

**REPORT ON CHECK INSPECTION OF SURDA COPPER MINE OF LESSEE  
M/S HCL IN VILLAGE-SURDA, DISTRICT-EAST SINGHBHUM**

**Name and designation of inspecting officer** : Shri Anupam Nandi (Regional  
Controller of Mines Ranchi)

**Date of Inspection** : 05.02.2020

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

- i) Name of mine : Surda Mine
- ii) Owner : Hindustan Copper Limited
- iii) Nominated Owner : S.K Bandopadhaya
- iv) Mining Engineer : Parvej Alam
- v) Agent : Sanjay Kumar Singh
- vi) Mine Manager : Parvej Alam
- vii) Lease Area : 388.68 Hectares
- viii) Location : Village- Surda, Sohada, District- Singhbhum (E)
- ix) Lease Period : Up to 31.03.2020
- x) Date of Expiry : 31.03.2020
- xi) Date of approval of Mining Plan : 16.04.2019.
- xii) Date of approval of scheme : -
- xiii) Period of Mining Plan : 01.04.2019 to 31.03.2020
- Scheme of Mining : -
- xiv) Production (Year 2018-19) : 217526 (in tons)

## 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.

The Surda Mine is located between latitude N22032'43.119"-N22034'17.401" and longitude E 86025'31.849"-E 86026'45.097" in Ghatsila Division, East Singhbhum District, Jharkhand State. It is situated 10 km away from Ghatsila Railway station, S.E Railway and 45 km from Tatanagar.

Overall geology ie lithology, Structure, ore mineralization, ore control of Surda mines are as follows:

**Lithology:** On the basis of Geological Mapping done by Geological Survey of India, the following sequence of rock from S.W. to N.E. is reconstructed for the Surda area

The details are given below:-

North-East:-

11. Epidiorite and basic rocks (Dalma Trap)
10. Sericite-Quartz-Schist
9. Quartzite (Chaibasa Stage)
8. Sericite-Kyanite-Quartz-Schist
7. Feldspathic-Schist with Tourmaline and Magnetite rock (not continuous along strike)
6. Quartz-Conglomerate (not continuous along the strike and well developed in the mines Shear Zone rocks)
5. Granular-Quartz-Chlorite rock with tourmaline and magnetite and vein Quartz conglomerate
4. Biotite-Schist
3. Quartzite (Dhanjori Quartzite)
2. Biotite-Schist
1. Talc-Chlorite-Schist and ultrabasic Dhanjori Traps rocks

Southwest:- The rock of the Chaibasa Stage (Sericite-Kyanite-Quartz-Schist and quartzite) are thrust over the younger rocks of Dhanjori group

**Structure:** The general strike of the rocks in the area is NW-SE with dip varying from 300 to 500 towards NE. The thrust zone maintains a NW-SE trend in this part of the belt. The rock formations have been affected by tectonic movements giving rise to a series of major plunging folds and axes trending approximately ESE-WNW and developed within the shear zone. On the limbs of these folds, S-shaped cross folds have

been observed. The Quartzite rocks shows well developed joint pattern. There are three mutually perpendicular tension fractures and two diagonal shear fractures are observed in the host rocks. The linear structure in the area is represented by (i) Pebble elongation (ii) Slicken-Slide (iii) Parallel alignment of mineral grains and (iv) axes of Micro fold, the lineation normally pitching 450 to 500 towards N 500 E.

**Mineralization:** The surface indication of mineralisation in the form of gossan bands is traceable along the strike of the formations. Gossan zone consists of iron oxides formed insitu and are yellowish brown, brick red to black in colour. In some cases triangular and other box works are noticed. On an average, the depth of oxidation does not exceed 30 m. and the main minerals of oxidation are azurite, malachite and iron oxide which are found to stain the outcrops.

**Control:** Mineralisation is largely confined to granular-chlorite-biotite-schist and quartzite-chlorite schist, especially where there are a number of sheared quartzite reefs. These rocks show evidences of crushing, silicification and hydrothermal alteration. Mineralisation occurs as disseminations along foliation, fracture and breccias fillings and also minor replacement patches

#### **General Geology :**

The generalized geological succession of the area may be summarized as below :

The general geological succession of the area is summarized as below,

Surda, an operating mine, is located in the southern sector of the best defined part of Singhbhum Copper Belt (SCB) Thrust or Shear Zone. The SCB Thrust from the Surda Mine in the South to Jaduguda north of Rakha, form as a very well defined arcuate ridge, trending NW-SE for some 16 km along the southern border of the Subarnarekha Valley.

Geologically this part of the SCB has a consistent stratigraphy, therefore the following description is generalized as representative of the entire sector. The major lode system is hoisted by the informally named "Mine Series " schist sandwiched between older Dhanjhor Formation metabasalts located to the southwest (forming the footwall) and younger Chaibasa Formation arenaceous and polytictic clastic meta sediments forming the hanging wall sequence to the northeast .

Local Stratigraphy (Based on Rakha Mine).

Lithology	Formation	Lode Relationship
Top (Northeast)  Sericite-quartz Schist, (Kyanite)quartzite, Garnetiferous mica schists and phyllites.	CHAIBASA FORMATION	Hangingwall
Biotite-(Chlorite)-quartzite-(Sericite) schists, Copper mineralized lodes: Quartz-Chlorite schist, quartz granular rock; 'footwall quartzite and minor quartz pebble conglomerate.	'MINE SERIES'	Copper Lodes
Massive metabasalt	DHANJORI FORMATION	Footwall

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

b) Deployment of mining machinery:

**Departmental**

Sl No	Machineries deployed	Capacity	Number of Unit	In use	Brief description	Remarks
1	LHD	Bucket capacity- 0.90 meter cube , Motor -40 HP	04 Nos.	04 Nos.	811 Eimco Elecon	
2	Cavo	Bucket capacity-0.167 Cu Yd,Hopper capacity -1.307 Cu Yd	02 Nos.	02 Nos.	310 make Atlas Copco	
3	Mucking loader (Cavo)	Bucket capacity-0.167 Cu Yd,Hopper capacity -1.307 Cu Yd	03 Nos.	03 Nos.	Make ROSAVA	
4	Loader		08 Nos.	08 Nos.	21B Loader & 12B Loader	
5	Loco	Capacity 4 Ton	06 Nos.	06 Nos.	make OVIS Equip. Pvt. Ltd.	
6	Loco	Capacity - 4 Ton	01 Nos.	03 Nos.	GEM/China/South Africa	
7	Loco	Capacity - 8 Ton	01 Nos.	01 Nos.	GEM	
8	Rock Breaker		02 Nos.	02 Nos.	Rock Breaker -180	
9	Scraper	Motor-40 HP	02 Nos.	02 Nos.	Make Pit Man, South Africa	
10	Pump	100 HP Pump-	05 Nos.	05 Nos.	Make Mather Platt. 7stage	
11	Pump	Pump- 220 HP	01 No.	01 No.	Make Mather Platt. 10 stage	
12	Pump	Pump- 240 HP	01 No.	01 No.	Make Mather Platt. 10 stage	
13	Pump	Pump 40HP	02 Nos.	02 Nos.	make KSB single stage	
14	Pump	Pump 30HP	02 nos.	02 nos.	make KSB single stage	
15	Pump	Roto Pump 30 HP	01 No.	01 No.		
16	EOT Crane	capacity - 5 Ton	09 Nos			
17	Hoist Engine	1200 Hoist Engine	02 Nos.	02 Nos.	make GEM Co., 30 KW AC induction Motor	
18	Slurry Pump	make Creative Engg., Banglore	04 Nos.	04 Nos.	make Creative Engg., Banglore	
19	Winder	make MB wild B Co. England, 100 HP motor, 26 mm Dia Langslay Rope, Tub capacity - 1.4 ton	01 No.	01 No.	No.3 Shaft	

20	Winder	make MB wild B Co. England, 175 HP motor, 22 mm Dia Langsley Rope, Skip capacity - 2.75 ton	01 No.	01 No.	Sub Incline Winder	
21	Winder	make Copax Co., Poland, 400KW motor, 30 mm Dia Lockcoil Rope, Skip capacity - 3.75 ton	01 No.	01 No.	No.4 Shaft	
22	Compressor	1000cfm, 3000cfm,3500cfm,	06 No.	06 No.	CPT, Kriloskar, KG Khosla Atlas Copco	
23	Ventilation Fan	180HP motor capacity	02 Nos.	02 No.		
24	Drill Rod Grinder Machine		4 No.	4 No.	Make Atlas Copco	

#### Contractual

SI No	Machineries deployed	Capacity	Number of Unit	In use	Brief description	Remarks
1	Compressor	250KW, 132KW	03 No.	03 No.		
2	Winch	37KW, 30KW, 30KW, 45KW, 30KW, 30KW, 11KW, 22KW,	33 No.	33 No.		
3	Umbrella Drill		01 No.	01 No.	Pneumatically operated	
4	Rock Grab Buket		01 No.	01 No.	Pneumatically operated	
5	Winder	315KW	01 No.	01 No.	JK2.0 Aux. Winder (Man Winding)	
6	Winder	800KW	01 No.	01 No.	JK3.5 Main Winder (Ore Hoisting)	

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

Sr. No.	Proposal in the approved Mining Plan or Scheme of mining (Period from 01/04/2019 to 31/3/2020 )	Observations regarding implementation of proposals given in approved Mining Plan or Scheme of mining.	Remarks
1.	CONSERVATION OF MINERALS		

a)	Exploration: 3200m (4 Nos. of Coring/angular BHs)	a) 2430 m( 4 Nos. of angular BHs).	
b)	Utilization of subgrade mineral:	b) NIL	
c)	Any other proposal for monitoring:	NA	
2.	<b>SCIENTIFIC MINING</b>		
a)	Mine Development and method of mining	<p>Mining method followed at Surda mines are</p> <p>a) Room &amp; pillar methods for ore body width 1.5 m to 4 m.</p> <p>b) Cut &amp; fill method for ore body width 4 m to 6 m.</p> <p>c) Post pillar methods for ore body width 6 m and above</p> <p>Presently stoping work is going on in:</p> <p>Level 6- Block 13</p> <p>Level 8- Block 28, Block 29, Block 42</p> <p>Level 11- Block 45, Block 43, Block 43A, Block 58</p> <p>Block 20 in level 7 is under development.</p>	
b)	Handling of Waste/subgrade material:	- The project is an underground mining project, where most of the activity is confined underground. Almost the entire waste rock generated during mining is used for stowing underground	
c)	Area reclamation & restoration:	18.79 Ha area Rehabilitation done in year 2018-19	
d)	Any other propoal for monitoring:	NA	

3. PROTECTION OF ENVIRONMENT			
a)	Afforestation:	500 Nos. trees planted in 2018-19 with survival rate of 40%	
b)	Quality of Air:	Within permissible limit	
c)	Quality of Water:	Within permissible limit	
d)	Noise Level:	Within permissible limit	
e)	Vibration:	Within permissible limit	
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.	12.12.2018	Shri B.P. Kerketta	Rule 11(1) & Rule 35(2)	complied	

5. Socio-Economic Development Plan: Total \_\_\_ 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	9.45	9.45	Water storage tanks, drinking water supply facility & irrigation support to agriculture Construction/ Support for
	ii) Water Supply			
	iii) Sanitation	15.66	15.66	



				Household latrine, Plaster & Painting of household toilets, Installation of Sanitary Pad vending Machines and Incinerators
	iv) Health, Safety and Medical Facilities	6.08	6.08	
2.	Education and Training	2.85 0.34	2.85 0.34	Skill development & Vocational Training programmes for local communities Support for E-learning centre in Baldeodas Santlala Mahila College, Ghatsila
3.	Employment to local inhabitants			
4.	Public Transportation and communication	0	3.00	
5.	Recreation and other sports activities	4.55	4.55	Mage cricket Tournament, Football, & Archery
6.	Expenditure for environment management	2.0	2.00	
7.	Other	1.88	1.88	Support & Training to SHGs working on Hand Glove Making, Handloom Products & Wooden Craft Products. -Veterinary Camp
	<b>Total:</b>	<b>42.81</b>	<b>45.81</b>	CSR activities.

*(Signature)*  
24/02/2020

(Anupam Nandi)  
Regional Controller of Mines & Inspecting Officer