

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

MCDR INSPECTION REPORT

Nagpur regional office

Mine file No : MAH/NAG/MN-103/NGP.V

Mine code : 40MSH14008

- (i) Name of the Inspecting : **M017**) **ASHISH MISHRA**
Officer and ID No.
- (ii) Designation : Sr. Asst. Contrl. Mines
- (iii) Accompanying mine : **SHRI A. V. MASADE, AGENT**
Official with
Designation
- (iv) Date of Inspection : 15/10/2018
- (v) Prev.inspection date : 13/09/2017

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **KANDRI**
- (b) **Registration NO.** : **IBM/5711/2011**
- (c) Category : A Manual
- (d) Type of Working : Underground
- (e) Postal address :
State : **MAHARASHTRA**
District : **NAGPUR**
Village : **KANDRI**
Taluka : **RAMTEK**
Post office : **KANDRI**
Pin Code : **441401**
FAX No. :
E-mail :
Phone : **07114--68148**
- (f) Police Station :
- (g) First opening date : 01/07/1982
- (h) Weekly day of rest : THU
2. Address for :
correspondance :
3. (a) Lease Number : **MSH0074**
- (b) Lease area : **83.06**
- (c) Period of lease : **20**
- (d) Date of Expiry : **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

Agent : Shri S.S.Chakravorty
 PO- Kandri Distt.
 Nagpur(MS) NAGPUR
 MAHARASHTRA
 Phone: 07114-- 68148
 FAX :

Mining Engineer

Name : Shri C.P.N.Pathak,Full Time
 Qualification : B.E. MIning
 Appointment/ :
 Termination date

Mining Engineer

Name : Shri R.S.Verma,Full Time
 Qualification : B.Tech. Mining
 Appointment/ : 21/06/2004
 Termination date

Geologist

Name : Shri I.A.Siddiqui,Full Time
 Qualification : M.Sc. (Geology)
 Appointment/ :
 Termination date

6. Date of approval of Mining	:	Renewal under rule 22 MCR1960	01/04/2003
Plan/Scheme of Mining		Mining Scheme rule 12 MCDR1988	04/10/2007
		Mining Scheme rule 12 MCDR1988	16/01/2013
		MP review under 17(1) MCR 2016	30/05/2017

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

Sl.No.	Item	Proposals	Actual work	Remarks
1a	Backlog of previous year	20 boreholes were proposed in 2017-18	37 Core boreholes were drilled in 2017-18. The total meterage is in 2017-18 is 12169 m.	Exploration through core boreholes is being done by MOIL and MECL (contract) previously. Presently exploration is being done by M/s MOIL itself.
1b	Exploration over lease area for geological axis 1 or 2	G-1 & G-2	G-1 & G-2	Presently working below -550'L is not feasible, therefore, below -550' level, the resources are considered under G-2 on the basis of exploration. Apart from this, complete potentially mineralized area has been proved upto G-1 level.
1c	Exploration Agencies and Expenditure in lakh rupees during the year	M/s MOIL Ltd.	Exploration was done by M/s MOIL ltd. with an expenditure of Rs 3.65 Cr approximately.	
1d	Balance area to be explored to bring Geological axis in 1 or 2	Nil	Complete area has been explored in detail however, depth persistancy and orebody behaviour is being proved through exploration at lesser grid interval. During 2017-18 to 2021-22 approved proposal period, exploration through 36 boreholes and 10800 meterage drilling is proposed at 50 m X 50 m grid.	
1e	Balance reserve as on 01/04/20		Balance reserves as on 01.04.2018 are: 111- 3736606 T 221- 8435350 T Total- 12171956 T	Additional resources of 3321567 T established through exploration by 37 core bore holes in the year 2017-18.

1f	General remarks of inspecting officers on geology, exploration etc	The deposit in Kandri Mine is of S shape due to tectonic activities and are named as North Limb, South Limb and South Extension. North Limb and South extension outcrop as thin band and both have shown development in thickness with depth. South limb is thick at surface and gradual decrease in thickness with depth has been proved in the area. In all 91 boreholes have been drilled till 2016-17 and exploration at closer grid is underway for South limb extension.
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Development :

Sl.No.	Item	Proposals	Actual work	Remarks
2a	Location of development w.r.t. lease area	Opencast: Pit 2 (East Hill Pit) Underground: - 250'L, -350' L, -450' L & 550 L Dump Working: MD-1 (Mineralized Dump)	As per the proposals. No opencast working has been done except dump mining for recovery of minerals. Opencast working is subjected to the grant of clearance from MoEFCC.	
2b	Separate benches in topsoil, overburden and minerals (Rule 15)	Not applicable as mining is proposed through underground methods only.	Underground mining has been carried out only.	
2c	Stripping ratio or ore to OB ratio	Not applicable as only underground workings are carried out.	Nil	

2d	Quantity of topsoil generation in m3	Not applicable Nil as only underground workings are carried out.	
2e	Quantity of overburden generation in m3	Not applicable Nil as only underground workings are carried out.	
2f	General remarks of inspecting officers on development of pit w.r.t. type of deposit etc		For 2017-18, Horizontal Development of 163 RMT has been done against the proposals of 160 RMT and vertical development of 63.8 RMT was done against the proposals of 60 RMT. Hence, development at the underground working levels are satisfactorily carried out by the lessee. Development is being carried out in south limb extremity and trough of syncline to bring the area under stoping as per the proposals made in the approved Mining Plan document. Opencast workings are subject to the MoEF clearance.

Exploitation:

Sl.No.	Item	Propasals	Actual work	Remarks
3a	Number of pit proposed for production	Not applicable as only underground workings are carried out.	Not applicable.	Development and production is proposed at -250' L, -350' L in the underground.

3b	Quantity of ROM mineral production proposed	2017-18: 63000 T 2017-18: 45255 T	Reported as 40513 T in the ROM and 4742 T in the mineral rejects as per the Annual Returns filed for 2017-18. Further, Due to discontinuity and pinching in ore zone, production is less than the proposals.
3c	Recovery of sailable/usable mineral from ROM production	80% of the ROM is saleable clean ore and 20% is mineral rejects. 89.5% of clean ore is recovered from the ROM and 10.5% mineral rejects generated.	
3d	Quantity of mineral reject generation	2017-18: 12600 T 2017-18: 4742 T	
3e	Grade of mineral rejects generation and threshold value declared.	Below 25% Mn containing mineral shall be stacked separately. 8% to 24% Mn containing mineral has been stacked separately. Threshold value is +10% Mn.	
3f	Quantity of sub grade mineral generation.	Not applicable. Nil	
3g	Grade of sub grade mineral generation	Not applicable. Nil	
3h	Manual / Mechanised method adopted for segregating from ROM	Manual sorting within the lease area. Manual sorting.	
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	Not applicable	Not applicable	Drilling and blasting is being carried out in the underground. Drilling pattern is Wedge cut with 32 mm dia blast holes and maximum numbers of holes blasted in one round are 32. Explosive used are small dia Nitrate mixture.
3k	Provision of mining machineries in mineral benches	Not applicable.	Not applicable.	Drills and loco are being used underground.
3l	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Not applicable.	Not applicable.	Level interval is 100' i.e., 30 m which is suitable for underground working proposals as per the occurrence and thickness of the ore body in the area.
3m	Total area covered under excavation/pits	12.01 ha	12.01 ha	The area is covered under old opencast workings. No fresh opencast workings have been carried out in the lease area.
3n	Ore to OB ratio for the pit/mine during the year.	Not applicable.	Not applicable.	
3o	Total area put in use under different heads at the end of year		Area under: Pits: 12.01 ha Mineral Storage: 4.22 ha Waste/ OB dumps: 26.90 ha Roads: 2.70 ha Infrastructure: 2.75 ha Township: 10.78 ha Totl: 59.36 ha Total:	Out of the total area put to use, 0.5 h of exhausted pit area has been reclaimed through backfilling in the year 2017-18. Plantation over the dumps has already been carried out in the past.

3p Production of ROM mineral during the last five year period as applicable

2016-17: 69000 T (U/g)	2016-17: 53354 T (U/g)
29600 (O/c)	Nil (O/c)
2015-16: 55150 T (U/g)	2015-16: 45830 T (U/g)
29600 (O/c)	Nil (O/c)
2014-15: 55750 T (U/g)	2014-15: 35040 T (U/g)
29600 (O/c)	Nil (O/c)
2013-14: 57000 T (U/g)	2013-14: 38005 T (U/g)
29600 (O/c)	Nil (O/c)
2012-13: 56350 T (U/g)	2012-13: 34000 T (U/g)
29600 (O/c)	Nil (O/c)

3q General remarks of inspecting officers on method of mining etc.

Method of mining is through underground overhead cut and fill that is suitable as per the occurrence of ore body in the area. Mode of entry is through vertical shaft of 4.5 m finished diameter and incline from surface to -50'L of size 4.5 m X 3.0 m. After stoping is completed, exhausted blocks are being stowed with sand. Waste encountered is being filled in the underground itself to the extent possible.

Solid Waste Management - Dumping:

Sl.No.	Item	Propasals	Actual work	Remarks
4a	Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)	Yes	Yes	Generated waste from underground that is brought to the surface and mineral rejects are being dumped separately within the lease area.

4b	Location of topsoil, OB and mineral reject dumps	Proposals incorporated in the Mining Plan. Dumping of OB is subjected to grant of MoEF clearance.	Top Soil- No Dump Waste and OB- N400 to N1000 & E200 to E550 (Western part of the lease area), N800 to N1150 & E650 to E1050, N700 to N1000 & E950 to E1300 (both in N-E part of the lease area) Mineralized Dumps- MD-1 at N550 to N750 & E350 to E500 (Western side), MD-2 at N650 to N800 & E1050 to E1200 (Eastern Part), 2 small stacks at N850 to N1000 & E600 to E850 (North Central Part)	
4c	Number of dumps within lease area and outside area of lease area	All dumps within lease area	All dumps are available within the lease area	
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)	Not applicable	Not applicable	
4e	Number of active and alive dumps.	All Waste/OB dumps are active though reclamation has been done on the dump slopes. Upon getting clearance from MoEF, dumping shall be done accordingly. Mineralized dumps are also active.	As per the proposals.	
4f	Number of dead dumps.	Nil	Nil	
4g	Number of dumps established.	Nil	Nil	Dumps are reclaimed but not rehabilitated as it may become active upon getting clearance from MoEF for opencast workings. Hence Nil.

4h	Whether Retaining wall or garland drain all along dumps are there.	No such proposals as retaining wall and garland drains are already built at the toe of the dumps.	As per the proposals.	
4i	Length of Retaining wall or garland drain all along dumps	No such proposals.	Nil for the year.	Approximately 1550 m long retaining walls and garland drains already built up at the toe of dumps (OB/Waste dumps).
4j	Number of settling ponds	No such proposals	Nil	
4k	Specific comments of inspecting officer on waste dump management			Waste dumps are already reclaimed through plantation. In the year 2017-18, 0.5 ha of exhausted pit area has been backfilled. Underground waste is being backfilled in the voids after exhaustion of minerals. Garland drains and retaining walls are already constructed at the toe of the dumps and fresh proposals may be incorporated upon getting clearance from MoEF for opencast workings.

Solid Waste Management - Backfilling:

Sl.No.	Item	Propasals	Actual work	Remarks
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5a	Status of part or full extraction of mineral from mined out area before starting backfilling.	Bckfilling shall commence after part exhaustion and full exhaustion both. For part exhaustion, as further working at levels below economic limits throug opencast workings shall not be possible, underground mining methods shall be adopted.	As per the proposals.
5b	Area under backfilling of mined out area	0.50 ha	0.50 Ha
5c	Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)	There is no top soil available in the lease area and generated top soil has already been utilized for plantation in the past.	Nil
5d	Total area fully reclaimed and rehabilitated	0.50 ha	0.50 ha
5e	General remarks of inspecting officers on backfilling and reclamation etc.	The reclamation of voids created in the underground by stoping are filled back by sand stowing and waste rock generated by development. The part of the opencast pit no.1 of 0.50 ha area is reclaimed by back filling with waste rock. The opencast pit no.2 will be used as a water reservoir in the future for rainwater harvesting.	

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).	Yes	Yes	
6b	Area available for rehabilitation (ha) .	Approximately 9.19 ha of mined out pit	Area under exhausted O/c pit and Magazine pit are available for Rehabilitation. The area shall be backfilled by Waste and then restored by plantation. Presently, it is under active reclamation.	0.50 ha area has been reclaimed and rehabilitated.
6c	afforestation done (ha).	39.19 ha	As per the proposals	
6d	No. of saplings planted during the year	Nil	10000 saplings, out of which 8500 was outside the lease area and 1500 was within the lease area.	
6e	Cumulative no .of plants	Data not available being very old mine.	Approximately 71000 Saplings and plants.	
6f	Any other method of rehabilitation	No such proposals	Nil	
6g	Cost incurred on watch and care during the year	Approximately Rs 22 lakhs	As per the proposals.	
6h	Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (Lx B x D	Approximately 9.19 ha: Magazine pit approximately 200 m X 200 m X 28 m & Opencast pit in Central part with 250 m X 200 m X 40 m	As per the details given in the proposals	
6i	Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings	0.50 ha area to be reclaimed and rehabilitated through backfilling waste	As per the proposals.	

6j	Compliance on reclamation and rehabilitation by backfilling (iii)Afforestation on on backfilled area	No such proposals till date	Nil	Backfilling is under progress
6k	Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir	No such proposals till date	Nil	
6l	Compliance on reclamation and rehabilitation by backfilling (v)any other specific means.	No such proposals till date	Nil	
6m	Compliance of rehabilitation of waste land within lease (i)afforestation	No such proposals till date	Nil	
6n	Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha)	No such proposals till date	Nil	
6o	Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation	No such proposals till date	Nil	
6p	Compliance of environmental monitoring (core zone and buffer zone)	Yes	Yes, being done as per the guidelines of MoEFCC.	

6q	General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.	Progressive closure is being done but it can be done at full swing only after getting clearance from MoEFCC. BACKfilling of exhausted pits is in progress, waste dumps are already reclaimed through plantation and environmental monitoring is also being done properly in the mine.
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Mineral Conservation:

Sl.No.	Item	Proposals	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area	Grade-wise sorting within lease area and then dispatch.	As per the proposals.	
7b	Method of grade-wise mineral sorting i.e. manual or mechanical.	Manual	Manual sorting.	
7c	Different grade of mineral sorted out at mines.	Below 25% Mn (i.e. Mineral Rejects) 25% to below 35% Mn 35% to below 46% Mn & 46% Mn and above	As per the proposals	
7d	Any beneficiation process at mines	No	No	

7e	General remarks of inspecting officer on Mineral conservation and beneficiation issues	Mine is being worked through underground mining method and complete mineral, apart from statutory barriers that are required for safety and support, is being extracted. Even material having more than 8% Mn (less than threshold value) and upto 25% Mn is being stacked separately for any future usage. 25% and above Mn containing material is being sold. Hence, mineral conservation aspect is being dealt satisfactorily.
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Environment:

Sl.No.	Item	Propasals	Actual work	Remarks
8a	Separate removal and utilization of topsoil (Rule 32)	No such proposals	Nil	Top soil, in the past, has already been excavated and utilized.
8b	Concurrent use or storage of topsoil	No such proposals	Nil	
8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)	Yes	Yes. Details furnished under item 4b of the report.	
8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	Yes	Yes, backfilling of mined out pits is in progress. Details furnished under item 5 of the report.	

8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	Yes	Yes, backfilling of mined out pits is in progress. Details furnished under item 5 of the report.	
8f	Baseline information on existence of plantation and additional plantation done (Rule 41)	Yes	Yes, it has been furnished in the approved Mining Plan for the lease area.	
8g	Survival rate		85% survival rate for plantation carried out within the lease area.	
8h	Water sprinkling on roads to control airborne dust	Yes	Yes	Water sprinkling is being done for the area under dump working. For the purpose, one water tanker with capacity 12000 Ltr is being utilized.
8i	General remarks of inspecting officer on aesthetic beauty in and around mines area			Apart from normal degradations due to mining activities, aesthetic beauty is satisfactory for the area. Lessee has carried out extensive plantations in and around the lease area. Waste dump plantation has already been done in the past and presently reclamation activities in form of restoration of land through backfilling is in progress. As underground mining is being carried out, environment impact is very less due to mining in the area.

Compliance of Rule 45:

Sl.No.	Item	Propasals	Actual work	Remarks
9a	Status of submission of Monthly and Annual returns		Online Monthly and Annual returns submissions are upto date.	
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Mining Engineer: Shri D. Thakur Geologist: Shri Anil Singh Rajput Manager: Shri R. A. Khan	Correct and complete information furnished.	
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	In the Land use pattern area has been shown under 'Already abandoned' category.	Incorrect information has been furnished.	Spot guidance given and suggested lessee to make corrections accordingly.
9d	Scrutiny of Annual return on afforestation	Within Lease area: 1500 saplings with 85% survival Outside lease area: 8500 saplings with 95% survival	Plantations within lease area was checked during field inspection and data furnished is correct by and large.	
9e	Scrutiny of Annual return on mineral reject generation (Grade and quantity)	Mineral rejects: Quantity- 4742 T Grade-8% Mn to 24%	Correct information has been furnished by the lessee.	
9f	Scrutiny of Annual return on ROM stock and/or graded ore	ROM: Opening and closing stocks-Nil, Production: 40513 T from Underground, 22487 T from Dump Working Graded Ore: Information has been furnished for various grades produced and dispatched from mine	For ROM (underground), mineral rejects have not been counted therefore, it was suggested to make corrections accordingly.	

9g	Scrutiny of Annual return on sale value, Ex. Mine price and production cost	Sale Value: Rs 1009840135/- Ex. Mine Price: 25% to below 35% Mn- Rs 4928.12/- per T 35% to below 46% Mn- Rs 12454/- per T 46% Mn and above- Rs 17633.80/- per T Cost of production- Rs 7478.09/- per T	Complete information has been furnished. It is under examination with MMS Div. as well as Regional Office separately and suitable actions shall be initiated in case of any discrepancy.
9h	Scrutiny of Annual return on fixed assets	Total Value of fixed assets: Rs 0 Apart from this value for fixed assets alongwith its depreciated values etc. have been furnished.	It was advised to the lessee to furnish correct information in the value of fixed assets and spot guidance given.
9k	Scrutiny of Annual return on mining machineries	Information on mining machineries deployed in the mine has been furnished in the returns.	Complete and correct information has been furnished.

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