

**INDIAN BUREAU OF MINES
MINERALS DEVELOPEMMENT AND REGULATION DIVISION**

Inspection under SDF for star rating of mines REPORT

Bangalore regional office

Mine file No : KNT/CTD/FE/4/BNG

Mine code : 30KAR07013

- (i) Name of the Inspecting : **A101**) **ARUN KUMAR**
Officer and ID No.
- (ii) Designation : Deputy Controller Mines
- (iii) Accompanying mine : Vijayanand Chakrasali - Mines Manager
Official with
Designation
- (iv) Date of Inspection : 21/02/2019
- (v) Prev.inspection date : 11/01/2017

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **A. NARRAIN**
- (b) **Registration NO.** : **IBM/327/2011**
- (c) **Category** : **A Fully Mechanised**
- (d) **Type of Working** : **Opencast**
- (e) **Postal address**
- State** : **KARNATAKA**
- District** : **CHITRADURGA**
- Village** : **MEDEKERIPURA**
- Taluka** : **CHITRADURGA**
- Post office** : **BHEEMASAMUDRA**
- Pin Code** : **577501**
- FAX No.** : **0832-6713721 (F), Jayavel.G**
- E-mail** : **MK.Reddy@vedanta.co.in**
- Phone** : **0832-6713600 (O),**
- (f) **Police Station** : **Baramasagara**
- (g) **First opening date** : **03/10/1955**
- (h) **Weekly day of rest** : **SUN**
2. **Address for** : **Vedanta Limited(formerly Sesa sterlite/Sesa Goa**
correspondance **Sesa Ghor, 20 EDC Complex,**
Patto, Panaji, Goa- 403001
3. (a) **Lease Number** : **KAR1020**
- (b) **Lease area** : **163.5**
- (c) **Period of lease** : **20**
- (d) **Date of Expiry** : **13/05/2013**
4. **Mineral worked** : **IRON ORE** **Main**

5. Name and Address of the

Lessee : VEDANTA LIMITED
 Sesa Ghor, EDC Complex,
 Patto- Panaji, Tiswadi,
 North Goa, Goa. NORTH GOA
 GOA
 Phone:08194238101, 9483211966
 FAX :08194238170

Owner : SAUVICK MAZUMDAR
 M/S VEDANTA LTD., SESA
 GHOR, EDC CO PATTO, PANAJI,
 TISWADI, NORTH GOA, 403001
 NORTH GOA GOA
 Phone: 08194238101
 FAX : 08194238170

Agent : M. Krishna Reddy
 Megalahalli Office Complex
 Bheemasamudra ,
 Chitradurga, Karnataka
 CHITRADURGA KARNATAKA
 Phone: 08194-238101
 FAX : 0832-2460612

Mining Engineer

Name : Y.M.MAHESH, Full Time
 Qualification : B.E. MINING
 Appointment/ : 20/01/2007
 Termination date

Geologist

Name : Somshekhar Dhodkunde, Full Time
 Qualification : M.Sc, Applied Geology
 Appointment/ : 11/01/2016
 Termination date

Manager

Name : G.JAYAVELU
 Qualification : B.E MINING, FCC
 Appointment/ : 01/01/2013
 Termination date

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|---|---|--------------------------------|------------|
| 6. Date of approval of Mining Plan/Scheme of Mining | : | Renewal under rule 22 MCR1960 | 03/04/1992 |
| | | Renewal under rule 22 MCR1960 | 04/03/1998 |
| | | Modif.of approved Mining Plan | 02/07/2001 |
| | | Mining Scheme rule 12 MCDR1988 | 06/03/2003 |
| | | Modif.approved Mining Scheme | 18/08/2005 |
| | | Mining Scheme rule 12 MCDR1988 | 26/04/2007 |
| | | Mining Scheme rule 12 MCDR1988 | 19/08/2008 |
| | | Modif.approved Mining Scheme | 25/02/2010 |
| | | Mining Scheme rule 12 MCDR1988 | 29/02/2012 |
| | | Mining Scheme rule 12 MCDR1988 | 03/09/2012 |
| | | Renewal under rule 24 MCR1960 | 19/11/2012 |
| | | Modif.of approved Mining Plan | 10/05/2016 |
| | | MP review under 17(1) MCR 2016 | 15/12/2016 |
| | | MP modif under 17(3) MCR 2016 | 23/03/2018 |
| | | MP modif under 17(3) MCR 2016 | 19/06/2018 |

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

| Sl.No. | Item | Proposals | Actual work | Remarks |
|--------|---|-------------|---|--|
| 1a | Backlog of previous year | Nil | 17 Nos. of bore hole drilled to a depth of 3950.20mts. | New bore holes drilled for infill drilling |
| 1b | Exploration over lease area for geological axis 1 or 2 | No proposal | Total mineralized area of 90.25Ha is explored at G1 level. | In 2019-20, 7 core bore holes have been proposed at 50mts grids to a total depth of 730 mts to ascertain the mineral reserves which was covered with stacks & mobile crushing plant. |
| 1c | Exploration Agencies and Expenditure in lakh rupees during the year | No proposal | M/s Kartikay Exploration & Mining Pvt. Ltd. Cost of exploration is 2.63 Cr | Exploration drilling was given on contract. |
| 1d | Balance area to be explored to bring Geological axis in 1 or 2 | No proposal | 90.25 Ha of leasehold area is mineralized; entire mineralized zone is explored up to G-1 Level. | Entire mineralized area is explored to G-1 level |
| 1e | Balance reserve as on 01/04/20 | Nil | 100.945 MMT as on 01.02.2019 | - |
| 1f | General remarks of inspecting officers on geology, exploration etc | | | Detailed exploration is carried out for infill drilling. The entire mineralized area of 90.25 Ha is explored under G-1 level. |

Development :

| Sl.No. | Item | Proposals | Actual work | Remarks |
|--------|--|---|---|---------|
| 2a | Location of development w.r.t.lease area | South Block - N1572000-1572800,E630100-630800 North Block- N1572600-1574200,E629400-629700 | Location of the development was carried out within the proposed grids | - |

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| 2b | Separate benches in topsoil, overburden and minerals (Rule 15) | Separate benches proposed in Overburden & Mineral benches | Separate benches maintained in OB & Mineral bench | South Block:OB - 2,Mineral - 6,OB/Mineral- 5;North Block:OB - 1, Mineral - 3.No generation of top soil. |
| 2c | Stripping ratio or ore to OB ratio | 1:0.72 | 1:0.63 | Development in the central portion of South Block is in progress. |
| 2d | Quantity of topsoil generation in m3 | No proposal | Nil | Mine is being in the operation since 1954. Entire area is already broke open. Hence no top soil available. |
| 2e | Quantity of overburden generation in m3 | 1915000 | 1467205 CuM | Data is as on 31st Jan 2019.BD-1.70 ton/Cum for waste |
| 2f | General remarks of inspecting officers on development of pit w.r.t. type of deposit etc | | | Development was carried out & is in progress within the proposed grids with separate benches in OB & Mineral in both the North & South Block. |

Exploitation:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|---|-----------------|-------------------|---|
| 3a | Number of pit proposed for production | 2 pits proposed | Working in 2 pits | North & South Block |
| 3b | Quantity of ROM mineral production proposed | 4508804 Tonnes | 3944442 Tonnes | Data is as on 31st Jan 2019 |
| 3c | Recovery of sailable/usable mineral from ROM production | 100% | 100% | Dry screening & crushing plant with 100% product recovery |
| 3d | Quantity of mineral reject generation | 151875 Tonnes | Nil | Hematitic Siliceous ore not encountered. |

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| 3e | Grade of mineral rejects generation and threshold value declared. | +35% Fe (Hematitic Siliceous ore) | Nil | Silicious Ore not encountered till 31st Jan 2019. |
| 3f | Quantity of sub grade mineral generation. | No Proposal | Not Applicable | No Proposal as per App. Mining Plan |
| 3g | Grade of sub grade mineral generation | No Proposal | Not Applicable | - |
| 3h | Manual / Mechanised method adopted for segregating from ROM | Mechanized method proposed | Mechanized method adopted for seregating from ROM | Dry screening & crushing plant |
| 3i | Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects. | No proposal | Beneficiation studies done on siliceous ore. | The study was done through IBM lab.in the previously |
| 3j | Provision of drilling and blasting in mineral benches | Drilling & Blasting proposed in hard strata when encountered | Top hard lumpy ore benches are blasted using controlled blasting method with the help of Wagon drill & diesel driven compressor. | Only 20% of the total material handling needs blasting.Spacing-4 Mts,Burden-3 mts& Ht-7-8 Mts |
| 3k | Provision of mining machineries in mineral benches | Proposal is given for use of mining machinery in mineral benches. | Excavators and 35 Toner Dumpers are used for excavation of ore and waste in mining pit | Company owned machinery is used for excavation |
| 3l | Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM | 7 m height of bench is proposed for mining. | Average height of 7 meters is maintained in entire pit. | It was observed that at places the Bench height was 1 to 0.5 m more in hard strata. |
| 3m | Total area covered under excavation/pits | 64.68 Ha | 64.68 Ha is covered for mining purpose | - |
| 3n | Ore to OB ratio for the pit/mine during the year. | 1:0.72 | 1:0.63 | Development in the central portion of South Block in progress. |

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| 3o | Total area put in use under different heads at the end of year | O/c working-64.68 Ha,Reclaimed-28.27 Ha,Waste disposal-40.25 Ha,Buildings & roads-26.89 Ha,Mineral/Subgrade stack-0.50 Ha | O/c working-64.68 Ha,Reclaimed-23.24 Ha,Waste disposal-40.25 Ha,Buildings & roads-26.89 Ha,Mineral/Subgrade stack-0.50 Ha | - | |
| 3p | Production of ROM mineral during the last five year period as applicable | 2013-14: 2.29 MMT 2014-15: 2.29 MMT 2015-16: 2.29 MMT 2016-17: 2.289 MMT 2017-18: 2.438 MMT | 2013-14: 2.06 MMT 2014-15: 1.03 MMT 2015-16: 2.28 MMT 2016-17: 2.28 MMT 2017-18: 2.28 MMT | - | Actual production is within proposed limit. |
| 3q | General remarks of inspecting officers on method of mining etc. | | | | The Mining is carried out in accordance with the proposal given; working in two pits with shovel dumper combination.64.68 Ha area is covered under mining. |

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 of OB proposed | Separate dumping of OB is done | No top soil & mineral rejects in proposal for FY 2018-19 |
| 4b | Location of topsoil, OB and mineral reject dumps | OB proposed to be dumped in D3 dump | OB dumped in between N1572500-1573100,E-630400-630800 | OB is dumped in D3 dump in SE corner of South Block. |
| 4c | Number of dumps within lease area and outside of lease area | Inside Lease : 04Nos. Outside Lease- NIL | 04 Nos.dumps observed inside the lease area | 02 Nos. dumps are inactive and 02 Nos. dumps are active |
| 4d | Location of dumps w.r.t. ultimate pit limit (Rule 16) | Dumps proposed Outside the Ultimate pit Limit | Dumps are located Outside Ultimate pit Limit | All the OB is disposed within leasehold area outside the UPL |

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|----|--|---------------------------------------|--|--|
| 4e | Number of active and alive dumps. | 02Nos. (D3 & D4 dumps) | 01 No. (D3 dump) active dump | OB will be accommodated in D3 from 2018-20 and from 2020-22 in D4 dump |
| 4f | Number of dead dumps. | 02Nos. (D1 & D2 dumps) | 02Nos. (D1 & D2 dumps) | Both the dumps are stabilized. |
| 4g | Number of dumps established. | 02 Nos.(D1 & D2 dumps) | 02 Nos.(D1 & D2 dumps) | Stabilized by means of geotextiling and vegetation. |
| 4h | Whether Retaining wall or garland drain all along dumps are there. | Retaing wall & Garland drain proposed | Retaing Wall & Garland drain available all around the dump | - |
| 4i | Length of Retaining wall or garland drain all along dumps | D3 Dump: R.W- 409 Mts & G.D- 415 Mts | D3 Dump: RW-In all 1033 Mts & GD- 1035 Mts | RW & GD are constructed in phased manner with the movement of the dump |
| 4j | Number of settling ponds | No proposal | Nil | 9Nos. settling ponds constructed outside lease area previously |
| 4k | Specific comments of inspecting officer on waste dump management | | | The OB is dumped at the earmarked place. One dump (D3) is presently used and D4 is proposed in coming years. Inactive dumps have been stabilized by geotextile & vegetation. |

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. | No proposal | Nil | Mineral is not exhausted for backfilling. |
| 5b | Area under backfilling of mined out area | No proposal | Nil | No backfilling proposed for mining plan period 2017-22 |

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|----|---|-------------|------------------------|---|
| 5c | Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32) | No proposal | No top soil generated. | No restoration of mined out are for mining plan 2017-22 |
| 5d | Total area fully reclaimed and rehabilitated | No proposal | Not applicable | - |
| 5e | General remarks of inspecting officers on backfilling and reclamation etc. | | | No proposal of backfilling in the plan period. Pits are not matured for backfilling as mineral from these pits are not exhausted so far |

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 on or before 1st of July every year | Submitted on 1st July 2018 | - |
| 6b | Area available for rehabilitation (ha) . | No proposal | nil | No restoration of mined out are for mining plan 2017-22 |
| 6c | afforestation done (ha). | 0.40 Ha | 4.17 Ha | Plantation on dump and greenbelt. |
| 6d | No. of saplings planted during the year | 400@75% survival rate | 25668 Nos. of saplings planted | It includes dump, greenbelt & outside lease area |
| 6e | Cumulative no .of plants | Not in proposal | 454362 Nos of plants | It includes plantation on dump are and green belt |
| 6f | Any other method of rehabilitation | No proposal | Not applicable | - |
| 6g | Cost incurred on watch and care during the year | Not in proposal | Sapling Procurement cost - Rs. 6057460 Sapling watch and care cost - Rs. 1528017 | Procurement of saplings, watering & manure. |

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|----|--|-------------|-----|---|
| 6h | Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (Lx B x D | No proposal | Nil | Novoids are available for back filling |
| 6i | Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings | No proposal | Nil | Planataion on waste dump done for reclamation |
| 6j | Compliance on reclamation and rehabilitation by backfilling (iii)Afforestati on on backfilled area | No proposal | Nil | No area is available for backfilling & thus no planatation done . |
| 6k | Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir | No proposal | Nil | - |
| 6l | Compliance on reclamation and rehabilitation by backfilling (v)any other specific means. | No proposal | Nil | - |
| 6m | Compliance of rehabilitation of waste land within lease (i)afforestation | No proposal | NA | - |
| 6n | Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha) | No proposal | Nil | - |
| 6o | Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation | No proposal | NA | - |

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|----|---|---|--|---|
| 6p | Compliance of environmental monitoring (core zone and buffer zone) | Environmental monitoring for air, water & noise proposed in core zone & buffer zone | Environmental monitoring done on quarterly basis by Chennai Mettex Lab Pvt. Ltd. | - |
| 6q | General remarks of inspecting officers on PMCP compliance and progressive closure operations etc. | | | Te PMCP activities as proposed in the approved document are being carried out by the lessee. Except for plantation no other means of reclamation & rehabilitation proposed. |

Mineral Conservation:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|---|--|--|---|
| 7a | ROM Mineral dispatch or grade-wise sorting within lease area | Grade wise sorting proposed within the lease area | grade wise sorting of Fines & lumps is done within lease area | Grade wise Fines and lumps are dispatched separately from lease area |
| 7b | Method of grade-wise mineral sorting i.e. manual or mechanical. | Mechanical | Mechanical method adopted for mineral sorting | Dry crushing & Screening plant |
| 7c | Different grade of mineral sorted out at mines. | Lumps Below 55% 55% to below 58% 58% to below 60% 60% to below 62% 62% to below 65% 65% and above Fines Below 55% 55% to below 58% 58% to below 60% 60% to below 62% 62% to below 65% 65% and above | Lumps Below 55% 55% to below 58% 58% to below 60% 60% to below 62% 62% to below 65% 65% and above Fines Below 55% 55% to below 58% 58% to below 60% 60% to below 62% 62% to below 65% 65% and above | Sorting of fines and lumps is done using dry crushing and screening plants and the products are dispatched separately as per the grade. |

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|----|--|-------------|---|---|
| 7d | Any beneficiation process at mines . | No proposal | Dry Crushing & Screening method adopted | Only facility of dry processing of ROM is available in lease area |
| 7e | General remarks of inspecting officer on Mineral conservation and beneficiation issues | | | Mineral conservation is taken care. The Siliceous ore of +35% Fe is stacked separately & blended. |

Environment:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|---|---|---|---|
| 8a | Separate removal and utilization of topsoil (Rule 32) | No proposal | Nil | No generation of top soil |
| 8b | Concurrent use or storage of topsoil | No proposal | No top soil is generated | - |
| 8c | Separate dumps for overburden, waste rock, rejects and fines (Rule 33) | Separate dumping of OB and stacking of fines & lumps proposed | D3 dumps for OB. Fines & lumps stacked separately | It was observed that 2 additional stacks of fines were stacked in North & South Blocks which was not in proposal .Violation pointed out |
| 8d | Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use | No proposal | Nil | No restoration of mined out area proposed for the plan period. |
| 8e | Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc) | No proposal | Plantation is done on finalized stages of dumps. | - |

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|----|--|--|---|---|
| 8f | Baseline information on existence of plantation and additional plantation done (Rule 41) | Baseline information on existence of plantation available. | Plantation on dumps- 23500 Nos., Green Belt- 2168 Nos. Total: 25668 Nos. | In FY 2017-18.WML- 12269 Nos & OML- 11917 Nos. planted @ 75% survival rate. |
| 8g | Survival rate | 75% | 75% | - |
| 8h | Water sprinkling on roads to control airborne dust | Sprinkling of water all along haul roads proposed | On the day of inspection dust were generated in the mines & water spraying was insufficient to suppress the dust. | Violation pointed out for non compliance. |
| 8i | General remarks of inspecting officer on aesthetic beauty in and around mines area | | | Aesthetic beauty in and around the mine is maintained by virtue of platation. |

Compliance of Rule 45:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|---|--|---|------------|
| 9a | Status of submission of Monthly and Annual returns | | M.R. Submitted up to January 2019. A.R. Submitted up to 2017-2018. | - |
| 9b | Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager | 1) Manager: Mr. Vijayanand Chakrasali 2) Mining Engineer in charge: Mr. Padmaraja Tumati 3)Geologist in charge: Mr. Somshekar S Dhodakunde | Same Officials were present on the date of inspection. | FY 2017-18 |
| 9c | Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc. | O/c working- 64.68 Ha, reclaimed- 28.27 Ha Waste disposal-40.25 Ha buildings & roads-26.89 ha Mineral/ Subgrade stack-0.50 Ha | Appears to be correct | FY 2017-18 |

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|----|---|---|-----------------------|------------|
| 9d | Scrutiny of Annual return on afforestation | WML-12269 Nos, OML-11912 Nos @ 75% survival rate | Appears to be correct | FY 2017-18 |
| 9e | Scrutiny of Annual return on mineral reject generation (Grade and quantity) | Nil | Nil | FY 2017-18 |
| 9f | Scrutiny of Annual return on ROM stock and/or graded ore | ROM : OB- 27467 Tons, Production- 2288145 Tons, CB- 25512 Tons | Appears to be correct | FY 2017-18 |
| 9g | Scrutiny of Annual return on sale value, Ex. Mine price and production cost | Cost of production: Rs.654/Ton Avg Sale price : Rs.1718.29/Ton Ex- Mine price : Lumps 55% to below 58%- Rs.1786/ton 58% to below 60%- Rs.1871/Ton 60% to below 62%- Rs.2243/ton 62% to below 65%- Rs.2468/ton Fines Below 55%- Rs.847/ton 55% to below 58% - Rs.1615/ton 58% to below 60% - Rs.1573/ton 60% to below 62% - Rs.1469/ton 62% to below 65% - Rs.2192/ton | Appears to be correct | FY 2017-18 |

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|----|---|---|-----------------------|------------|
| 9h | Scrutiny of Annual return on fixed assets | Total Fixed asset value is Rs.1146287590 (It includes Land, Plant & machinery and capitalized expenditure) | Appears to be correct | FY 2017-18 |
| 9k | Scrutiny of Annual return on mining machineries | Dumpers-35 Nos., Excavators-12 Nos., WL-11 Nos., Dozer & WT-4 Nos Each | Appears to be correct | FY 2017-18 |

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

| Violation observed | | | | Show cause position | | | |
|--------------------|------------|------------|---------------|---------------------|--|-----------|---------------|
| Rule NO. | | Issued on | Compliance on | Rule NO. | | Issued on | Compliance on |
| MCDR17 | Rule 11(1) | 18/03/2019 | 12/06/2019 | | | | |
| MCDR17 | Rule 40 | 18/03/2019 | 12/06/2019 | | | | |

Date :

(ARUN KUMAR)

Indian Bureau of Mines