

## MCDR INSPECTION REPORT

### 1.0 GENERAL

SLN	PARTICULARS	DETAILS
1	File No.	CHG/DNT/FE-1/30CHG03002
2	Name & Designation of the inspecting officer	Shri Rudra N. Mishra, Senior Mining Geologist
3	Date of Inspection	11/12/2021 (MCDR)
4	Accompanying mine personnel	Shri Vinak Tiwari, General Manager, Geology, Shri Vivek Kumar, Dy. General Manager, B.E (Mining)
5	Date of Last Inspection & Officer	04/03/2021, Shri R.K. Das (Sr. ACOM)
6	Name of the Mine	<b>Bailadila Iron Ore Mines, Kirandul Complex, DEP-11 ML</b>
7	Total Lease Area (Ha) with breakup of non-forest and forest land	Forest Land: 874.924 Ha Non-Forest Land: Nil Total Land: 874.924 Ha
8	Mine code	30CHG03002
9	IBM Registration Number under rule 45 of MCDR, 2017	IBM/270/2011
10	Name of the lessee, Address, phone, email and fax number	NMDC Ltd, 10-3-311/A, Castle hills, Masab tank, Hyderabad, Telangana Ph.no: 040-23538704 e-mail: nmdchyd@hd1.vsnl.net, <a href="mailto:dkmohanty123@nmdc.co.in">dkmohanty123@nmdc.co.in</a> fax: 040-23538705
	Village	Kirandul
	Taluka/Mandal	Bade Bacheli,
	District	Dantewada
	Pin code	Kirandul, 494556
	State	Chhattisgarh
	Post office	Kirandul
11	Nearest police station	Kirandul
12	Nearest Railway station	Kirandul
13	Date of Grant of Mining Lease	27/12/1966
14	Date of Execution	12/09/1967
15	Date of opening of Mine	In the year 1987
16	Date of first Renewal, if applicable and its period & expiry	12/09/1997, 20Years, Expiry-11/09/2017
17	Date of submission of renewal application if Mining Operations are continuing under deemed extension	Under Rule 3(3) of Mineral (Mining by Government Company) Rules, 2015, the Mining Lease has been extended for 20 years from 11.09.2017 to 10.09.2037 by Mineral Resource Department, Govt of Chhattisgarh via Office Order No. f 4-

		55/2017/XII Naya Raipur, dated 11.05.2018.
18	Name of the Nominated Owner with Address, phone, email, fax number and date of appointment	NA
19	Name of the Mine Agent with Address, phone, email, fax number and date of appointment	Shri D K Mohanty, Director (Production) NMDC Ltd, 10-3-311/A, Castle hills, Masab tank, Hyderabad Ph.no: 040-23538704 e-mail ID: <a href="mailto:dkmohanty123@nmdc.co.in">dkmohanty123@nmdc.co.in</a> fax:040-23538705 Date of appointment: 8.10.2021
20	Name of the Mines Manager with Address, phone, email, fax number and date of appointment in mines	Shri R. Govindarajan, Executive Director, NMDC Ltd, Kirandul, B.I.O.M. Kirandul Complex, Dantewada PIN-494556, Chhattisgarh, Phone 07857-255222 Fax no: 07857-255227 e-mail: <a href="mailto:rgovindarajan@nmdc.co.in">rgovindarajan@nmdc.co.in</a> Date of appointment: 31.12.2019
21	Name of the Mining Engineer, Qualification and total experience with Address, phone, email, fax number and date of appointment in mine	Shri Vinay Kumar, Chief General Manager (Prod), NMDC Ltd, Kirandul, B.I.O.M. Kirandul Complex, Dantewada PIN-494556, Chhattisgarh, Ph.no: 07857 230223 e-mail: <a href="mailto:vinaykumar@nmdc.co.in">vinaykumar@nmdc.co.in</a> fax: 07857-255226 Date of appointment: 30.09.2018
22	Whether Geologist and Mining Engineer appointed in mines satisfy the rule 42 & carrying out their duties as per rule 43 & 44.	Shri Vivek Kumar, Dy. General Manager, B.E (Mining) FCC (R), Experience: 22Years Approximately NMDC Ltd, Kirandul, B.I.O.M. Kirandul Complex, Dantewada PIN-494556, Chhattisgarh, DOA:13/08/2021
23	Date of Approval of Mining Plan/Modified Mining Plan with five-year period and specific condition in approval letter, if any.	Yes, Shri Rityan. Goswami, MSc (Applied Geology), 14years, AGM (Geo.), Deposit 11, B.I.O.M. Kirandul Complex, Ph.No. 9406289240, Email- <a href="mailto:gritayan@nmdc.co.in">gritayan@nmdc.co.in</a> , Date of appointment: 30.07.2020
24	Date of Approval of Scheme of Mining/Modified Scheme of Mining with five-year period and specific condition in approval letter, if any.	Vide Letter No: 314(3)/96- MCCM (c) /MP-7, Dated: 23.07.1997. Vide Letter No: 314(3)/2005 MCCM (cz) /MP-7, Dated: 15.10.2005. Vide Letter No: Dantewada/FE/MPLN-1055/2016/Raipur/724, Dated:09.12.2016 Vide Letter No: Dantewada /Fe/Khanij-1203/2018/-Raipur/72 dated 08-05-2019

		Vide letter No.: DANTEWADA/FE/MP-1215/2019-RAIPUR/546, 11.12.2019
25	Mineral(s) granted in lease and proved for mining	Vide Letter No: 314(3)/2007 - MCCM (CZ) /S-7, Dated:29.11.2007 Vide Letter No: 314(3)/2012 - MCCM (CZ) /MS-18, Dated:11.03.2013
26	Method of Mining (Opencast, Underground)	Hematite
27	Category (Fully Mechanized, Others or Manual)	Opencast
28	Captive/Non-Captive	Fully Mechanized
29	EC for ROM Prod: Date of Issue:	Non-Captive
30	FA amount Rs Valid up to:	9.50 million tonnes,

Scientific Mining: Compliance of proposals of approved mining plan/scheme of mining. –

### **1.0 EXPLORATION**

<b>SN</b>	<b>ITEM</b>	<b>PROPOSALS (2020-21)</b>	<b>ACTUAL WORK (2020-21)</b>	<b>REMARKS</b>
1a	Backlog of previous year	99BH/5535Mts	74BH/6880 Mts	Violation pointed out for deviating the exploratory bore holes proposal.
1b	Exploration over lease area for Geological axis 1 or 2.	G1& G2	G1-160.826 Ha. G2-65.933 Ha G3 – 365.731 Ha G4 – 32.752 Ha	625.242 Ha is mineralized as per approved plan & 249.682 Non mineralized area
1c	Exploration Agency & Expenditure in lakh Rupees during the year	Exploration proposed by GEC Raipur (In house) , no expected expenditure given	Exploration carried out in House (GEC Raipur)	
1d	Balance area to be explored to bring Geological axis in 1 or 2	99BH's proposed to convert G2 into G1	83.19 Ha needs to be explored but only 45.62 ha converted in G1 area	74 BH drilled in G1 area
1e	Balance reserves as 01.04.2021	Nil	Mineral Reserves (111): 300.39 million tonnes, Mineral Reserves (122): 39.68 million tonnes with average quality of Lump: 66.20 % Fe & Fines: 64.03%	As per AR submitted for the year 2020-21.

1f	General remarks of inspecting officer on geology, exploration etc.	<p>Deposit 11 divided in three-part 11A, 11B, &amp; 11C.</p> <p>Deposit-11A: The total strike length of the mineral body is 2600 Mtr between CS8 to CS33 trending almost N-S however total length of the deposit is 1700mtr between CS9 to CS 25. The width of the body varies between 220m to 420m in the central zone. Average depth is 73.66m (maximum 155m and minimum 28m) based on exploration data.</p> <p>Deposit-11B: It Extends over strike length of 2800m trending about N-S with average width of 600m varying from 450m to 900m divided in three blocks north, central and south on the basis of ore body appearance.</p> <p>Deposit-11C: The area belongs to the northern part of the Deposit 14NMZ ML. The total length about 1700m with the average ore body width 350m.</p> <p>The Iron ore of Bilabial range belong to the Bilabial series which are associated with slightly metamorphosed iron ore bearing sedimentary rocks of pre-cambrian age. These hill ranges comprise shale, banded hematite quartzite and conglomerates containing pebbles of quartzite and shale.</p> <p>BHQ is occurring as mother rock, usually parallel bands along the strike direction. Iron ore is formed due to enrichment of iron by leaching of silica from BHQ by supergene enrichment occurring as a main ore type” Hematite” in soft (as Blue Dust) and homogeneous, massive and hard and compact steel grey and hard to medium hard blue hematite form. Mineral deposit is meta-sedimentary stratiform deposit. VL pointed out. Not bore hole drilled as per proposal</p>
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## **2.0 DEVELOPMENT**

SN	ITEM	PROPOSALS (2020-21)	ACTUAL WORK (2020-21)	REMARKS
2a	Location of development w.r.t. lease area	Dep-11A 523681 E -523454 E 2065829 N– 2065360N Dep-11B 524547 E -523783 E 2063439 N– 2062758N Dep-11C 525377 E -524878 E 2061101 N– 2060652N	Dep-11A 523666 E -523445 E 2065843N– 2065384N Dep-11B 524512 E -523901 E 2063345N– 2062718N Dep-11C 525081 E -524948 E 2061031N– 2060655N	
2b	Separate benches in topsoil, overburden and mineral (Rule 15)	Separate benches proposed in overburden and mineral	Separate benches maintained in overburden and mineral	Overburden-5  Mineral-5

2c	Stripping ratio of ore to OB ratio (t / t)	1:0.25	1:0.13	
2d	Quantity of topsoil generation in m <sup>3</sup>	No proposal	Nil	No Top soil generation
2e	Quantity of overburden generation in m <sup>3</sup>	2384000 Tons	586851 Tons	Bulk Density t/m <sup>3</sup> : Ore: 3.5(avg) OB: 2.7(avg)
2f	General remarks of inspecting officer on development of pit wrt. type of deposit etc.	Mining carried out by fully mechanized open cast bench mining method with deployment of HEMM and in conjunction with deep hole drilling & blasting. Production activity is scheduled in three shifts in rotation.		

### **3.0 EXPLOITATION**

S.N.	ITEM	PROPOSAL (2020-21)	ACTUAL WORK (2020-21)	REMARK
3a	Number of pits proposed for production	1pit proposed	Working in one pit only	.
3b	Quantity of Iron Ore production proposed	Total: 9500000Tonne Dep-11A 2000000 Tonne Dep-11B 6000000 Tonne Dep-11C 1500000 Tonne	Total: 5773993Tonne Dep-11A 155106 Tonne Dep-11B 4490908 Tonne Dep-11C 1127979 Tonne	Within the proposed limit
3c	Recovery of saleable/usable mineral from Iron Ore production	100%	100%	No change
3d	Quantity of mineral reject generation	285000 tonnes	158000 tonnes	As per AR submitted for the year 2020-21.
3e	Grade of mineral reject generation and threshold value declared	50% fe,	50% fe,	As per AR submitted for the year 2020-21.
3f	Quantity of sub-grade mineral generation	No proposal	Nil	
3g	Grade of sub-grade mineral generation	45-55 Fe %	50 Fe %	
3h	Manual / Mechanised method adopted for segregating from ROM	Mechanized method proposed for segregating from ROM	Mechanized method adopted for segregating from ROM	Dry Crushing (7.0 MTPA) & Screening (3000Tph)
3i	Any analysis or beneficiation study proposed & carried out for sub-grade mineral and reject	No study Proposed	No such study carried out	Nil
3j	Provision of drilling & blasting in mineral benches	Provision of Drilling and	Drilling and blasting carried out by	Drill m/c of 254mm dia. &

		blasting is made in Mineral benches for hard strata	combination of slurry and Nonel Detonators	152.400 mm dia. with spacing -7.0 – 6.0mts, burden 5.5 -4.5 mts & depth of 12 mts
3k	Provision of mining machineries in mineral benches	Hydraulic excavators and Dumper combination Proposed	Mining is carried out by using Hydraulic excavators and 100 Tonner Dumper.	Drill Machine: 05 Nos, Dumpers: 05 Nos. (100 Tonner- 4 dumpers & 01 dumper: 85.00 tonner), Shovel:04No., Dozers:04 Nos, Water Tankers:02 Nos
3l	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Bench height of 12 m and width of 40-50 m proposed	Average Bench height of 12 m and bench width of 40-45 m maintained	
3m	Total area covered under excavation/pits	361.041 Ha at the end of plan period	94.59 Ha at the end of reporting year	Nil
3n	Stripping ratio of ore to OB ratio (tonnes /tonnes)	1:0.25	1:0.13	Nil
3o	Total area put in use under different heads at the end of year	Area Under Pit: 361.04 ha, Waste dump-163.332 Ha, Mineral storage: 92.703, Infrastructure-244.303 Ha at the end of plan period	Covered under working pit-94.59 Ha, Use for waste disposal: 71.989 ha Occupied by plant, building residential, welfare building and roads:46.058 ha at the end of reporting year	Nil
3p	Production of Iron Ore during last Five -year period, as applicable	2016-17-3800000 Tons	2016-17- 1310508 Tons	Actual production within the proposed limits
		2017-18-3800000 Tons	2017-18- 2618285 Tons	
		2018-19-4800000 Tons	2018-19- 3468280 Tons	
		2019-20-6800000 Tons	2019-20- 5029112 Tons	
		2020-21-6800000 Tons	2020-21- 5773993 Tons	
3q	General remarks of inspecting officer on method of mining etc.	Method of mining is Open cast mechanized mining with shovel dumper combination. Subgrade mineral blended with Saleable ore.		

#### **4.0 SOLID WASTE MANAGEMENT-DUMPING**

<b>SN</b>	<b>ITEM</b>	<b>PROPOSALS (2020-21)</b>	<b>ACTUAL WORK (2020-21)</b>	<b>REMARKS</b>
4a	Separate dumping of topsoil, OB & mineral reject (Rule 32, 33)	Separate dumping for OB proposed	Separate dump of OB maintained	Nil
b	Location of topsoil, OB & mineral reject dumps	Dep-11A 523320 E-523304E 2065162N- 2065269N Dep-11B 524018 E-524135 E 2062861N- 2062950N Dep-11C 524531 E – 524904 E 2060015N- 2060460N	Dep-11A 523320 E-523304 E 2065162N- 2065269N Dep-11B 524018 E-524135 E 2062861N- 2062950N Dep-11C 524531 E – 524904 E 2060015N- 2060460N	Waste is being dump at earmarked place as per approved documents.
4c	Number of dumps within lease area and outside lease area	Within lease area-3 Nos. Outside lease area- Nil	Within lease area-3 Nos Outside lease area- Nil	
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)	Out Side UPL	Out Side UPL	
4e	Number of active & alive dumps	03 of active & alive dumps proposal	03 of active & alive dumps	
4f	Number of dead dumps	No Proposal	Nil	
4g	Number of dumps stabilized	No Proposal	Nil	
4h	Whether Retaining wall or garland drain all along dumps are there	GD 2000 m Proposed	Garland Drain:1750m constructed all along dump	
4i	Length of Retaining wall or garland drain all along dump	GD- 2000 meters	GD- 1750meters constructed	
4j	Number of settling ponds	03	03	Nil
4k	Specific comments of inspecting officer	No top soil encountered at this stage. Waste is being dump at earmarked place as per approved documents.		

## **5.0 SOLID WASTE MANAGEMENT-BACKFILLING**

<b>SN</b>	<b>ITEM</b>	<b>PROPOSALS (2020-21)</b>	<b>ACTUAL WORK (2020-21)</b>	<b>REMARKS</b>
5a	Status on part or full extraction of mineral from mined out area before starting backfilling	No Proposal	Nil	Area is not matured for backfilling
5b	Area under backfilling of mined out area	No Proposal	Nil	
5c	Concurrent use of topsoil for restoration or rehabilitation of mined out area (Rule 32)	No Proposal	Nil	
5d	Total area fully reclaimed & rehabilitated	No Proposal	Nil	
5e	General remarks of inspecting officer on backfilling, reclamation etc	The Mineral is not exhausted and the area is not matured for backfilling.		

## **6.0 PROGRESSIVE MINE CLOSURE PLAN**

<b>SN</b>	<b>ITEM</b>	<b>PROPOSALS (2020-21)</b>	<b>ACTUAL WORK (2020-21)</b>	<b>REMARKS</b>
6a	Whether Annual report on PMCP submitted on time and correctly - Rule 23E (2). Details should be given in the format as given in Annexure-20.	PMCP report to be submitted by 1 <sup>st</sup> of July every year.	PMCP report submitted.	
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	No Proposal	i) Nil ii) 2.0 Ha iii) 2000 nos iv) 415319 nos v) Nil  Departmental	
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 iv) Rehabilitation by making water reservoir v) Any other specific means	No Proposal	Nil	



6d	Compliance of Rehabilitation of waste land within lease i) Afforestation ii) Area rehabilitated (ha) iii) Method of rehabilitation	No Proposal	Nil	
6e	Compliance of Environmental monitoring (core zone & buffer zone)	Proposed Environmental monitoring in core and Buffer Zone.	Environmental monitoring in core and Buffer Zone is carried out regularly.	Monitoring carried out by M/s Pragati Lab consultant Pvt.Ltd, Hyderabad. All the parameters were observed to be within the permissible limits.
6f	General remarks of inspecting officer on PMCP compliance & progressive	PMCP activities were carried out as per proposal.		

### 7.0 MINERAL CONSERVATION

SN	ITEM	PROPOSALS (2020-21)	ACTUAL WORK (2020-21)	REMARKS
7a	ROM Mineral dispatch or grade-wise sorting within lease area	Grade-wise sorting proposed within the lease area	Grade-wise sorting done within the lease area	Subgrade mineral generated is blended simultaneously with high grade mineral during feeding to the crushing plant.
7b	Method of grade-wise mineral sorting i.e., manual or mechanical	Mechanical sorting proposed.	Mechanical method adopted for grade wise sorting.	
7c	Different grade of mineral sorted out at mines	Below 55 Fe%, 55 to 58 Fe%, 58 to 60 Fe%, 60 to 62 Fe%, 62 to 65 Fe% 65% and above	Below 55 Fe%, 55 to 58 Fe%, 58 to 60 Fe%, 60 to 62 Fe%, 62 to 65 Fe% 65% and above	

7d	Any beneficiation process at mines	No proposal	Nil	
7e	General remarks of inspecting officer on Mineral conservation & beneficiation issues	Crushing is being done for sizing of ore. Partially Mineral rejects are disposed onto Dynamic Stockpile and blended with high grade ore		

## **8.0 ENVIRONMENT**

<b>SN</b>	<b>ITEM</b>	<b>PROPOSALS (2020-21)</b>	<b>ACTUAL WORK (2020-21)</b>	<b>REMARKS</b>
8a	Separate removal and utilization of topsoil (Rule 32)	No proposal	Nil	No top soil generated
8b	Concurrent use or storage of topsoil	No proposal	Nil	
8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)	Separate dumping for OB proposed	Separate dump for OB maintained	
8d	Use of overburden, waste rock, rejects and fines dump for restoring the land to its original use	No proposal	Nil	
8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc.)	No proposal	Nil	
8f	Baseline information on existence of plantation & additional plantation done (Rule 41)	4000 saplings proposed	2000 saplings planted	Plantation carried out in 7.5 Mts safety zone, Violation Pointed out
8g	Survival rate	No proposal	80% survival rate	Nil
8h	Water sprinkling on roads to control airborne dust	Water sprinkling on haul roads proposed to control airborne dust.	Water Tankers were deployed to control the airborne dust on haul roads and screening plants.	2 nos of water tankers of 28000 lt capacity deployed.
8i	General remarks of inspecting officer on aesthetic beauty in and around mines are	The aesthetic beauty in and around the mine is well maintained		

## 9.0 COMPLIANCE OF RULE 45

S. N.	Item	Comments	Remarks
9a	Status of submission of monthly and Annual returns	M.R. Submitted upto–Nov -2021 A.R. submitted for the year 2020-21	AR Submitted on 30.06.2021
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Mines Manager- Shri Vinay Kumar Mining Engineer- Shri S K Kochar Geologist-Shri. Ritayan Goswami	Same Mining Engineer & Geologist were present during the course of inspection.
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	Covered under working pit-94.59 Ha, Use for waste disposal: 71.989 ha Occupied by plant, building residential, welfare building and roads:46.058 ha at the end of reporting year	Appears to be correct
9d	Scrutiny of Annual return on afforestation	WML- 2000 saplings @80% Survival Rate, OML- Nil	Violation Pointed out
9e	Scrutiny of Annual return on mineral reject generation (Grade & Quantity)	Nil	Nil
9f	Scrutiny of Annual return on ROM stock and/or grade ore	ROM Stock: Opening Stock: 150805.00T Production: 5773993.00 T. Closing stock: 745554.00 T Dump working: OB, Production & CB- Nil	Appears to be correct
9g	Scrutiny of Annual return on sale value, Ex. Mine price & production costs	<b>Lumps</b> Ex Mine Price:65% and above: Rs 5095.40/Ton <b>Fines:</b> Ex Mine Price:60% to below 62%: Rs 3230.33/Ton Ex Mine Price:62% to below 65%: Rs 3858.84/Ton Ex Mine Price:65% and above: Rs 4074.11/Ton Cost of production: Rs.1402.08/Ton	Violation Pointed out
9i	Scrutiny of Annual return on Fixed assets	Value of Fixed Assets: Rs 6205841108 (As per reported in AR)	
9k	Scrutiny of Annual return on mining Machineries	Drill Machine: 05 No, Dumpers: 05 Nos. (100 Tonner- 4 dumpers & 01 dumper: 85.00 tonner), Shovel:04No., Dozers:04 Nos, Water Tankers:02 Nos	

10- Details of violations observed during current inspection and compliance position of earlier violation pointed out: -Violations Pointed-out during Inspections below

नियम	उल्लंघन के प्रकार का विस्तृत ब्यौरा
Rule 11(1)	<p>RMP along with PMCP was approved vide letter no. DNT/FE/MP-1215/2019-RAIPUR/546, 11.12.2019 for a period of <b>2020-21 to 2024-25</b>. The deviation observed in mining operation vis-a-vis approved document are given below</p> <p>1) As per approved Mining Plan, 99 boreholes were proposed to be drilled till the year 2020-21, only 74 number of boreholes have been drilled.</p> <p>2) Afforestation: There was a proposal given for plantation of 4000 nos. of plants during 2020-21. Whereas, only 2000 of the plants have been planted</p>
Rule - 19	<p>Machinery and plant. -(1) Where heavy earth moving machinery is used in mines, the holder of a mining lease shall maintain log books duly authenticated by the manager or mining engineer of such mines in respect of each machine showing date-wise account of hours worked, hours not worked, reasons for non-working, consumption of fuel or energy and lubricants and output of the machine during the corresponding working hours. (2) The summary of operation of each machine shall be recorded in the log book at the end of each month bringing out the percentage availability and percentage utilization of the machine, average hourly performance and average fuel or energy consumption per hour. (3) The log books may be maintained in electronic form or in hard copy and shall be made available to the authorized officer on demand.</p> <p>The Same was not produced for verification on demand.</p>
Rule- 45 (5) (c)	<p>Following deficiencies were observed in the Annual Returns submitted:</p> <p>1) Cost of Production and Value of fixed assets of Deposit 11, Deposit 14ML and Deposit 14NMZ given same but the ex-mine price of lumps and fines of same grade were different in Annual Return submitted for the year 2020-21.</p>

Earlier violation pointed out have been complied. Five stars during self-appraisal. It's also validated after inspection.

Date: 11/01/2022

Shri Rudra N Mishra  
Senior Mining Geologist