

**REPORT ON CHECK INSPECTION OF NADIDI IRON & Mn Mines OF M/s BONAI INDUSTRIAL COMPANY LIMITED IN SUNDARGARH DISTRICT OF ODISHA STATE [PREPARED IN THE FORMAT, PRESCRIBED VIDE CCOM'S LETTER NO. 11013/35/MP/MISC/89-CCOM (Vol. III)]**

Name and designation of inspecting officer: Shri Harkesh Meena, Regional Controller of Mines  
Date of Inspection : 24.02.2018

**1. General information of the mine**

(i) Name of the mine : Nadidih Iron & Mn Mine

(ii) Owner: M/s Bonai Industrial Co. Ltd.

(iii) Nominated Owner: Mr. M.D. Rustagi

(iv) Mining Engineer : Mr. Indrajit Panda

(v) Agent: Mr. A.S. Mohapatra

(vi) Mine Manager : Mr Ganesh Sah

(vii) Lease area: 73.855 Ha.

(viii) Location :

Village: Nandikasira & Rengalbeda,  
Tahasil: Koira , District: Sundergarh, Odisha

(ix) Lease period: 11.12.1947 to 31.03.2020.

(x) Date of Expiry : 31.03.2020

(xi) Date of approval of Mining Plan: 09.05.2008

(xii) Date of approval of Review of Mining Plan : 22.01.2016

(xiii) Period of Mining Plan/ Review of Mining Plan: 2015-16 to 2017-18

(xiv) Production:

<b>Year</b>	<b>Proposed in Metric Tonnes</b>	<b>Actual in Metric Tonnes</b>
2016-17	5275636.70	2706866.65
2017-18 (upto Jan'18)	5300000	2468441.43

**2. Brief description of the mine:**

**(a) A brief description of the mine covering location, geology, problems associated with mining of the deposit etc.**

### (1) Location:

Nadidih Iron & Manganese Mine  
Vill : Nadidih  
P.O: Koira  
Dist: Sundargarh  
Odisha- 770048

The area falls under survey of India Toposheet No.73 G/5 around 210 57'52.978'' N – 21058'25.032''N latitude and 85015'29.522''E – 85016'10.212''E longitude and is situated by the side of the main Barbil-Koira-Rourkela road about 8 km NE of Koira. The deposit falls in Bonai sub-division of Sundergarh district of Odisha

### (2) Geology:

The Nadidih Iron and manganese ore deposit forms a part of pre-cambrian sedimentary formation known as the Iron-ore series developed in Singhbhum-Keonjhar-Bonai area. The general strike of the formation in Northern Singhbhum is NNE-SSW, but gradually changing over to NW-SE in the eastern part and in the adjoining area of Mayurbhanj. This part of Singhbhum is marked by a shear zone along which rocks have been thrust towards the south and metamorphosed.

In Nadidih Iron & Mn. Mines, the Iron ore occurs in the form of hard laminated ore, hard massive ore, soft laminated ore, lateritic ore and blue dust e.t.c. The strike of the ore body is variable due to highly folded & metamorphosed of the rock strata. The strike is observed some part of deposit N 45° W & S 45° E and dip direction towards 32° SW which is little bit deviating of the Singhbhum-Keonjhar-Bonai belt. The top surface of the formation is lateritic soil about 10 meter thickness and increase the thickness 19 meter lateritic soil of top surface along the dip direction from eastern part of lease to south eastern direction.

#### **Different types of ores:-**

The varieties of ore met within the lease area are –

- (i) Hard Ore (massive and laminated)
- (ii) Soft ore
- (iii) Friable and flaky ore
- (iv) Blue dust.

**Laterite** is most common especially at the hill top as cap rock lying over the iron ore zones. Pockets of ochre of various types are found. These are the deleterious materials of iron ore. Pockets of kaolin and other clay minerals are also found, which generally brings down the overall ore grade. Shale bands of small thickness are found inter-banded with the iron ore and also thick, compact laminated shale beds are seen at places. The overburden or the wastes consists of soil (top soil), laterite and shale.

#### **(i) Hard Ore**

The hard Ore is generally of steel grey colour and compact or massive, sometimes thickly banded in nature. Very often the ore is highly broken and jointed and sometimes litalized near the surface. It contains about 62% to 65% of Fe and 1.00 – 2.25 % of Al<sub>2</sub>O<sub>3</sub> & SiO<sub>2</sub>

(ii) **Soft ore**

The soft ore is generally hydrated oxides of iron as goethite and limonite etc. this type of ore is usually vesicular or porous and is often lower in grade. It contains about 62% to 65% of Fe & 4% to 6% of phosphorous with higher Al<sub>2</sub>O<sub>3</sub> content.

(iii) **Friable or Flaky ore**

These ores are generally flaky in nature with a wider range of Al<sub>2</sub>O<sub>3</sub> and phosphorous. Fe contents generally vary 60% to 63%.

(iv) **Blue dust**

This variety is blue in colour, fine and powdery in nature. It contains about 63% to 65% of Fe but Al<sub>2</sub>O<sub>3</sub> content ranges from 1.0 – 1.5 % or at places more than 2 %. It occurs as thin bands only at the deeper levels of the ore zone.

(3) Problems associated with mining of the deposit etc : Nil

**(b) Description on deployment of mining machinery**

Sl. No.	Machineries deployed	Capacity	Number of units	In use	Idle	Percentage of utilization	Brief description	Remarks
1	2	3	4	5	6	7	8	9
1	Back Hoes	3.5 Cum.	1	1		80%		
		2.5 Cum.	3	3		80%		
		1.0 Cum.	12	12		80%		
2	Water Sprinkler	12 KL	4	4		80%		
		4.8 KM.	Static sprinkling system	Static sprinkling system		80%		
3	Loaders	(1.7-2.1) Cum.				80%		
4	Dumpers	35 MT	22	22		80%		
5	Drills / Blast Holes	Nil	Nil	Nil		80%		
6	Bull Dozers	300 HP	2	2		80%		
						80%		
7	Motor Graders	150 HP	1	1		80%		
8	Screen Plants	300 TPH	4	4		80%		
		150 TPH	2	2		80%		
9 10	Crushers	250 TPH	1	1		80%		
		150 TPH	2	2		80%		
11	Wet Beneficiation	150 TPH	1	1		80%		

	Plant						
14	Cranes	Nil	Nil	Nil		80%	
15	Air Compressor	750 Cfm	1	1		80%	
16	D.G. Set	(140-1250) KVA	2	2		80%	

### 3. Implementation of Mining Plan or Review of Mining Plan:

Sl.No.	Proposal in the approved Mining Plan or Review of Mining Plan	Observations regarding implementation of proposals given in approved Mining Plan or Review of Mining Plan.							Remarks/Reason for deviation																					
1	2	3							4																					
(1)	<b>CONSERVATION OF MINERALS</b>																													
(a)	Exploration	<table border="1"> <thead> <tr> <th>Year</th> <th>Borehole Proposed</th> <th>Borehole Actual</th> <th>Size</th> <th>Spacing (m)</th> <th>Collar level (mRL) Max-Min</th> <th>Total Meterage (m)</th> </tr> </thead> <tbody> <tr> <td>2016-17</td> <td>14</td> <td>14</td> <td>75m</td> <td>50</td> <td>40-95</td> <td>1087.80</td> </tr> <tr> <td>2017-18</td> <td>9</td> <td>10</td> <td>75m</td> <td>50</td> <td>56-103</td> <td>751.20</td> </tr> </tbody> </table>							Year	Borehole Proposed	Borehole Actual	Size	Spacing (m)	Collar level (mRL) Max-Min	Total Meterage (m)	2016-17	14	14	75m	50	40-95	1087.80	2017-18	9	10	75m	50	56-103	751.20	
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(b)	Utilization of sub-grade mineral	The sub-grade mineral has been stacked separately for future utilisation and some low grade is used for wet beneficiation and upgraded & despatched.																												
(c)	Any other proposal for monitoring	-																												
(2)	<b>SCIENTIFIC MINING</b>																													
(a)	Mine Development and method of mining	<table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="2">Proposed in Metric Tonnes</th> <th colspan="2">Actual in Metric Tonnes</th> </tr> <tr> <th>Ore</th> <th>Location</th> <th>Ore</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>2016-17</td> <td>5275636.70</td> <td>Top-2, Boundary Pit &amp; Dump Screening</td> <td>2706866.65</td> <td>Top-2, Boundary Pit &amp; Dump Screening</td> </tr> <tr> <td>2017-18 (Upto Jan'18)</td> <td>5300000</td> <td>Top-2, Boundary Pit &amp; Dump Screening</td> <td>2468441.43</td> <td>Top-2, Boundary Pit &amp; Dump Screening</td> </tr> </tbody> </table> <p>Proposed mining operation will also be mechanised opencast and the production target will be 5.3 million tonne. The bench height and width will be up to 9m and 20m for Iron quarry. The conventional opencast mining method with the utilization of</p>							Year	Proposed in Metric Tonnes		Actual in Metric Tonnes		Ore	Location	Ore	Location	2016-17	5275636.70	Top-2, Boundary Pit & Dump Screening	2706866.65	Top-2, Boundary Pit & Dump Screening	2017-18 (Upto Jan'18)	5300000	Top-2, Boundary Pit & Dump Screening	2468441.43	Top-2, Boundary Pit & Dump Screening			
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		excavator, dumper, rock breaker, deep hole drilling & blasting will be adopted. A wet beneficiation plant of capacity 0.5 million tonne is already under operation.					
(b)	Handling of Waste/ sub-grade material	Year	Proposed in Metric Tonnes	Actual in Metric Tonnes		Waste generation was more due to more intercalated waste occurrences.	
			Sub grade	Waste	Sub grade		Waste
		2016-17	427564.1	733914.75	Nil		364828.73
		2017-18 (Jan'18)	430000	398148.25	Nil		564375.02
(c)	Area reclamation & restoration	Year	Proposed in ha	Actual in ha		The mined out area is not matured for Reclamation & Rehabilitation	
		2016-17	0.50	Nil			
		2017-18 (upto Jan'18)	0.50	0.1			
(d)	Any other proposal for monitoring	--					
<b>(3)</b>	<b>PROTECTION OF ENVIRONMENT</b>						
(a)	Afforestation	Year	Proposed in ha	No. of Plantation Proposed	Actual in ha	No. of Plantation Achieved (Survival)	
		2016-17	10000	13800	Gap/Casual Plantation & 1 Ha.	85%	
		2017-18	10000	16000	Gap/Casual Plantation & 1 Ha.	90%	
(b)	Quality of air	Under permissible limit					
(c)	Quality of Water	Under permissible limit					
(d)	Noise level	Under permissible limit					
(e)	Vibration	Under permissible limit					
(f)	Any other proposal for monitoring.	--					

**4. History of Violations after approval of Mining Plan or Review of Mining Plan:**

SL No.	Date of Inspection	Name of inspecting officer	Violations of MCDR, 2017 observed and pointed out	Rectification of violations	Remarks
1	2	3	4	5	6
1	14.07.2017	Shri G C Sethi, DCOM	Violation of Rule 11(1) of MCDR, 2017 was observed and pointed out to lessee on 21.07.2017.	Compliance received on 18.08.2017 and under process.	

**5. Socio-Economic Development Plan:**

Sl. No.	Proposed action towards socio-economic development during the current year	Expenditure proposed in Rs. Lakhs ( Previous financial year) (2016-17)	Expenditure incurred in Rs. Lakhs (Previous financial year) (2016-17)	Remarks
1	General development in the area			
	a) Housing			
	b) Water supply	3518000	4507649	
	c) Sanitation	1283000	1372648	
	d) Health, safety and medical facilities.	250000	438984	
2	Training			
3	Employment to local inhabitants	280000	27900	
4	Infrastructure-public transport, roads, communication and electricity	12275400	6051458	
5	Recreation and other sports activities	1601000	1535916	
6	Expenditure for environment management			
7	Others(Education)	3242000	3094701	
	<b>Total</b>	<b>22449400</b>	<b>17029256</b>	

(HARKESH MEENA)  
Regional Controller of Mines

