INDIAN BUREAU OF MINES
MINERALS DEVELOPMEMT AND REGULATION DIVISION

MCDR INSPECTION REPORT

Bhubaneshwar regional office

Mine file No : ORI/IRON/KJR/MCDR-35/BBS **Mine code : 30ORI08059**

(i) Name of the Inspecting Officer and ID No. : **VPD) VIKRAM DESHPANDE**

(ii) Designation : Assistant Controller Mine

(iii) Accompaning mine Official with Designation : S/Shri GV Satyanarayana, Agent, SS Mishra, Mines Mana

(iv) Date of Inspection : 18/10/2022

(v) Prev.inspection date : 23/06/2021

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **KHONDBOND**

(b) Registration NO. : **4376/30ORI08059**

(c) Category : A Mechanised

(d) Type of Working : Opencast

(e) Postal address

State : ORISSA
District : KEONJHAR
Village : KHONDBOND
Taluka : CHAMPUA
Post office : BICHAKUNDI
Pin Code :
FAX No. : 0676772239
E-mail : md.office@tatasteel.com
Phone : 06767 72239

(f) Police Station : Bamebari

(g) First opening date : 17/01/1983

(h) Weekly day of rest : SUN

2. Address for correspondance : VILL:KHANDBOND& GURDA
PO:BICHAKUNDI
P.S.JODA,DIST:KEONJHAR,ORISSA,PIN:758034

3. (a) Lease Number : ORI0108
(b) Lease area : 978
(c) Period of lease :
(d) Date of Expiry : 31/03/2030

4. Mineral worked : MANGANESE ORE Associated
IRON ORE Main

5. Name and Address of the

Lessee : TISCO
Bombay House 24, Homy Mody Street Mumbai MUMBAI
(SUBURBAN) MAHARASHTRA
Phone:
FAX :

Owner : T V NARENDRAN
TATA STEEL LIMITED
JAMSHEDPUR, POST-BISTUPUR
SINGBHUM EAST, JHARKHAND
SINGHBHUM (EAST) JHARKHAND
Phone: 06572431818
FAX : 0657-2431818

Agent : G V SATYANARAYAN
KEONJHAR ORISSA
Phone:
FAX :

Mining Engineer
Name : ARUN KUMAR SAHU,Full Time
Qualification : B TEC H MINING
Appointment/ Termination date : 31/12/2021

Manager
Name : SHRI S S MISHRA
Qualification : DIPLOMA, FCC
Appointment/ Termination date : 03/12/2021

6. Date of approval of Mining Plan/Scheme of Mining :

Renewal under rule 22 MCR1960	11/12/2001
Modif.of approved Mining Plan	11/06/2004
Modif.of approved Mining Plan	09/03/2009
FMCP under 23C(1)	09/03/2009
Mining Scheme rule 12 MCDR1988	31/03/2009
Mining Scheme rule 12 MCDR1988	19/06/2013
Modif.approved Mining Scheme	19/01/2016
Modif.approved Mining Scheme	24/08/2016
MP review under 17(1) MCR 2016	09/11/2017
Modif.approved Mining Scheme	12/03/2020

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

Sl.No.	Item	Proposals	Actual work	Remarks
1a	Backlog of previous year	208 BORE HOLES WERE PROPOSED	ONLY 11 BORE HOLES DRILLED	VIOLATION FOR THE DEVIATION ISSUED UNDER RULE 11 OF MCDR 2017
1b	Exploration over lease area for geological axis 1 or 2	In the year 2021-22, it was proposed to drill 208 boreholes in 50x50 and 100x100	15.72 ha area has been already explored under potential mineral area under G1 & G2	Out of the total area ,Mineralised zone is 524.6 ha under G1,G2,G3 and G4 and Non-Mineralised area is 453.5ha
1c	Exploration Agencies and Expenditure in lakh rupees during the year	Tata Steel Limited, 752.8 Lakhs	Tata Steel Limited, 18.728 Lakhs	
1d	Balance area to be explored to bring Geological axis in 1 or 2	Out of 524 hectares of mineralised area, only298.08 ha. explored in G1. Remaining area also needs to be explored further to bring into Geological axis G1 level	Out of 524 hectares of mineralised area, only298.08 ha. explored in G1. Remaining area also needs to be explored further to bring into Geological axis G1 level	

1e	Balance reserve as on 01/04/20	as per the modification of mining plan approved on 12.3.2020, the reserves /resources area as on 1/1/2020 are under Iron Ore Mn 111 84.47 MT, 0.874 MT 121 51.43 MT 0 122 14.83 MT 0.009MT 211 56.32 MT 0 221 9.57 MT 0 .692MT 222 14.89MT 0.102MT 333 0 .64 MT 0	Reserves /resources as on 1/4/2022 are under Iron Ore Mn 111 81.28 MT, 0.763 MT 121 53.59 MT 0 122 2.44 MT 0.009 MT 211 40.49 MT 0 221 42.74 MT 0 .6927MT 222 3.64MT 0.69237MT 333 0 .64 MT 0	Reserves enhanced as on 01/04/2020.

1f	General remarks of inspecting officers on geology, exploration etc	The rock formations of the area belong to the Iron ore group of Upper Dharwar age. In south Singhbhum, Bonai & Keonjhar district Manganese ore deposits are associated with Shales, Laterite, Chert & Quartzite of the Iron Ore Group& are distributed within the Horse shoe shaped synclinorium, plunging towards NNE ,over-folded towards SW. The shale formation occurs as a core of the synclinorium. along Jamda-Koira valley overlying the Banded Iron Formation.

Development :

Sl.No.	Item	Propasals	Actual work	Remarks

2a	Location of development w.r.t.lease area	Iron Part Pit 1- 13850N - 14460N 10550E - 10920E Pit 2 12580 N - 13350 N 9900 E & 10360 E Pit -3 9948 N - 10540 N 9200 E - 9602 E Manganese Part OZ XII - 13741N - 14308 N 8637 E - 9134 E	Iron Part Pit 1- 13854 N - 14452 N 10559 E - 10890E Pit 2 12980 N - 13200 N 9940 E & 10356 E Pit -3 10000 N - 10500 N 9203 E - 9598 E Manganese Part OZ XII - 13930 N - 14305 N 8869 E - 9134 E
2b	Separate benches in topsoil, overburden and minerals (Rule 15)	Yes	Yes
2d	Quantity of topsoil generation in m3	No such proposal	As per proposal

Exploitation:

Sl.No.	Item	Propasals	Actual work	Remarks
3a	Number of pit proposed for production	Iron Part -3 Pit Name Pit-1,Pit-2,Pit-3 Manganese part -1 Pit Name OZXII	Iron Part-3 Pit Name Pit-1,Pit-2,Pit-3 Manganese part-1 Pit Name OZXII	
3b	Quantity of ROM mineral production proposed	Iron:- 8.83 MTPA Manganese:- 250000(Tons)	Iron:- 4.802MTPA Manganese:- 44989(Tons	

3c	Recovery of sailable/usable mineral from ROM production	Iron Part: 7.87 MT Manganese Part: 200000 tons	Iron Part: 3.95 MT Manganese Part: 34129 tons	
3d	Quantity of mineral reject generation	Iron:- 0.96 MT Manganese:- 50000(tons)	Iron:0.84MT Manganese:- 8860 (Tons)	
3e	Grade of mineral rejects generation and threshold value declared.	Iron:- >45% to <58% Manganese>10% to < 25%	Iron:- Average Fe % 54.14 Mn:- Average Mn %19.32	
3f	Quantity of sub grade mineral generation.	Iron:- 0.96 MT Manganese:- 50000(tons)	Iron:0.84MT Manganese:- 8860 (Tons)	
3g	Grade of sub grade mineral generation	Iron:- >45% to <58% Manganese>10% to < 25%	Iron:- Average Fe % 54.14 Mn:- Average Mn %19.32	
3h	Manual / Mechanised method adopted for segregating from ROM	Iron:- Mechanized Manganese:- Manual	Iron:- Mechanized Manganese:- Manual	
3i	Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects.	Yes	Done as Proposed	Mineral Reject is blended with ore for mineral conservation purpose

3j	Provision of drilling and blasting in mineral benches	Deep Hole Drilling Iron Dia:- 150 mm Depth:- 11 m Spacing:- 4 Burden:-3.2 Explosive used:- SME Manganese Dia:- 100 mm Depth:- 6.6 m Spacing:-3 Burden:-2.5 Explosive used: - Slurry Explosive (cartridges)	Deep Hole Drilling Iron Dia:- 150 mm Depth:- 11 m Spacing:- 4 Burden:-3.2 Explosive used:- SME Manganese Dia:- 100 mm Depth:- 6.6 m Spacing:-3 Burden:-2.5 Explosive used: - Slurry Explosive (cartridges)
3k	Provision of mining machineries in mineral benches		Sl No. Equipment Type Capacity Proposal Actual 1 KOMATSU HD785-7 Rear Dumper 100MT 12 10 2 HD 465 Water Sprinkler 50 KL 2 2 3 EX 1200 (Tata Hitachi) Hydraulic Excavator 5.9 Cu M 4 3 4 ROCL8 Drill 165mm 1000CFM 1 2 5 IDM 45 Crawl IR Drill 165mm 1000CFM 3 2 6 Drill 100mm 300 CFM 1 0 7 WA 900-3E Pay loader 9 Cu M 2 1 8 D-275A-5R Track Dozer 13.7 Cu M 4 4 9 WD 600-6 Wheel Dozer 8 Cu M 1 1 10 GD 825A- 2 Motor Grader 16 FT 1 1 11 Explosive Van Tata 1612 3.9 MT 2 2 12 RT 880 Mobile Crane 75 MT 2 2

3l	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Iron Part: Bench Height- 10 Mt Bench Width - 20-25 Mt Manganese Part: Bench Height- 6-8 Mt Bench Width - 10 Mt	Iron Part: Bench Height- 10 Mt Bench Width -20-25 Mt Manganese Part: Bench Height- 6-8 Mt Bench Width -10 Mt	
3m	Total area covered under excavation/pits	268.946 Ha	224.247 Ha	Iron Part: Pit-1,Pit-2,Pit-3 Manganese Part: Pit1
3n	Ore to OB ratio for the pit/mine during the year.	Iron Ore: 1:0.091 (T/cum) Manganese Ore: 1:8.75(t/cum)	Iron Ore:1: 0.14 (T/cum) Manganese Ore:1:5.82 (t/cum)	
3o	Total area put in use under different heads at the end of year		Sl No Area of Different Heads Proposed of end of approved plan period(In Ha) area put to use at the end of RY(in Ha) 1 Mining 268.946 224.247 2 Mineral Storage 78.517 40.031 3 Mineral Beneficiation Plant 24.309 22.972 4 Township 1.488 0.000 5 Tailing Pond 33.020 7.520 6 Railways 0.000 0.000 7 Roads 49.533 33.100 8 Infrastructure (Workshop. Adm. Building etc.) 14.892 7.147 9 OB / Waste Dump 104.727 64.786 10 Topsoil Preservation 1.723 0.245 11 Others (Magazine, Water harvesting) 0.532 0.238	

3p	Production of ROM mineral during the last five year period as applicable	2017-18: 50000 Tons Mn 11394000 MT Fe 2018-19: 55000 Tons Mn 4850000 MT Fe 2019-20: 59014 Tons Mn 5640000 MT Fe 2020-21: 100000Tons Mn 8710000 MT Fe 2021-22 250000 tons Mn 8830000MT Fe	2017-18: 49991.932 Tons Mn 2579594.501 Tons Fe 2018-19: 45488.5 Tons Mn 2806573.745 Tons Fe 2019-20: 54169Tons Mn 3494185.16 Tons Fe 2020-21: 55,768.000 Tons Mn 4437378.13 Tons Fe 2021-22 44989 tons Mn 4801367.803 Tons Fe	
3q	General remarks of inspecting officers on method of mining etc.			The method of mining is A category and is fully mechanized .The ROM production is carried out by opencast mining methods in the pit 1, Pit 2 ,pit 3and in Mn pit as proposed in the document.

Solid Waste Management - Dumping:

Sl.No.	Item	Propasals	Actual work	Remarks
4a	Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)	Separate dumping for overburden and mineral reject /subgrade envisaged	Separate dumping for overburden and mineral reject /subgrade done.	

4b	Location of topsoil, OB and mineral reject dumps	Iron Part: SG Dump 3: Position: 10300E to 9850 E, 12783 N to 12410N , Top RL - 710 SG Dump 1A and 2A: Position: 9580E to 9880 E, 11400 N to 10810N , Top RL - 677 Waste Dump C: Position: E: 10172 E to 10473 E N: 13946 N to 14119 N Top RL : + 708 Waste Dump 5A : Position: E: 9579 E to 9956 E N: 11226 N to 11998 N Top RL : + 668 Waste Dump 5B : Position: E: 9727 E to 10024 E N: 12215 N to 12557 N Top RL : + 687 Manganese Part: Back filling N/S: 13998N to 14320N, E/W:	Iron Part: SG Dump 3: Position: 10320E to 9846 E, 12800 N to 12400N , Top RL - 710 SG Dump 1A and 2A: Position: 9585E to 9878 E, 11420 N to 10800N , Top RL - 677 Waste Dump C: Position: E: 10327 E to 10469 E N: 13970 N to 14106 N Top RL : + 708 Waste Dump 5A : Position: E: 9579 E to 9954 E N: 11236 N to 11998 N Top RL : + 668 Waste Dump 5B : Position: E: 9734 E to 9914 E N: 12122 N to 12540 N Top RL : + 687 Manganese Part: Back filling N/S: 14052N to 14214N, E/W: 9036E to 9330E,

4c	Number of dumps within lease area and outside of lease area	Within Lease Area: Waste Dump-8 Mineral Reject-3 Outside Lease Area: Waste Dump- 0 Mineral Reject- 0	Within Lease Area: Waste Dump-8 Mineral Reject-3 Outside Lease Area: Waste Dump- 0 Mineral Reject- 0	Iron Part: 1.Waste dump A 2.Waste dump-5A 3.Waste dump-5B 4.Waste Dump-C 5.Mineral Reject-1A&2A 6.Mineral Reject-3 Manganese Part: 1.Waste Dump-1 2.Waste Dump-2 3.Waste Dump-4 4.Back Filling Area 5.Mineral Reject-1
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)	Outside the UPL	Outside the UPL	
4e	Number of active and alive dumps.	8	8	Iron-5. Mn-3
4f	Number of dead dumps.	3	3	Iron-1, Mn-2
4g	Number of dumps established.	3	3	Iron-1, Mn-2
4h	Whether Retaining wall or garland drain all along dumps are there.	Garland Drain	Garland Drain as proposed	
4i	Length of Retaining wall or garland drain all along dumps	Iron Part: Toe wall:854m Garland drain:854m Manganese Part: Toe wall:800m Garland drain:800m	Iron Part: Toe wall:854m Garland drain:854m Manganese Part: Toe wall:445m Garland drain:445m	Iron Part: Waste Dump-5b, Waste Dump-C Manganese Part: Waste Dump-1
4j	Number of settling ponds	2	2	Near pillar No-16A, Waste Dump-5b

4k	Specific comments of inspecting officer on waste dump management	On the slopes of the dumps plantation has been carried out and around the dumps retaining wall have been also constructed. However, the 2 check dams as proposed were not made for which violation has been issued.

Solid Waste Management - Backfilling:

Sl.No.	Item	Propasals	Actual work	Remarks
5a	Status of part or full extraction of mineral from mined out area before starting backfilling.	After exhaustion of mineable ore from northern side of Mn.Pit 1 it will be subsequently backfilled	Not done due to non-exhaustion of mineral	
5b	Area under backfilling of mined out area	5.5 ha area proposed for backfilling	Backfilling done for only 2.8 ha area.	
5c	Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)	No such proposal	Top soil encountered while excavation	Top soil encountered while excavation used for plantation purpose.
5d	Total area fully reclaimed and rehabilitated	No such proposal	No such proposal	

5e	General remarks of inspecting officers on backfilling and reclamation etc.		The lessee has proposed the reclamation of mined out area of 5.5 ha by backfilling during the year, but only 2.8 ha area has been done. Violation letter issued regarding the non-compliance of proposal.

Progressive Mine Clousre Plan:

Sl.No.	Item	Propasals	Actual work	Remarks
6a	Whether Annual report on PMCP submitted on time and correctly. Rule 23 E(2).	To be Submitted before Ist july	Submittd within stipulated time	Submitted on 20/6/2022
6b	Area available for rehabilitation (ha) .	No such proposal	No such proposal	
6c	afforestation done (ha).	No such proposal	No such proposal	
6d	No. of saplings planted during the year	No such proposal	No such proposal	
6e	Cumulative no .of plants	36500	38416	2018-19 to 2021-22
6f	Any other method of rehabilitation	No such proposal	No such proposal	
6g	Cost incurred on watch and care during the year			
6h	Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (Lx B x D	5.55 ha	2.8 ha	

6i	Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings	8 LCum	0.2 LCum	
6j	Compliance on reclamation and rehabilitation by backfilling (iii)Afforestation on backfilled area	No such proposal	No such proposal	
6k	Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir	No such proposal	No such proposal	
6l	Compliance on reclamation and rehabilitation by backfilling (v)any other specific means.	No such proposal	No such proposal	
6m	Compliance of rehabilitation of waste land within lease (i)afforestation	12000	13522	Iron part: Waste Dump-5a,Waste Dump-5b Manganese part: Waste Dump-1
6n	Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha)	4.6 ha	5.5 ha	Iron part: Waste Dump-5a,Waste Dump-5b Manganese part: Waste Dump-1
6o	Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation	Plantation	Plantation	Iron part: Waste Dump-5a,Waste Dump-5b Manganese part: Waste Dump-1

6p	Compliance of environmental monitoring (core zone and buffer zone)	Periodical monitoring of environmental parameters are proposed	Carried out as per the proposal	
6q	General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.			The lessee has not carried out the compliance as out of 5.5 ha proposed area only 2.8 ha area has been backfilled. Hence violation issued under rule 11(1) of MCDR 2017.

Mineral Conservation:

Sl.No.	Item	Propasals	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area	Grade-wise sorting	Grade wise sorting is being practice	
7b	Method of grade-wise mineral sorting i.e. manual or mechanical.	Mechanised for Iron ore and manual for Mn ore	Mechanised for Iron ore and manual for Mn ore	
7c	Different grade of mineral sorted out at mines.	Iron ore having grade 45 to 58% and > 58% Fe Manganese having 10 to 25% Mn and >25% Mn	Iron ore having grade 45 to 58% , 62 to 65% Fe and >65% Fe Manganese having 10 to 25% Mn , 25% to 35% , 35 to 46% and> 46% Mn	
7d	Any beneficiation process at mines .	Crushing and washing plant of 8MTPA capacity having hydro cyclone and Paste Thickener for Iron ore Part.	Crushing and washing plant of 8MTPA capacity having hydro cyclone and Paste Thickener for Iron ore Part	

7e	General remarks of inspecting officer on Mineral conservation and beneficiation issues			At present grade wise sorting is being carried out. The proposed 8MTPA wet beneficiation plant as proposed has started functioning alongwith Paste Thickener for Iron Ore Part .Further 2MTPA wet beneficiation plant from 2022-2023 is proposed to start.

Environment:

Sl.No.	Item	Propasals	Actual work	Remarks
8a	Separate removal and utilization of topsoil (Rule 32)	No such proposal	No such proposal	Topsoil generated was concurrently used in plantation as and when produced
8b	Concurrent use or storage of topsoil	No such proposal	Topsoil generated was concurrently used in plantation as and when produced	
8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)	Provision for separate dumping of overburden, waste rock, subgrade/ reject is envisaged	Provision for separate dumping of overburden, waste rock, subgrade/reject done	
8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	No such proposal	No such proposal	

8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	Plantation proposed at waste dumps and backfilling	Plantation carried out as proposed. Backfilling of 2.8 ha done against 5.54 ha	Backfilling of Mn Pit
8f	Baseline information on existence of plantation and additional plantation done (Rule 41)	12000 nos of sapling were proposed during the year 2021-22	13522 nos of sapling are planted during the year 2021-22	
8g	Survival rate	85%	85%	
8h	Water sprinkling on roads to control airborne dust	Mobile water sprinkler & fixed type water sprinkler	Mobile water sprinkler & fixed type water sprinkler	
8i	General remarks of inspecting officer on aesthetic beauty in and around mines area			Surrounding in and around mine is good because of plantation carried out and by regular sprinkling of water on mine road to control the dust.

Compliance of Rule 45:

Sl.No.	Item	Propasals	Actual work	Remarks

9a	Status of submission of Monthly and Annual returns	As per MCDR 2017, the monthly return are to be submitted before 10th day of every month in respect of the preceding month and AR shall be submitted before the 1st day of July each year for the proceeding financial year.	Submitted within prescribed time
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager		
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.		
9d	Scrutiny of Annual return on afforestation	Area-4.6 Ha, No. of Saplings-12000	Area-5.5Ha, No. of Saplings-13522
9e	Scrutiny of Annual return on mineral reject generation (Grade and quantity)	Iron Part:?45% to <58% & 0.91 MT Manganese Part: ?10% to <25% & 50000 tons	Iron Part: Avg Fe %: 54.14 & 0.84MT Manganese Part: Avg Mn %: 19.32 & 8860 tons
9f	Scrutiny of Annual return on ROM stock and/or graded ore		

9g	Scrutiny of Annual return on sale value, Ex. Mine price and production cost	2913.07rupees per tone
9h	Scrutiny of Annual return on fixed assets	Fixed Assets (in Rs) 10753043933
9k	Scrutiny of Annual return on mining machineries	Sl No. Equipment Type Capacity Proposal Actual 1 KOMATSU HD785-7 Rear Dumper 100MT 12 10 2 HD 465 Water Sprinkler 50 KL 2 2 3 EX 1200 (Tata Hitachi) Hydraulic Excavator 5.9 Cu M 4 4 4 ROCL8 Drill 165mm 1000CFM 1 2 5 IDM 45 Crawl IR Drill 165mm 1000CFM 3 2 6 Drill 100mm 300 CFM 1 0 7 WA 900-3E Pay loader 9 Cu M 2 1 8 D-275A-5R Track Dozer 13.7 Cu M 4 4 9 WD 600-6 Wheel Dozer 8 Cu M 1 1 10 GD 825A- 2 Motor Grader 16 FT 1 1 11 Explosive Van Tata 1612 3.9 MT 2 2 12 RT 880 Mobile Crane 75 MT 2 1

Details of violations observed during current inspection and compliance position of violation pointed out

Violation observed				Show couse position			
	Rule NO.		Issued on	Compliance on	Rule NO.	Issued on	Compliance on
MCDR17	Rule 11(1)		04/11/2022				
MCDR17	Rule 12(4)		04/11/2022				

Date :

(**VIKRAM DESHPANDE**)

Indian Bureau of Mines