

**INDIAN BUREAU OF MINES
MINERALS DEVELOPMENT AND REGULATION DIVISION
MCDR INSPECTION REPORT
BHUBANESWAR REGIONAL OFFICE**

General:

SL. No.	Particulars	Details
1	Name of the Mine	Mahagiri Chromite Mines
2	Date of inspection	13/7/2023
3	Name of inspecting officer	Prashant S Hegde, RMG along with Shri A.K Pany, AME
4	Name accompanying mine officials	Shri R R Sharma, Mines Manager Shri K . Mohapatra, Geologist & Shri Suresh Prusty, DGM (Geology)
5	Last date of Inspection & Officer	20.02.2023 Shri B.L Gurjar, RCOM & Shri A.K Pany, AME
6	Total Lease Area (Ha) with breakup of Non-forest and forest land	73.777 Ha. (Forest land)
7	Minecode	11ORI19017
8	IBM Registration Number under rule 45 of MCDR, 2017	IBM/4200/2011
9	Name of the lessee, Address, phone, email and fax number	M/s Indian Metals & Ferro Alloys Limited IMFA Building, At- Bomikhal, Po-Rasulgarh, BBSR, Dist.- Khurda, Pin- 751010, Phone- 06742580100, email- minesplanningcell@imfa.in and Fax- 06742580020
10	Village	Kaliapani
11	Taluka/Mandal	Sukinda
12	District	Jajpur
13	Pincode	755047
14	State	Odisha
15	Post office	Kaliapani
16	Nearest police station	Kaliapani
17	Nearest Railway station	Tomka
18	Date of Grant of Mining Lease	18/06/2005
19	Date of Execution	20/09/2005
20	Date of opening of Mine	16.01.2006 (O/C) & 02.01.2009 (U/G)

21	Date of expiry	19.09.2035 (Deemed to be extended upto 19.09.2055 as per MMDR Act)
22	Name of the Nominated Owner with Address, phone, email, fax number and date of appointment	Mr. C R Ray IMFA Building At/Po - Bomikhal, Rasulgarh,BBSR. District: Khurda, State: Odisha, Pin code: 751010 Phone: (0674) 2580100/125, Fax: (0674) 2580020 Email id: crray@imfa.in Date of Appointment-01.04.2013
23	Name of the Mine Agent with Address, phone, email, fax number and date of appointment	Sandeep Bapuraojee Narade, Mahagiri Mines(Chromite) Mob- 8118095950 At/Po- Kaliapani, Dist- Jajpur Pin - 755028, Odisha, Email: sandeepnarade@imfa.in Date of appointment : 1.07.2023
24	Name of the Mines Manager with Address, mobile no, email, fax number and date of appointment in mine	Mr. R.R. Sharma, Kaliapani, Jajpur, 755047 Mob.-9937297143, Email: rajeshsharma@imfa.in Date of appointment:- 01.04.2022
25	Name of the Mining Engineer , Qualification and total experience with Address, mobile no, email, fax/phone number and date of appointment in mine	Mr. R.R. Sharma, Kaliapani, Jajpur, 755047 Mob.-9937297143, Email: rajeshsharma@imfa.in Date of appointment:- 01.04.2022
26	Name of the Geologist , Qualification and total experience with Address, mobile no, email, fax number and date of appointment in mine	Mr. Khirod. Kumar Mohapartra, Kaliapani, Jajpur, 755047 Mob.9777444198, Email: khirodmohapatra@imfa.in Date of appointment:-02.03.2015
27	Date of Approval of Mining Plan/Review of Mining Plan/ their modifications with five-year period and specific condition in approval letter, if any.	Modification of Review of Mining Plan dated 11.08.2021 Period 2021-22 to 2024-25.
28	Mineral (s) granted in lease and proved for mining	Chromite
29	Method of Mining(Open cast, Underground)	Presently Underground only
30	Category (Fully Mechanised, Others or Manual)	A – Fully Mechanized.
31	Captive/Non Captive	Captive

I/14642/2023

32	Present EC Capacity	3,00,000 tonnes
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OBSERVATIONS/COMMENTS OF INSPECTING OFFICER:**Exploration:---**

SL.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
1a	Backlog of previous year	5 nos core boreholes with total 478m	6 nos core boreholes with total 436m	Underground exploration carried out.
1b	Exploration over lease area for Geological axis 1 or 2.	G1	G1	The potential mineralized area has been explored under G1 and non mineralized area under G2 .
1c	Exploration Agency & Expenditure in lakh Rupees during the year	NIL	Maheswari Mining (P) Ltd, & expenditure : 19.63 lakh rupees	_____
1d	Balance area to be explored to bring Geological axis in 1 or 2	Nil	Nil	Exploration proposed to ascertain the geometry and grade of ore body.
1e	Balance reserves as on 01.04.2023	NA	111: 4.032 million tonnes 122: 5.661 million tonnes as on 1/4/2023	Based on approved modified RMP dated 11/8/21 with cut-off grade of +10% Cr2O3 and avg. grade rage of 30 to 52 % Cr2O3
1f:	General remarks of inspecting Officer on Geology, exploration etc.	The Mahagiri Chromite Mine's deposit is a part of chromite bearing Sukinda ultramafic complex. Regional chromite band No VI of Sukinda Chromite belt is lying in the lease area have a general trend of ENE-WSW dipping 75 to 84 degree toward SSE .The potential mineralized area has been explored under G1 and non-mineralized area in category G2 . The ore body was explored upto -388 mRL level.		

Development:--

SL.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
2a	Location of development w.r.t. lease area	Underground development of 2450m	Underground development of 2426.64 m	NIL

I/14642/2023

2b	Separate benches in topsoil, overburden and mineral	NA	NA	Underground Mining proposals.
2c	Stripping ratio or ore to OB ratio	NA	NA	Underground Mining proposals.
2d	Quantity of topsoil generation in m3	Nil	Nil	Underground Mining proposals.
2e	Quantity of overburden generation in m3	17,951 m3 from Underground	20682.477 m3 from Underground.	As reported, little excess quantity due to achievements of backlog development of U/G operation.
2f	General remarks of inspecting Officer on development of pit w.r.t. type of deposit etc	Mining operations within the lease hold area commenced from 16.01.2006. Opencast mining was continued till 2017-18 and after that only underground mining is being carried out. Existing quarry has been developed over an area of 9.6 Ha. Leaving a parting of 50m below 185mRL (opencast Pit limit), underground mining has started. Trackless mining using LHD and LPDT has been adopted at underground mine. Underground working has been accessed by a Decline and vertical Shaft from the surface. Vertical shaft: 315m depth and Ventilation Shaft:41 m depth; Decline Length 2958 m.		

Exploitation:--

SL.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
3a	Number of pits proposed for production	Stope blocks: 10S3,10P4,10S4, 9S6, AP4, AS6,AS5, AP3, AS4,AP2, AS3, AP1, AP17, AP16	Stope blocks- 10S4,10P3,AP1,AP2,AP3 AS3,AS4,AS5,AS6,AP16, AP17	As per stoping permission granted by IBM
3b	Quantity of ROM mineral production proposed	Stope production: 2,55,000 tonnes + Development production:45,000 tonnes = Total of 3,00,000 tonnes	Stope production: 2,34,944.79 tonnes + Development production:45,511.54 t = Total of 2,80,456.33 tonnes	Nil
3c	Recovery of salable/usable mineral from ROM production	90 %	90 %	10 % mining loss
3d	Quantity of	Nil	Nil	_____

	mineral reject generation			
3e	Grade of mineral reject generation and threshold value declared	Nil	Nil	Threshold value of Chromite : Cr2O3-10% (Min.)
3f	Quantity of sub-grade mineral generation	Nil	Nil	Avg. grade Ore : 30 to 52 % Cr2O3
3g	Grade of sub-grade mineral generation	Nil	Nil	
3h	Manual / Mechanised method adopted for segregating from ROM	Mechanized	Mechanized	-----
3i	Any analysis or beneficiation study proposed & carried out for sub-grade mineral and reject	Nil	NA	-----
3j	Provision of drilling & blasting in mineral benches	Drilling pattern in ore and rock of Development faces: Burn Cut with 45 to 89 mm dia. holes; Drilling pattern in Stopes Ring Drilling with 100 - 150mm dia. holes ; Charge per round (Kg); 117 in Development;	As per proposals.	-----
3k	Provision of mining machineries in mineral benches	Trackless mining using LHD and LPDT has being adopted at underground mine	Trackless mining using LHD and LPDT has being adopted at underground mine	-----
3l	Whether	Nil	NA	Underground

I/14642/2023

	height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM			d Mining proposals.
3m	Total area covered under excavation/pits	NA	NA	Underground Mining proposals.
3n	Ore to OB ratio for the pit/mine during the year	NA	NA	Underground Mining proposals.
3o	Total area put in use under different heads at the end of year	Land use Area in Ha 1.Area under mining-9.60Ha 2.Reclaimed/Rehabilitated-7.84Ha 3.Used for waste Disposal- 5.09 4.Occupied by Infrastructure-9.837Ha	Land use Area in Ha 1.Area under mining-9.60Ha 2.Reclaimed/Rehabilitated- 7.84Ha 3.Used for waste Disposal- 5.09 4.Occupied by infrastructure -9.837Ha	_____
3p	Production of ROM mineral during last five-years period, as applicable	2018-19=2,10,000MT 2019-20=2,62,000MT 2020-21=3,00,000MT 2021-22=3,00,000MT 2022-23=3,00,000MT	2018-19=2,01,383.795MT 2019-20=1,99,178.598MT 2020-21=2,40,899.685MT 2021-22=2,93,954.836MT 2022-23=2,80,456.33MT	_____
3q	General remarks of inspecting Officer on method of mining etc	Blast hole stoping with post filling is being carried out as method of stoping, in accordance with Approved modified RMP. This method has been selected considering high percentage of ore recovery with minimum ore dilution and adequate ground control and long term stability. Trackless mining using LHD & LPDT is being adopted at underground mine. Eight levels are developed so far at +145mRL, +132 mRL, +85mRL, +72mRL, +25mRL, +12 mRL, -35mRL and -95 mRL.		

Solid Waste Management-Dumping:--

SL.No.	Item	Proposals (FY 2022-	Actual work	Remarks
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		23)		
4a	Separate dumping of topsoil, OB & mineral reject (Rule 32, 33)	Topsoil-No Wastes form underground operation :17,951 m3 Mineral reject-No	Topsoil-No Wastes form underground operation :20,682 m3 Mineral reject-No	_____
4b	Location of topsoil, OB & mineral reject dumps	Topsoil-No Wastes- 3922E to 3430E and 1454N to 1134 N Mineral reject-NA	Topsoil-No Wastes-E/W 3922E to 3430E and 1454N to 1134 N Mineral reject-NA	Wastes are used for back-filling of opencast pit & underground void and land filling as per the proposals.
4c	Number of dumps within lease area and outside lease area	Within lease-One nos Outside-Nil	Within lease-One nos Outside-Nil	_____
4d	Location of dumps w.r.t. ultimate pit limit	Northern side of the lease w.r.t. ultimate pit limit of 185 mRL	Northern side of the lease w.r.t. ultimate pit limit of 185 mRL	_____
4e	Number of active & alive dumps	Nil	Nil	_____
4f	Number of dead dumps	One	One	_____
4g	Number of dumps stabilised	One	One	_____
4h	Whether Retaining wall or garland drain all along dumps are there	Yes	Yes	_____
4i	Length of Retaining wall or garland drain all along dump	Retaining wall-50m Garland drain-150m	Retaining wall-50m Garland drain-150m	As per Mining plan proposals
4j	Number of settling ponds	De-siltation of settling pond	De-siltation of 6 nos settling ponds has been carried out.	_____
4k	Specific comments of inspecting Officer on waste dump management	13,000 m3 Wastes were used for back-filling of opencast pit & remaining wastes used for backfilling underground void and land filling as per the proposals.		

Solid Waste Management-Backfilling:--

SL.No	Item	Proposals (FY 2022-23)	Actual work	Remarks
5a	Status on part or full extraction of mineral from mined out area before starting backfilling	NA	NA	Underground mining operation below opencast pit.
5b	Area under backfilling of mined out area	0.52 ha	0.52Ha	opencast pit
5c	Concurrent use of topsoil for	Nil	Nil	Underground

I/14642/2023

	restoration or rehabilitation of mined out area			mining operation
5d	Total area fully reclaimed & rehabilitated	7.84 reclaimed & 2.29 Ha rehabilitated so far	7.84 84 reclaimed & 2.29Ha 84 rehabilitated sofar	Opencast existing pit.
5e	General remarks of inspecting Officer on backfilling and reclamation etc	Wastes were used for back-filling of opencast pit & underground void and land filling as per the proposals. Back filling of the stopes in which stoping completed is being carried out, as per the recommendation of the CIMFR. The hydraulic fill is being transported to underground through pipe lines. During FY 22-23: Back filling completed - AS7, AS4, AS6, AP3,AP4, AS5,AS4,AP2 , 10S4 and Stoping of Block 10S3, 10P4 & 9S6 yet to be started.		

Progressive Mine Closure Plan:---

SL.N.	Item	Proposals (FY 2022-23)	Actual work	Remarks
6a	Whether Annual report on PMCP submitted on time and correctly - Rule 26(2). (Hard copy same provided)	Before 1 st July of, 2022-23	Submitted on time	NIL
6b	Management of worked/ mined out benches i) Area available for rehabilitation (ha) ii) Afforestation done (ha) iii) No. of saplings planted during the year iv) Cumulative no. of plants v) Any other specific method of rehabilitation vi) Cost incurred on watch & care during the year	i)0.1Ha ii)0.1Ha iii)250 nos iv) - v)Plantation vi) Nil	i)0.1Ha ii)0.1Ha iii)265 nos iv)27656 v) Plantation vi) Nil	NIL
6c	Compliance on reclamation and rehabilitation by backfilling i) Voids available for backfilling (L X B X D) ii) Void filled by waste/tailings iii) Afforestation on the backfilled area	i)0.42/0.8 L.cum (underground) ii)0.13 L.cum (Pit)/0.8 L. cum. (stope)	i)0.42/0.83 L.cum (underground) ii)0.13 L.cum (pit)/0.83 L. cum(Stope)	NIL

	iv) Rehabilitation by making water reservoir v) Any other specific means	iii)0.1Ha/250nos iv)Nil v)NA	iii)0.1ha/265 iv)Nil v)NA	
6d	Compliance of Rehabilitation of waste land within lease i) Afforestation ii) Area rehabilitated (ha) iii) Method of rehabilitation	i)Nil ii)Nil iii)Nil	i)Nil ii)Nil iii)Nil	NIL
6e	Compliance of Environmental monitoring (core zone & buffer zone)	Monitoring of AAQ , water Quality and noise level to be carried out through a recognized environmental consultant.	Monitoring of AAQ , water Quality and noise level are being carried out through a recognized environmental consultant, M/S SIMA LAB Pvt Ltd ,New Delhi and parameters are within the limit.	NIL
6f	General remarks of inspecting Officer on PMCP compliance & progressive closure operation etc	Lessee has implementing PMCP proposals as per approved modified RMP.		

Mineral Conservation:---

SL.No.	Item	Proposals ((FY 2022-23)	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area	The ore produced from mine is being consumed at their captive plant at Choudwar & Therubali . Plant acceptable grade of ore is +30%Cr2O3.	Grade wise dispatch to their captive plant at Choudwar & Therubali. Size During FY 2022-23 Dispatch Qty Lumps: Below 40% Cr2O3- 10,687.51MT 40% to below 52% Cr2O3- 2,14,603.050MT Fines:	NIL

I/14642/2023

			Below 40% Cr2O3-10,935.960MT 40% to below 52% Cr2O3-63,451.150MT	
7b	Method of grade-wise mineral sorting i.e. manual or mechanical	Mechanical using crusher and screening	Mechanical using crusher and screening	NIL
7c	Different grade of mineral sorted out at mines	Below 40%, 40% to below 52%	Below 40%, 40% to below 52%	NIL
7d	Any beneficiation process at mines	Nil	Nil	NIL
7e	General remarks of inspecting Officer on mineral conservation & beneficiation issues	Grade-wise sorting & dispatches of ore/mineral to their captive plant as per the proposals and there is no mineral conservation issue.		

Environment:--

SL.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
8a	Separate removal and utilization of topsoil	Nil	Nil	Underground mining operation.
8b	Concurrent use or storage of topsoil	Nil	Nil	Nil
8c	Separate dumps for overburden, waste rock, rejects and fines	13,000 Cum of underground wastes backfilled in opencast pit	13,000 Cum of underground wastes backfilled in opencast pit	Nil
8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	-Wastes are used for back-filling of opencast pit & underground void and land filling as per the proposals.	Carried out as per the proposals	Nil
8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	0.52 Ha area backfilling of openpit/0.1ha area afforestation during year 22-23	0.52 Ha area backfilling of open-pit/0.1ha area afforestation during year 22-23	_____
8f	Baseline information on existence of plantation & additional plantation done	250 nos plantation during year 22-23 in 0.1 Ha area	265 nos saplings planted in 0.1 Ha area	_____
8g	Survival rate	95 %	95 %	_____

8h	Water sprinkling on roads to control airborne dust	Water sprinkling on roads proposed	Carried out as per the proposals.	_____
8i	General remarks of inspecting Officer on aesthetic beauty in & around mines area.	Aesthetic beauty in & around mines area is good as lessee implementing the PMCP proposal and carried out plantation as per the proposals.		

Compliance of Rule 45

SL.No.	Item	COMMENTS		Remarks.
9a	Status of submission of Monthly and Annual returns	Regularly submitting the MRs/ARs on-time.		Nil
S.N.	Item	Details GIVEN in A.R.	Actual in field	_____
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Mining Engineer Cum Manager: Shri Rajesh R Sharma Geologist: Shri Khirod Kumar Mohapatra	Actual also the same	_____
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	Land use Area in Ha 1.Area under mining- 9.60Ha 2.Reclaimed/ Rehabilitated- 7.84Ha/2.29Ha 3.Used for waste Disposal- 5.09Ha 4.Occupaied by infrastructure and road -12.688	Actual also as per AR	_____
9d	Scrutiny of Annual return on afforestation	250 nos	265 nos of saplings planted inside the lease area.	_____
9e	Scrutiny of Annual return on mineral reject generation (Grade & quantity)	Nil	Nil	_____
9f	Scrutiny of Annual return on ROM stock and/or graded ore	Stock ROM as on 31.03.2023- 11347.800MT Stock of graded Ore	Appear to be correct.	The lessee has advised to make necessary entry of the

I/14642/2023

		as on 31.03.2023-12501.144 MT		production proposals @ on-line MRs/AR. Subsequently, the same was approved on 2/8/23.
9g	Scrutiny of Annual return on sale value, Ex. Mine price & production cost	Ex-Mine Price and cost of production: Rs-8838.35 per tonne	Appear to be correct as captive mine.	_____
9i	Scrutiny of Annual return on fixed assets	Value Rs-22,77,23,182	Appear to be correct	_____
9k	Scrutiny of Annual return on mining machineries	FRONT END LOADER: 6 nos ; TIPPERS: 7nos ; WATER TANKER: 1nos ; LOAD HAUL DUMPER: 7 nos ; CRUSHER(150T/H): 1nos ; AIR COMPRESSOR: 3nos ; ROCK DRILL (ELEC.): 1 nos ; PUMPS (ELEC.): 7 nos ; VENTILATION FAN: 2nos .	Observed to be correct	_____

(10) Violation observed during current inspection and compliance position of earlier violation pointed out:

(a) Compliance position of earlier violation pointed out: No serious violation pointed out during earlier inspection.

(b) No serious violations observed during current inspection.

(11) On-line validation of star rating of templates submitted under rule 35 (FY-2022-23) has been made on 3/8/23 for four star.

(12) The lessee was submitted drone data under rule 34A for FY 22-23 on 19/6/23 and discrepancies observed in the image during validation has also been communicated on 4/8/23 for compliance.

Date:4/8/2023

(Prashant S. Hegde)
Regional Mining Geologist