

**REPORT ON CHECK INSPECTION OF BALAJI IRON ORE MINE OF LESSEE  
ANIL KHIRWAL IN VILLAGE-BALIJORE, P.O & P.S. NOAMUNDI, DISTRICT-  
WEST SINGHBHUM**

**Name and designation of inspecting officer** : Shri Anupam Nandi (RCOM Ranchi)

**Date of Inspection** : 04.12.2019

**1. General information of the mine:**

- i) Name of mine : Balaji Iron Ore Mines
- ii) Owner : Anil Khirwal
- iii) Nominated Owner : Anil Khirwal
- iv) Mining Engineer : B.D. Pandey
- v) Agent : Anil Khirwal
- vi) Mine Manager : B.D. Pandey
- vii) Lease Area : 19.331 Ha
- viii) Location : Vill.-Balijore, P.O. & P.S.- Noamundi  
Dist-Singhbhum (W)
- ix) Lease Period : upto 30.04.2022
- x) Date of Expiry : 30-04-2022
- xi) Date of approval of Mining Plan : 05/12/2018
- xii) Date of approval of scheme :
- xiii) Period of of Mining Plan : 2019-20 to 2022-23(upto 30.04.2022)
- Scheme of Mining
- xiv) Production (Year 2018-19) : 39030 MT

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

a. A brief description of the mine covering location, geology, problems associated with mining of the deposit etc. may be given.

### **Physiography:**

The Mining Lease of Balaji Iron Ore Mine over an area of 19.331 hectares of Shri Anil Khirwal falls in part of Bonduburu Noamundi Protected Forest Block no. 40 in district Singhbhum West of Jharkhand State. The lease hold area falls under Survey of India Toposheet no.73F/8 and delineated between latitude  $22^{\circ} 09' 19.18161''$  -  $22^{\circ} 09' 42.81962''$  and longitude  $85^{\circ} 29' 02.18744''$  -  $85^{\circ} 29' 26.61785''$ . The mine is well connected with Chaibasa-Noamundi-Barajamda state highway road, which is approximately 66 Kms. away from Chaibasa. The nearest loading station is Noamundi, which is about 06 Kms. from the mine. The Barajamda railway Station is about 10 Kms. from the mine.

The leasehold area displays an undulating topography. The leasehold area in northern and eastern part is mainly flat undulating plateau, which rises towards south and west. The contour rises from north to south and from east to west. There is a small tungri on the west where Puja pit exists. The maximum elevation of the area is 505m located towards eastern part of the area whereas minimum elevation is 485m on the south-west of the leasehold.

### **Drainage Pattern:**

There is no perennial nala within the leasehold. Surface runoff during rainy season follows the gradient of the terrain and passes through the seasonal Betlata nala situated  $1\frac{1}{2}$  km on the west of target area. There are dry nalas within the leasehold running in NE-SW to NW-SE direction. There are two dry nalas to the west of Mahabir pit flowing in NE to SW and are joining the main third dry nalas which is on the east of Puja pit and is running from SE to NW. All these nalas are dry and water flows in them only during rainy season. These seasonal nalas are flowing from south-east to north-west and finally meeting the Betlata nala at a distance of 2.3 kms.

a) Brief description of Regional Geology with reference to location of lease/ applied area.

### **Geology:**

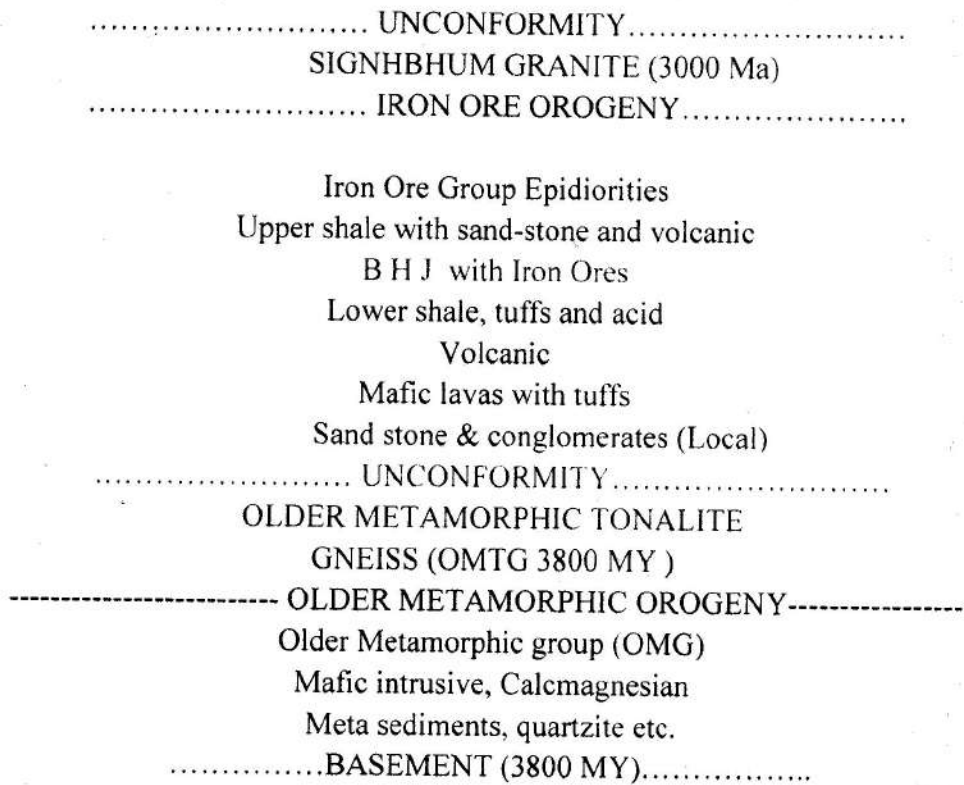
#### **Regional Geology:**

The slightly metamorphosed volcanic and sedimentary sequence of rocks, occurring in and around this lease area belongs to the Iron Ore series of Precambrian age and forms a part of western dipping eastern limb of the north plunging asymmetric synclinorium. Precambrian

schistose rocks in which whole class of the iron ore deposits are vested include schist, tuffs, Phyllites, basic rocks and banded iron ore formations. The iron ore bodies mostly overlie the shale/tuffs and form prominent geomorphic features due to their resistance to weathering. This has been represented by the evacuate hill ranges representing the iron ore 'horse shoe' of Singhbhum-Keonjhar-Bonai synclinorium. Several workers have updated the interrelationship between the different formations since Jones and Dunn originally propounded it.

**Regional Stratigraphy:**

The stratigraphic succession has under gone evolutionary changes as per the interpretation of Mr. H.C. Jones, Mr. J.A. Dunn, etc. Hence the Regional stratigraphy as postulated by Sarkar & Saha in 1983 is as mentioned below where in the geo-chronological data are also included.



**Regional Lithology:**

The litho-logical units are basically grouped into three units identified as given below:

- a) Basic volcanic.
- b) Argillaceous suit of rocks which is also host to manganese ore lenses and pockets.
- c) Banded Iron Formation.

**Local Geology:**

The Balaji Iron Ore Mine of Sri Anil Khirwal is a part of the western limb of the Iron Ore range of Singhbhum (W), Jharkhand. The available field studies conducted indicates that the local structural elements are compatible with the general regional trend of the western limb of the synclinorium. The presence of the structural canoes and basins are possibly the effect of the superimposed fold systems. Banded Hematite Jasper exposed possibly represents the canoes while the ore persistence in depth, represents the basins. The strike varies from North - South

to NNW-SSE. The dip is westerly with the amount varying from 20 to 30 degree. In few isolated locations the dip are as high as 65°. The Host rock i.e. BHJ, ferruginous laterite and the ore body have similar trend.

Within the lease area, in the northern part in between boundary pillar 8 & 9, float iron ore occurs up to a depth of 3.0m found capping laterite and shale which continues towards east up to the end of Hanuman pit 'B'. From boundary pillar 8 to 7, its west, up to dry nala, laterite with iron boulders occurs where Mahabir pit, Ganesh pit 'A' and 'B' exists. Beyond nala in north-western part of the leasehold is Kolhan conglomerate, which extends up to the west of northern part of Puja pit. To the west of conglomerate is ferruginous laterite, which covers the north-western part and up to the south of B.P.no.5. Ferruginous laterite is also observed in the west of Ganesh pit 'A', east of Puja pit, south of Hanuman pit up to B.P. no.1. Laterites are found capping soft laminated iron ore and Blue dust in the western part to the south of conglomerate. The Banded Hematite Jasper occurs in the western part near B.P. 2 & 3 below which there is soft laminated iron ore.

### **Lithological Succession:**

The lithological succession established as observed within leasehold is compatible with other locations on the western limb of the synclinorium. The general lithological succession of this mine is as follows:

Alluvium  
Kolhan Conglomerate  
Ferruginous Laterites/Float Iron Ore  
Laminated Iron Ore/Blue dust  
Banded Hematite Jasper  
Soft Laminated Iron Ore  
Shale

The Hematite Iron Ore in this mine occurs as lateritic ore/laminated ore/Soft laminated ore and Blue Dust. The thickness of iron ore body as exposed in and around Puja pit is 10 meters.

### **Control of Mineralization:**

The possible parameters which control the mineralization may be attributed to:

- a) Regional & Local tectonics.
- b) Leaching and metasomatic replacement of B.H.J. and thereby leading to the Iron Ore formations, as evidenced by the presence of un-leached portion of the ore and BHJ within the ore body.

**Problems associated with mining of the deposit:**

Lease area Fe ore deposit is a pocket deposit where Hematite found in a low grade of Fe content that is 58% Fe. In these circumstances the mining is very tough and costing is very high. Area is rich with BHQ/BHJ so the costing of blasting and excavation is high & tough due to hardness of BHQ/BHJ. As per UNFC field guidelines classification no. IV, the technological for resource estimation should be taken as i) Bore Hole Drilling - 30 to 15 m or less strike interval; (ii) Exploratory mining: 2-3 levels at 20-30 m interval wherever necessary; (iii) Core sludge, channel, bulk samples for beneficiation studies on bench/ pilot scale. Exploration of 17 DTH and 18 Core Drill in the broken up area of 8.242 Ha upto a depth of max 60mt has been done. As per approved review of mining plan exploration has been proposed for the year 2021-22.

**b. Description on deployment of mining machinery may be given in the following format.**

**b) Deployment of mining machinery :**

**Departmental**

SI No	Machineries deployed	Capacity	No. of Units	In use	Idle	Percentage of utilization	Brief description	Remarks
1	Air Compressor (Screw type)	300 cfm	1	1	0	27.35	Model-XA157 Atlas Copco, 86 HP	Diesel Operated
2	Jack Hammer	2.5 - 3 cum	3	2	1	33.45	Model- Atlas Copco	Compressed air operated
3	Water Tanker	9 KL	1	1	0	60	Model- Tata 1210SE, 35 HP	Diesel Operated
4	Small Screen Unit	35 TPH	1	1	0	61.66	Model- Fixed Screen local made.	Electric Operated & Partly Diesel
5	JCB(Bucket)	0.5 cum	1	1	0	53.09	4DX, 90HP	Diesel Operated
6	JCB(Loader)	1.1 cum	1	1	0	53.09	4D,96HP	Diesel Operated
7	DG	35 HP	2	1	1	70.23	Model - Crompton Greaves 63 KVA	Diesel Operated

**Contractual**

SI No	Machineries deployed	Capacity	No. of Units	In use	Idle	Percentage of utilization	Brief description	Remarks
-------	----------------------	----------	--------------	--------	------	---------------------------	-------------------	---------



1	P.C - 300	1.3 cum	1	1	0	58.62	Model-PC-300 Kamatsu, 128 HP	Diesel Operated
2	Zaxix	1.8 cum	1	1	0	51.42	Model- Xaxix- 330. 146 HP	Diesel Operated
3	Pay loader	2.5 cum	1	1	0	40.29	Model- 9020 L& T. 126HP	Diesel Operated
4	Dumper	15 tonnes	6	3	3	55.26	Model-2516C Tata Hyva, 92HP	Diesel Operated

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

Sr. No.	Proposal in the approved Mining Plan or Scheme of mining (Period from 2019-20 to 2022-23)	Observations regarding implementation of proposals given in approved Mining Plan or Scheme of mining.	Remarks
1.	CONSERVATION OF MINERALS		
a)	Exploration:	10 Numbers of Core Drill was done for exploration during the year 2018-19.	The area explored in G 1 category is 16.493 ha. and G2 category 2.173 ha. So the remaining area of 0.665 ha. to be explore.
b)	Utilization of subgrade mineral:	There is only one sub-grade dump that is no 05. Sold sub-grade mineral BHQ/BHJ Lumps to Vayuveera Resources, Pawanshut Minerals and Minerals and Mining Traders in last 5 months in the year 2019-20. Rest Sub-Grade minerals are stack for future sale whenever required.	
c)	Any other proposal for monitoring:	Nil	Conservation is satisfactory.
2.	SCIENTIFIC MINING		
a)	Mine Development and method of mining	Mine development being done as per approved Review of mining plan.	Mine development is as per approved document. No deviation.
b)	Handling of Waste/subgrade material:	No proposal for separate dumping of OB and mineral waste. Concurrent backfilling by waste in the mined out areas.	
c)	Area reclamation & restoration:	Total Area reclaimed & rehabilitated is 1.506 ha and area back filled is 0.4972 ha.	
d)	Any other proposal for monitoring:	NA	
3.	PROTECTION OF ENVIRONMENT		

a)	Afforestation:	Till the end of F.Y. 2018 - 19 planted 3872 and 1602 nos. of trees in WML & OML respectively which covers an area of 0.4326ha. & 0.52 ha. respectively. The survival rate of the plantation was 42.01% in WML and 38.13% in OML respectively .	s
b)	Quality of Air:	Within permissible limit	NIL
c)	Quality of Water:	Within permissible limit	NIL
d)	Noise Level:	Within permissible limit	NIL
e)	Vibration:	Within permissible limit	NIL
f)	Any other proposal for monitoring:	NA	

#### 4. History of Violations after approval of Mining Plan or Scheme of Mining:

Sl. No.	Date of Inspection	Name of Inspecting Officer	Violations of MCDR,88 observed and Pointed out	Rectification of Violations	Remarks
1.	19/12/2017	Shri B.P. Kerketta, (Sr. ACOM)	Rule 35(2)	Compiled	

#### 5. Socio-Economic Development Plan: Total 2.0213 lakh spent for C S R activities during 2018-19.

Sl. No.	Proposed Action Plan towards Socio-Economic Development	Expenditure Proposed (In Rs. Lakh)	Expenditure Incurred (In Rs. Lakh)	Remarks
1.	General Development in the area			
	i) Housing		0.08400	
	ii) Water Supply		0.10570	
	iii) Sanitation		0.10700	
	iv) Health, Safety and Medical Facilities		0.14860	
2.	Education and Training		1.15720	
3.	Public Transportation and communication		0.04700	
4.	Recreation and other sports activities		0.37180	
5.	Other			
	<b>Total:</b>	<b>1.5000</b>	<b>2.0213</b>	<b>CSR activities.</b>

(Anupam Nandi)

Regional Controller of Mines & Inspecting Officer