

REPORT ON CHECK UP INSPECTION OF DEPOSIT 5, BAILADILA IRON ORE MINE, BACHELI COMPLEX OF NMDC LTD SITUATED IN BACHELI VILLAGE KUWAKONDA TEHSIL, SOUTH BASTAR DANTEWADA DISTRICT, CHATHISGARH STATE

1. GENERAL INFORMATION ABOUT THE MINE

i)	File No:	CHG/BST/FE-4/30MPR02005/RPR
ii)	Mine Code	30MPR02005
iii)	Name & Designation of the Inspecting Officer:	B.L. Gurjar Regional Controller of Mines
iv)	Date of inspection	15.11.2017
v)	Mine Name :	Deposit 5, BIOM, Bachel complex
vi)	Owner	NMDC LTD
vii)	Nominated owner	P.K. Satpathy
viii)	Mining Engineer	C. Raja Lenin babu
ix)	Agent	A.K. Shukla
x)	Mines Manager	Sanjeev Sahi
xi)	Lease Area	540.05 hectare
xii)	Location	Bachel, South BastarDantewada, Chathisgarh
xiii)	Lease Period	11.09.1995 to 10.09.2015 for 20 yrs with validity of ML extended up to 31.03.2020 as per MMDR (amendment) Act 2015
xiv)	Date of Expiry	31.03.2020
xv)	Date of Approval of mining Plan	BST/FE/MPLN-198/NGP-15 dt.29.03.2016
xvi)	Date of Approval of Mining Scheme	NA
xvii)	Period of Mining Plan	Valid upto 2019-20
xviii)	Production (Last five years) as per Mining plan 2012 – 13(8.2 million tones) 2013 - 14: (8.2 million tones) 2014 - 15: (8.2 million tones) 2015 - 16: (8.2 million tones) 2016 - 17: (9.0 million tones)	Actual 6939161 Te 6830060 Te 6820670 Te 6489610 Te 7984700 Te
xix)	EC limit	10 million Tonnes per annum
xx)	Financial Assurance amount and validity	1) BG. Rs 135,01,000 valid upto 31/3/2020 2) BG No. 0008BGR0015118 dated 23.05.2017 for an amount of INR 14,85,14,000 valid up to 31.03.2020

2. Brief Description of the Mine

i)	Method of mining	Mining is being carried out by fully mechanized open cast bench mining method using shovel - dumper combination, by deployment of HEMM and in conjunction with deep hole blasting.
ii)	Drilling & blasting	<ul style="list-style-type: none"> • <u>Primary drilling</u> is done by using 250 mm electrical blast hole rotary drills and 160 mm diesel driven blast hole rotary percussive drills. • <u>Primary blasting</u>: Primary blasting is done with 250 mm dia drill holes and secondary blasting is done with 100 mm dia holes. The depth of primary drill holes varies between 12 m to 15 m, depending upon the strata conditions. • <u>Secondary drilling</u> is done by 100 mm dia. crawler mounted top hammer drill for boulder drilling and toe drilling. • <u>Secondary blasting</u>: Secondary blasting is done either to remove toe or to break oversize boulders generated by primary blasting. Boulder blasting is normally done with pop shooting and sometimes with plaster shooting. • <u>Explosives</u>: Site mixed emulsion explosives are used for blasting primary drill holes of 250 mm & 160 mm dia. Cartridge slurry explosives of 83 mm dia are used for secondary blasting. • <u>Explosive storage</u>: Three magazines each having storage capacity of 3.5 MT of cartridge explosive, 20000 Mtrs Detonating Fuse and the fourth magazine to store 10000 Mtrs safety fuse and 3.5 MT cast booster. Magazine No. 4 has an annex having capacity to store 40,000 Nos of detonators. • <u>Initiation pattern</u>: Different initiation patterns are normally used depending upon the requirement of fragmentation, throw and muck profile. Various controlled blasting techniques are used including shock tubes and delay detonators for charging and initiation to minimize the charge per delay reducing the ground vibrations, noise and flyrock etc. For misfire dealing a second Detonating cord is also put in blast hole
iii)	Excavation & Loading	Excavation of Iron ore from the face is done by electric rope shovels (bucket capacity 8 m ³) and hydraulic excavator (bucket capacity 8 m ³). Cater pillar wheel loader of 8 m ³ bucket capacity is also used for loading.

iv)	Transportation	The ore loaded into the dumpers of 85 Tonnes and 100 Tonnes capacity is transported to the Crushing Plant & dumps through the haul roads. Water sprinkling is done by 30/28 m ³ capacity water tanker on the haul road for ensuring effective dust suppression. The gradient of the haul road is 1 in 16.
v)	Beneficiation	The Iron ore mined is transported to primary crusher installed in the crushing plant at 1104 MSL. All the ore is crushed in two stages to below 150 mm size. The crushed ore is stacked in the primary surge pile at 1036 MSL. The ore from the primary surge pile is reclaimed by a set of apron feeder underneath the primary surge pile. The crushed ore from crushing plant is carried through downhill conveyor system going through the hill tunnel to the secondary surge pile situated before screening plant. The secondary surge pile is located above the screening plant at 725 MSL. The crushed ore from the secondary surge pile is drawn by a set of apron feeders and feed to the screening plant having a set of primary screens, secondary screens and classifiers. The lump ore (-150mm to +10 mm) and fine ore (-10 mm +100 mesh) are conveyed through two different systems of conveyors to the lump ore and fine ore stockpile separately in the loading plant. The lump ore also be taken to the tertiary crushing plant for crushing the same size below 40mm to produce natural pellets / calibrated lump ore of -40 +10mm size. The fine ore from the tertiary crushing plant is conveyed through the fine ore conveyed to the fine ore stock pile. Arrangements also exist for dumping the fine ore in the valley and also reclaim the same from the valley as and when required. Plant has also facilities for reclamation of micro fines by use of hydro cyclones and slow speed classifiers. The washing of ore is being done at screening plant during monsoon period. The low grade micro fines are discharged into thickeners from where the effluent is discharged through a slurry pipeline in to tailing dam no.1. A part of water from thickener is reused in the plant. The tailings are diverted to tailing dam no. 1 during the months of monsoon when wet screening is in operation. During the rest of the period, only dry screening is resorted. From tailing dam no.1 the slime is de-silted and dumped in the fine ore stockpile of loading plant and proportionate quantity of the slime is blended along with regular fines coming from the mine.

vi	Present working location and bottom RL	519342 E to 520819 E; 2064580 N to 2066270 N Bottom RL 1008 m
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3. Description on deployment of mining machinery

Sl. No	Machinery	Capacity of Each Unit	No. of Unit	HP/KW/CFM of Each Unit	Elect./ Non-Elect.	Used in O/C or U/G
1	Elec. Rope Shovel	8 m ³	4	600 KW	Electrical	O/C
2	Elec. Rope Shovel	8 m ³	1	750 KW	Electrical	O/C
3	Hydraulic Shovel	8 m ³	1	1041 HP	Diesel	O/C
4	Front end Loader	8.8 m ³	1	801 HP	Diesel	O/C
5	Blast hole drill (Single pass)	250 mm	1	1800 cfm & 650 HP	Electrical	O/C
6	Blast hole drill (Single pass)	250 mm	1	1800 cfm & 600 HP	Electrical	O/C
7	Blast hole drill (Multi pass)	250 mm	1	450 HP	Electrical	O/C
8	Blast hole drill (Multi pass)	160 mm	1	554 HP	Diesel	O/C
9	Secondary drill	100 mm	1	300 HP	Diesel	O/C
10	Dumper (BEML)	100 Te	4	1000 HP	Diesel	O/C
11	Dumper (BEML)	85 Te	8	890 HP	Diesel	O/C
12	Dumper (CAT)	85 Te	1	825 HP	Diesel	O/C
13	Water tanker	28000 litre	3	380 HP	Diesel	O/C
14	Water tanker	30000 litre	1	635 HP	Diesel	O/C
15	Dozer (BEML)	NA	6	410 HP	Diesel	O/C
16	Dozer (CAT)	NA	1	850 HP	Diesel	O/C
17	Wheel Dozer	NA	1	485 HP	Diesel	O/C
18	Motor Grader	NA	2	280 HP	Diesel	O/C

SN	Proposal in the Approved MP/SOM	Observations regarding implementation of proposals given in Approved MP/SOM	Remarks
4. Conservation of Minerals			
a)	Exploration 29 boreholes of 3023 mtrs depth drilling & 22 pits of 352 cu.m. volume	29 boreholes of 3445 mtrs depth drilled during 2016-17.	Pitting proposed in float ore areas is pending for change in land use plan approval from forest department
b)	Utilization of subgrade mineral	Ore has been excavated from different blocks simultaneously for proper blending and quality control. Most of the iron ore in South and N-W blocks is of high grade which has been suitably blended with low grade ore of central and NW blocks. 15.92 LT of sub grade mineral with 55 to 62% Fe grade has been utilised with regular ROM production during 2016-17 Only 1.72 LT of Mineral rejects are generated against the proposed generation of 5.50 LT of MR during 2016-17.	
c)	Any other proposal for monitoring	The quantity of slime diverted to the tailing dam is 0.65 LT during 2016-17. The quantity of de-silted slime by means of tipper-poclain combination during 2016 -17 was 150163 T.The de-silted slimes are transported to the loading plant and blended with regular fines coming from the mine for dispatch.	
5. ScientificMining			
a)	Mine development & method of mining	Resource model and reserve model are prepared by using computerised mine planning software SURPAC, WHITTLE & MINESCHED. Blast hole data is compiled regularly and used to refine the block model. Production plans are prepared using the refined block model to ensure proper blending and quality control. Long term and short term production plans and schedules are prepared considering annual production	

		<p>targets for various products based on quality and quantity.</p> <p>Production plans are prepared so as to feed ROM simultaneously from different benches to ensure mineral conservation and systematic development of the mines. Sub grade mineral blended simultaneously with high grade mineral during feeding to the crushing plant.</p> <p>Mining operation are going on within the proposed extents and limits using methods as proposed.</p>	
b)	<p>Handling of waste / subgrade material</p> <p>Dump no.2,3,4,5 for OB/waste rock and sub grade dump1 & 2 for mineral rejects.</p>	<p>Waste material consisting of shale and Banded hematite quartzite (BHQ) is mined using shovel-dumper combination and dumped in dump no. 2 and 3.</p> <p>Mineral rejects are dumped in sub grade stockpile1&2.</p> <p>Dumping yet to start in dump no. 4 and 5 due to delay in obtaining forest clearance for change in land use from forest department.</p>	Revision of Land use plan approval pending with forest department
c)	Area reclamation & restoration	Terracing and stabilization by geo coir matting executed in an area of 2.0 hectare of waste dump slopes of dump no.1.	
d)	Any other proposal for monitoring	Nil	
6. Protection of Environment			
a)	Afforestation	In 2016-17, Rs. 12.5 crore transferred to Hariyar Chhattisgarh Kosh (SBI SB A/c No. 35791546924) for plantation beyond mining lease area, under Hariyar Chhattisgarh Scheme of Govt. of Chhattisgarh.	CGRVVN is the executing agency for the plantation work of NMDC, BIOM, Bachel Complex.
b)	Quality of Air	Regular environment quality monitoring carried out in the area by MoEF approved	
c)	Quality of Water		

d)	Noise Level	lab M/s Pragathi Labs & Consultants pvt ltd., Hyderabad.	
e)	Vibration		
f)	Any other proposal for monitoring	Environmental monitoring data for air, water, noise & vibration during summer and Monsoon for the year 2017 found in order.	

7. History of violations after approval of MMP for the period 2015 - 2020

S. No	Date of Inspection	Name of Inspecting Officer	Violation of MCDR2017 Observed & pointed out	Rectification of violation	Remarks
a)	27.07.2017	S. Karthikeya Jr. Mining geologist IBM, Raipur	Rule 11(1), 26(2), 33, 37(2), 47	Action has been taken for rectification of violations	Earlier Violation Complied with and no serious violation observed.

8. Socio Economic Development Plan (2016 - 17)

SN	Proposed action plan towards socio economic development	Expenditure proposed (in Lakh Rs.)	Expenditure incurred (in Lakh Rs.)	Remarks
1	Support for Drinking Water & Agriculture	1058.915	963.528	Based on the CSR budget and expenditure statement for the year 2016 - 17
2	Support to Health & Medical services	834.665	943.521	
3	Support to skill development & Education	2097.109	2136.553	
4	Social & livelihood support	93.1	530.152	
5	Support to Transportation services & Infrastructure	930.726	757.256	
6	Expenditure for environment	800	1470	
7	Others (religious activity)	NIL	NIL	
	TOTAL (Lakh Rupees)	5814.515	6801.01	

9. CSR Details: *Details of CSR budget and expenditure for the year 2016-17 for various purposes in respect of deposit 5 is enclosed.*

B.L.Gurjar
RCOM Raipur