive Mine Closure Plan is true and correct to the best of our knowledge and records.

80. The copy of last lease renewal deed to be enclosed. Further, legible copy of surface right obtained (annexure-7) and forest clearance (annexure-8) to be enclosed.

81. The notice of closing and reopening of mines in the year 2013-14 and 2016-17 respectively to be enclosed.

82. The documentary evidence i.r.o. bulk density considered for high grade chrome ore and mineral reject to be enclosed.

83. BH wise information of drilled BH to be given in tabulated form indicating Year, type (Core/DTH), diameter, spacing, inclination, collar RL, depth, whether mineralized or non-mineralized etc.

84. Copy of form I and J as per MCDR, 2017 to be enclosed for all the drilled BH for ready and future reference as per Rule 47 and 48 of MCDR, 2017. The same should be signed by the Geologist appointed under MCDR, 2017.

85. A separate undertaking may be given that FMCP will be submitted as per rule 24 of MCDR, 2017 i.e two years prior to the proposed closure of the mine.

In view of above, wherever necessary correction required to be made.

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