

**INDIAN BUREAU OF MINES
MINERALS DEVELOPEMMENT AND REGULATION DIVISION**

MCDR INSPECTION REPORT

Nagpur regional office

Mine file No : MAH/NAG/MN-211/NGP

Mine code : 40MSH14015

- (i) Name of the Inspecting : **M017**) **ASHISH MISHRA**
Officer and ID No.
- (ii) Designation : Sr. Asst. Contrl. Mines
- (iii) Accompanying mine : Shri P. S. Shankaraiya, Mines Manager
Official with
Designation
- (iv) Date of Inspection : 19/03/2020
- (v) Prev.inspection date : 20/09/2019

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **SATUK**
- (b) **Registration NO.** : **IBM/5711/2011**
- (c) Category : B Manual
- (d) Type of Working : Opencast
- (e) Postal address :
State : MAHARASHTRA
District : NAGPUR
Village : BELDONGRI
Taluka : PARSEONI
Post office : SATUK
Pin Code :
FAX No. :
E-mail :
Phone : 42160
- (f) Police Station :
- (g) First opening date : 25/02/1979
- (h) Weekly day of rest : SAT
2. Address for : P. O. - SATUK,
correspondance : TAH.- PARASEONI,
DISTT.- NAGPUR (M. S.).
3. (a) Lease Number : MSH0079
- (b) Lease area : 95.29
- (c) Period of lease : 20
- (d) Date of Expiry : 01/03/1999

MSH0078
 8.68
 60
 30/06/2022

4. Mineral worked : MANGANESE ORE Main

5. Name and Address of the

Lessee : M/S MANGANESE ORE (INDIA) LTD.
 3, MOUNT ROAD EXTENSION
 POST BOX NO. 34, NAGPUR
 (MP) NAGPUR MAHARASHTRA
 Phone:
 FAX :

Owner : C.P.N.PATHAK
 3, MOUNT ROAD EXTN. POST
 BOX NO. 34 NAGPUR NAGPUR
 MAHARASHTRA
 Phone: 0712 - 2545703
 FAX : 0712 - 2524996

6. Date of approval of Mining	:	Renewal under rule 22 MCR1960	12/05/2003
Plan/Scheme of Mining	:	Modif.of approved Mining Plan	13/10/2006
	:	Mining Scheme rule 12 MCDR1988	07/07/2008
	:	Mining Scheme rule 12 MCDR1988	10/01/2012
	:	Mining Scheme rule 12 MCDR1988	10/01/2013
	:	MP review under 17(1) MCR 2016	11/08/2017

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

Sl.No.	Item	Proposals	Actual work	Remarks
1a	Backlog of previous year	No such proposals	Nil	Ore zone has already been proved in the area upto 240 mRL (General RL is around 305 m) through total 16 number of boreholes out of which 5 boreholes were drilled in 2012-2017 (last 5 years proposal period). Additionally, 5 boreholes are proposed to be drilled in the area in 2019-20 to 20021-22 period.
1b	Exploration over lease area for geological axis 1 or 2	G-1	G-1	Detailed exploration over the entire potentially mineralized area has been done.
1c	Exploration Agencies and Expenditure in lakh rupees during the year	No such proposals	Nil	
1d	Balance area to be explored to bring Geological axis in 1 or 2	Nil	Nil	
1e	Balance reserve as on 01/04/20	Balance reserves/resources as on 01.04.2019 are given under actual work details:	111-94175 T 221- 494237 T	

1f	General remarks of inspecting officers on geology, exploration etc	Geologically the area has been proved through exploration and future exploration is also proposed to ascertain depth continuity. Though the area is proved upto 240 mRL, ultimate pit bottom has limitations due to lease shape (around 265 mRL in the Eastern part for Pit-4 and around 255 mRL for Central and Western Part for Pit-2 and 3.
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Development :

Sl.No.	Item	Propasals	Actual work	Remarks
2a	Location of development w.r.t.lease area	Proposed Development location is Y75 to Y200 and X-250 to X-500 as per the local grid within Pit 3 and 4 in between 300 mRL to 290 mRL (hangwall side). Further, Dump working is also proposed for black dumps located in the hangwall side of Pit-2, 3 and 4 and in the western part of the lease area.	All the pits located in the lease area i.e. Pit-2, 3 and 4 are water logged. Requirement of development was quite higher as ROM:Waste ratio for the mine is around 1:7.5, but due to non-availability of power source from MSEB, de-watering of the pits could not be carried out. Hence, only dump working has been carried out to meet the production proposals. In-situ development is Nil during the period.	

2b	Separate benches in topsoil, overburden and minerals (Rule 15)	There is no top soil in the area proposed for development. Further, overburden/waste and minerals (including subgrade/mineral rejects) are proposed to be kept separately.	No top soil benches/dump available in the area. Separate dumping/stacking of Overburden/waste and minerals generated from the mine has been done. As the orebody is in form of vein deposit, having approximate thickness of 5-6 m with a dip of 35 to 45 degrees due south, separate benches in ore and overburden is not possible. Thus, due care in sorting of ROM is being done and any mineralized content is being extracted in form of recovery of cleaned ore from ROM or recovery from mineralized dumps.	
2c	Stripping ratio or ore to OB ratio	1:7.5	Not applicable as working has been done in the mineralized dumps only for recovery of Mn ore.	In-situ working could not be done due to non-availability of power source from MSEB as mentioned in 2a.
2d	Quantity of topsoil generation in m3	Nil	Nil	
2e	Quantity of overburden generation in m3	2018-19: Approximately 63000 cum from in-situ working	Nil, as no in-situ development could be made due to nonavailability of power source (no dewatering could be done to commence in-situ developments)	

2f	General remarks of inspecting officers on development of pit w.r.t. type of deposit etc	The deposit occurring in the lease area is having strike in EW direction and dip of 35 to 45 degree due south. In the footwall side of the existing pits, development is not possible due to existence of waste dump and lease shape constraints. In the hangwall side of the pits, black dumps are there. Thus, development of the pit is possible only after dump working and clearance of area in the southern part of the pits.	As per the proposals, in-situ as well as dump working, both were proposed but only dump workings were carried out in the area due to the reasons as elaborated under item 2a. This dump working is essential for making the area availability for in-situ developments in the lease area and mineral conservation. Hence, considering these two aspects, development was found adequate.
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Exploitation:

Sl.No.	Item	Propasals	Actual work	Remarks
3a	Number of pit proposed for production	Pit-3 and 4 were proposed to be joined into one large pit.	Nil	Please refer item 2a of the report.
3b	Quantity of ROM mineral production proposed	For 2018-19: Total 21100 T (21000 T from in-situ + 100 T from Dump Working)	For 2018-19: 5076 T (Nil from in-situ + 5076 T from Dump working)	Dump recovery remained on hgher side due to increase in demand for LGHS (low grade high silica) material containing +20% Mn. Further, overall ROM production remained within the proposed production limits and workings were in the interest of systematic development of the mine and conservation of minerals.

3c	Recovery of sailable/usable mineral from ROM production	For in-situ workings, out of total ROM, 40% of the material is proposed to be having saleable grade, 10% will be subgrade and rest 50% shall be intercalated waste. For Dump workings, recovery proposed is 10% out of the total material handled.	For in-situ workings: Not applicable/Nil For Dump Workings: approximately 15-18%	Higher recovery for Dump workings were due to inclusion of LGHS into recovered/cleaned ore.
3d	Quantity of mineral reject generation	Mineral reject considered in the proposal is the material having Mn<10% and is mainly waste. Proposed quantum of mineral rejects in the year 2018-19: 10500 T (50% of ROM)	For 2018-19: Nil	Reasons mentioned in item 2a.
3e	Grade of mineral rejects generation and threshold value declared.	Mineral reject considered in the proposal is the material having Mn<10% and is mainly waste. Threshold value is +10% Mn.	Nil as only dump working has been done in the area.	
3f	Quantity of sub grade mineral generation.	10% of the ROM, i.e., 2100 T	Nil	
3g	Grade of sub grade mineral generation	+10-20% Mn	Nil	

3h	Manual / Mechanised method adopted for segregating from ROM	Manual sorting	Manual sorting has been done for mineralized dump workings.
3i	Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects.	No such proposals	Nil
3j	Provision of drilling and blasting in mineral benches	Yes, drilling in in-situ working is proposed to be carried out by 110 mm diameter DTH drills with 6.5 m depth in Overburden and 3.5 m in Ore. Explosive proposed to be used is Slurry explosives with bottom initiation through Nonel. No drilling/blast ing proposed for Dump Working.	Nil, as only Dump Working is carried out.
3k	Provision of mining machineries in mineral benches	Yes, mining is proposed to be carried out through Category A mechanized workings. 1 Excavator with bucket capacity of 0.2 cum and 3 tippers with haul capacity of 14 T are proposed to be deployed.	Dump workings only were carried out through outsourced equipments and mainly maual working has been carried out.

31	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Separate benches in ore and overburden cannot be made due to type of the deposit. However, as per the occurrence, bench height proposed is 6.0 m (one bench of 6.0 m for waste and 2 sub-benches of 3.0 m each for ore).	Method of mining proposed is category A. Thus, proposed bench height is suitable for working as per the mechanization as well as, as per the occurrence of ore in the lease area. However, no in-situ working was carried out. Dump working has been done by making 3 m benches, hauling the excavated material to OCF and manual sorting.	
3m	Total area covered under excavation/pits	Total area proposed to be covered under pits as per the proposals approved for the period 2017-18 to 2021-22 (at the end of proposal period) shall be 2.80 ha.	Total area under Pits=1.55 ha	Area under pits at the start of plan period of 2017-18 to 2021-22 was 1.55 ha which remained unchanged as no opencast workings (in-situ) could be started.
3n	Ore to OB ratio for the pit/mine during the year.	1:7.5	Not applicable as working has been done in the mineralized dumps only for recovery of Mn ore.	In-situ working could not be done due to nonavailability of power source from MSEB as mentioned in 2a.
3o	Total area put in use under different heads at the end of year	Total area put to use under different heads at the end of year 2018-19 is as given in the actual work.	Area under: Pits- 1.55 ha Waste Dumps- 3.5 ha Infrastructure/Roads- 0.246 ha Mineralized Dumps- 0.75 ha Mineral Storage- 0.25 ha Total- 6.296 ha	Apart from this, total 0.76 ha area has been covered under plantation which is (i) Along the road passing from the lease area (along the western boundary) from BP1 to BP10 & (ii) Near BP12 & 13 in the Southern part of the lease area (in and adjacent to 7.5 m non-mining zone)

3p	Production of ROM mineral during the last five year period as applicable	2017-18: 16100 T 2016-17: 36500 T 2015-16: 39347 T 2014-15: 28527 T 2013-14: 11900 T	2017-18: 4616 T 2016-17: 11277 T 2015-16: 12376 T 2014-15: 27500 T 2013-14: 11808 T
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3q General remarks of inspecting officers on method of mining etc.

Method of mining is mechanized as loading and transport is being carried out through mechanized means. Both insitu and dump workings are under proposals but only dump working is being carried out to facilitate insitu working.

Solid Waste Management - Dumping:

Sl.No.	Item	Propasals	Actual work	Remarks
4a	Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)	There is no top soil in the area proposed for development. Further, overburden/waste and minerals (including subgrade/mineral rejects) are proposed to be kept separately.	No top soil benches/dump available in the area. Separate dumping/stacking of Overburden/waste and minerals generated from the mine has been done.	

4b	Location of topsoil, OB and mineral reject dumps	<p>Top Soil dump: Nil</p> <p>OB/ Waste Dumps: 3 Waste Dumps at locations X-150 to X-500 & Y-200 to Y-250, X-78 to X-200 & Y-175 to Y-300, X-175 to X-250 & Y-300 to Y-375 respectively.</p> <p>Mineral rejects/Subgrade Dumps: 3 dumps at locations X-50 to X-150 & Y100 to Y-200 (2 dumps), X-100 to X-250 & Y50 to Y-125</p>	<p>As per the proposals, dumps are located.</p> <p>Further building of dumps due to in-situ excavation could not be done due to no in-situ working. Mineralized dumps have been worked for recovery of minerals.</p>
4c	Number of dumps within lease area and outside of lease area	No such proposals	Nil
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)	<p>Mineralized dumps are within pit limits and are proposed for exploitation of mineral content. Waste dumps are located outside pit limits in the footwall.</p>	As per the proposals.
4e	Number of active and alive dumps.	All dumps are active	All dumps as referred in 4b are active, no dump has been completely rehabilitated.
4f	Number of dead dumps.	Nil	Nil
4g	Number of dumps established.	No such proposals	Nil
4h	Whether Retaining wall or garland drain all along dumps are there.	Yes	Yes

4i	Length of Retaining wall or garland drain all along dumps	250 m approximately	As per the proposals for around 200-250 m in the northern part of the lease area at the toe of the dumps. Additionally, entire lease area has been secured with concrete boundary walls.	
4j	Number of settling ponds	No such proposals	Nil	
4k	Specific comments of inspecting officer on waste dump management			Waste dump management aspect is satisfactorily dealt with at the mine level. The dumps are surrounded by around 200-250 m garland drain and retaining wall to arrest any wash off from the dumps. Due to area restrictions, mineralized dumps are located within the pit limits.

Solid Waste Management - Backfilling:

Sl.No.	Item	Propasals	Actual work	Remarks
5a	Status of part or full extraction of mineral from mined out area before starting backfilling.	No backfilling is proposed even upto conceptual stage, instead, the area is proposed to be converted into water reservoir after exploitation of entire reserves.	Nil	
5b	Area under backfilling of mined out area	No such proposals	Nil	

5c	Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)	No top soil is available in the area proposed for working. Further, no backfilling is proposed, hence the information is Nil.	Nil	
5d	Total area fully reclaimed and rehabilitated	No such proposals	Nil	
5e	General remarks of inspecting officers on backfilling and reclamation etc.			No backfilling is proposed in the area as orebody is continuing in depth for which future scope for underground mining may be there. Thus, at present, on the basis of level of exploration carried out in the area, instead of backfilling, securing the area through fencing and facilitating water accumulation in the excavated pit is proposed to be done at conceptual stage.

Progressive Mine Clousre Plan:

Sl.No.	Item	Propasals	Actual work	Remarks
6a	Whether Annual report on PMCP submitted on time and correctly. Rule 23 E(2).	To be submitted on or before 30th June every year depicting work done under PMCP in the preceeding year	Yes, the report has been submitted by the lessee	
6b	Area available for rehabilitation (ha) .	Nil	Nil	

6c	afforestation done (ha).	0.50 ha	0.76 ha	This plantation work has been done in previous years. No plantation was proposed or carried out in the year 2018-19.
6d	No. of saplings planted during the year	Nil	Nil	
6e	Cumulative no .of plants	1500	1900	
6f	Any other method of rehabilitation	No such proposals	Nil	
6g	Cost incurred on watch and care during the year	Rs 25000/- approximately over environment monitoring	Rs 12000/- approximately	As no in-situ workings were there, expenditures were limited for vibration and noise monitoring (no blasting required).
6h	Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (Lx B x D	No such proposals	Nil	
6i	Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings	No such proposals	Nil	
6j	Compliance on reclamation and rehabilitation by backfilling (iii)Afforestation on backfilled area	No such proposals	Nil	
6k	Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir	No such proposals	Nil	

6l	Compliance on reclamation and rehabilitation by backfilling (v)any other specific means.	No such proposals	Nil	
6m	Compliance of rehabilitation of waste land within lease (i)afforestation	No such proposals for the year 2018-19	Nil	
6n	Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha)	No such proposals for the year 2018-19	Nil	0.76 ha area already covered under greenbelt plantation
6o	Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation	No such proposals for the year 2018-19	Nil	
6p	Compliance of environmental monitoring (core zone and buffer zone)	Environment monitoring is proposed for various environment parameters in core and buffer zone	Environment monitoring has been done mainly for air and water as per the working carried out in the mine	
6q	General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.			PMCP operations as per the present level of workings are satisfactory. Further plantation and stabilization of dumps is proposed in the mining plan at conceptual stage.

Mineral Conservation:

Sl.No.	Item	Propasals	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area	Dispatch of graded mineral after manual sorting of ROM and recovered mineral from dump	As per the proposals	

7b	Method of grade-wise mineral sorting i.e. manual or mechanical.	Manual Sorting of ROM as well as Mineralized Dump	Manual Sorting of the material from Mineralized Dumps only	
7c	Different grade of mineral sorted out at mines.	(a) Below 25% Mn (b) 25% to below 35% Mn (c) 35% to below 46% Mn	(a) Below 25% Mn (b) 25% to below 35% Mn (c) 35% to below 46% Mn	
7d	Any beneficiation process at mines	No such proposals	Nil	
7e	General remarks of inspecting officer on Mineral conservation and beneficiation issues			Mineralized dumps are being exploited and mineral contents are being extracted from the dumps. Thus, mineral conservational aspect is satisfactory. No beneficiation is required as graded mineral is being readily sold.

Environment:

Sl.No.	Item	Propasals	Actual work	Remarks
8a	Separate removal and utilization of topsoil (Rule 32)	No such proposals	Nil	
8b	Concurrent use or storage of topsoil	No such proposals	Nil	Top soil, might have been available at earlier stages, has already been utilized for plantation over 0.76 ha area. Presently no top soil is available within the proposed working area.

8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)	There is no top soil in the area proposed for development. Further, overburden/waste and minerals (including subgrade/mineral rejects) are proposed to be kept separately.	No top soil benches/dump available in the area. Separate dumping/stacking of Overburden/waste and minerals generated from the mine has been done.	
8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	No such proposals	Nil	No backfilling is proposed even upto conceptual stage, instead, the area is proposed to be converted into water reservoir after exploitation of reserves.
8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	No such proposals	Nil	

8f	Baseline information on existence of plantation and additional plantation done (Rule 41)	Baseline information has been furnished in the mining plan. Further, additional plantation of 1500 saplings has been proposed till date. Plantation has not been proposed in the plan period of 2017-18 to 2021-22 as presently no area is available for plantation purpose. After the dumps are matured, suitable plantation shall be proposed for stabilization of dumps.	Baseline information furnished in mining plan. Additional plantation in form of 1900 saplings over 0.76 ha area in the western and southern part of lease area has been done.
8g	Survival rate	75%	80%
8h	Water sprinkling on roads to control airborne dust	Yes, water sprinkling through mobile water tanker is proposed.	As per the proposals, water sprinkling is being carried out only in the dump working area, OCF and dispatch points.

8i	General remarks of inspecting officer on aesthetic beauty in and around mines area	Working is in form of dump rehandling only in the area. Plantation has been done in form of 1900 saplings alongside the road passing through the lease area in western part and in the southern part of the lease area. Existing pits are water logged. Hence, apart from normal degradation due to mining, aesthetic beauty is satisfactory in the area.
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Compliance of Rule 45:

Sl.No.	Item	Propasals	Actual work	Remarks
9a	Status of submission of Monthly and Annual returns	Annual Returns are required to be submitted before 1st July of every year for preceding year Monthly returns are required to be submitted before 10th of every month for preceding month	AR submitted online upto 2018-19 MR submitted online upto Feb'20	
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Mining Engineer: SHRI A.W. SHEIKH Geologist: SHRI DEBNATH MOHANTA Manager: SHRI P.S. SANKARAI AH	Correct information furnished.	

9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	Land use at the end of year 2018-19: Covered under current (O/C) Workings- 1.55 ha Used for waste disposal- 3.5 ha Occupied by plant, buildings, residential, welfare buildings & roads- 0.246 ha Others (Mineralized Dumps & Mineral Storage)- 1.0 ha Total- 6.296 ha	Correct information has been furnished
9d	Scrutiny of Annual return on afforestation	Nil	Correct information has been furnished as no plantation was proposed or carried out during the year.
9e	Scrutiny of Annual return on mineral reject generation (Grade and quantity)	Nil	Correct information has been furnished

9f	Scrutiny of Annual return on ROM stock and/or graded ore	ROM: (a) Open Cast Workings- Nil (b) Dump Workings: Opening and Closing Stocks- Nil, Production- 5076 T Graded Ore: (a) Below 25% Mn: Opeing Stock-119 T, Production- 1650 T, Dispatch-1449 T, Closing Stock-300 T (b) 25% to below 35% Mn: Opeing Stock- 2T, Production- 1602 T, Dispatch-61 T, Closing Stock- 1543 T (c) 35% to below 46% Mn: Opeing Stock-0 T, Production- 1824 T, Dispatch-0 T, Closing Stock- 1824 T	Correct information has been furnished
9g	Scrutiny of Annual return on sale value, Ex. Mine price and production cost	Sale Value: (a) Below 25% Mn: Rs 3354942.34/- (b) 25% to below 35% Mn: Rs 311535.09/- Ex-mine Price: (a) Below 25% Mn: Rs 2283/- per T (b) 25% to below 35% Mn: Rs 5113/- per T (c) 35% to below 46% Mn: ASP as no sale has occurred Cost of production: Rs 5413.41/- per T	Complete and correct information furnished

9h	Scrutiny of Annual return on fixed assets	Nil	As the land is non-forest revenue land for which lessee has only surface rights and land is not owned by the lessee, no depreciation or fixed asset has been given for land. Correct information has been furnished.	Working machines for dump rehandling are deployed either on contractual basis or borrowed from adjacent mines of the lessee. Hence, the details for depreciation of machineries has not been furnished to avoid duplicacy of data.
9k	Scrutiny of Annual return on mining machineries	Nil	Working machines for dump re-handling are deployed either on contractual basis or borrowed from adjacent mines of the lessee. Hence, the details are correct.	

Details of violations observed during current inspection and compliance position of violation pointed out

Violation observed		Show couse position	
Rule NO.	Issued on Compliance on	Rule NO.	Issued on Compliance on

Date :

(ASHISH MISHRA)

Indian Bureau of Mines