

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

Mining Plan Modification REPORT

Goa regional office

Mine file No : Goa/Fe/95

Mine code : 30GOA02013

- (i) Name of the Inspecting Officer and ID No. : **K02) KALMATA M.K.**
- (ii) Designation : Senior Mining Geologist
- (iii) Accompanying mine Official with Designation : Shri Sanjay Kumar, Mining Engineer.
- (iv) Date of Inspection : 06-SEP-17
- (v) Prev.inspection date : 07-MAR-17

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **KALAY IRON ORE MINE**
- (b) **Registration NO.** :
- (c) Category : A Mechanised
- (d) Type of Working : Opencast
- (e) Postal address
- State : GOA
- District : SOUTH GOA
- Village : SANTONA
- Taluka : SANGUEM
- Post office : KIRLAPALE
- Pin Code : 403706
- FAX No. :
- E-mail :
- Phone : 650641 (Bnf. Plant)
- (f) Police Station :
- (g) First opening date : 27-APR-51
- (h) Weekly day of rest : SUN
2. Address for correspondance : Kalay mine of M/s N.S. Narvekar,
Vill. Santona & Kirlapale,TQ: SANGUEM
P.O. KALAY, Curchorem.
3. (a) Lease Number : GOA0004
- (b) Lease area : 77.56
- (c) Period of lease :
- (d) Date of Expiry : 22-NOV-27
4. Mineral worked : IRON ORE Main

5. Name and Address of the

Lessee : N. S. NARVEKAR
 Bombi Niwas, MARGAO SOUTH
 GOA GOA
 Phone:0832-2722945
 FAX :

Owner : SHRI S. T. POKLE (POWER OF ATTORNEY HOLDER)
 M/s N.S. Narvekar, Bombi
 Niwas, MARGAO, GOA. SOUTH
 GOA GOA
 Phone: 722945
 FAX :

Mining Engineer
 Name : S.K. Singh, Full Time
 Qualification : AMIE (Mining), Ist CLASS MINES MANAGER C
 Appointment/ : 05-JUN-00 01-APR-03
 Termination date

Mining Engineer
 Name : K. RAMANI, Full Time
 Qualification : B.E. (Mining), IInd Class Mine Mgr. Certi
 Appointment/ : 01-APR-02
 Termination date

Mining Engineer
 Name : SANJAY KUMAR, Full Time
 Qualification : B.E (M.E)
 Appointment/ : 17-AUG-04
 Termination date

Geologist
 Name : K. N. Patil, Full Time
 Qualification : M.Sc. (Applied Geology)
 Appointment/ : 16-AUG-82 01-APR-03
 Termination date

Geologist
 Name : BENEDITO JOAQUIM FERNANDES, Full Time
 Qualification : M. Sc. (Geology), Goa University
 Appointment/ : 01-APR-02
 Termination date

Manager
 Name : CHANDRASHEKHAR SINGH
 Qualification : B.Tech. (Mining) & Holder of First Class
 Appointment/ : 19-APR-99
 Termination date

Manager
 Name : SHRI CHITTIMALLA SRINIVASAN CHARY
 Qualification : DIP MINING , FCMM
 Appointment/ : 03-NOV-06
 Termination date

Manager

Name : A. AVUDAIYAPPAN
Qualification : B.COM, FCMMCC(REST.)
Appointment/ : 31-MAY-00 03-NOV-06
Termination date

6. Date of approval of Mining : Modif.of approved Mining Plan 30-OCT-01
Plan/Scheme of Mining Mining Scheme rule 12 MCDR1988 17-MAR-03
Renewal under rule 24 MCR1960 06-MAR-07
Modif.of approved Mining Plan 29-JUL-10
MP modif under MCR 1960 27-NOV-15
MP modif under 17(3) MCR 2016 31-AUG-16
MP modif under 17(3) MCR 2016 22-MAR-17

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

Sl.No.	Item	Proposals	Actual work	Remarks
1a	Backlog of previous year	35 boreholes were proposed in the T.C.No-40/51.	Nil	Violation was pointed out for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.
1b	Exploration over lease area for geological axis 1 or 2	About 15 ha was proposed to explore under G-1 level in the year 2016-17.	Exploration was not carried out as per the proposal.	Violation was pointed out for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.
1c	Exploration Agencies and Expenditure in lakh rupees during the year	NA	NA	
1d	Balance area to be explored to bring Geological axis in 1 or 2	About 15Ha	Nil	
1e	Balance reserve as on 01/04/20		Proved mineral Reserves (111) 8.355 million tons Pre-feasibility Mineral resources (221/222) 3.932 million tons Inferred Mineral Resources (333) 8.543 million tons.	Reserves/resources are given for amalgamated lease (earlier mining lease was having two leases (T.C.No-12/52 & T.C.No-40/51).

1f	General remarks of inspecting officers on geology, exploration etc	About 234 boreholes were drilled in the lease area covering about 82ha. Out of 82 ha about 48Ha is explored under G-1 level and remaining under G-3. Further proposals were made in the year 2016-17 and 17-18 to explore entire area under G-1 level of exploration, due to want of consent no exploration was carried out in the year 2016-17 and Violation was pointed out for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.
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Development :

Sl.No.	Item	Proposals	Actual work	Remarks
2a	Location of development w.r.t.lease area	In the year 2016-17, there was a proposal to work between co-ordinates N 1690100 TO N 1690450 E 409100 TO 409500 N 1690670 TO N 1690850 E 408890 TO 409080.	Working has been carried out as per the proposal in the year 2016-17.	
2b	Separate benches in topsoil, overburden and minerals (Rule 15)	Separate benches were proposed in oB and ore.	Benches were made as per the proposal.	
2c	Stripping ratio or ore to OB ratio	1:4.54 (For kalay mine)	1:4.90 (For kalay mine)	
2d	Quantity of topsoil generation in m3	Nil	Nil	

2e	Quantity of overburden generation in m3	994500	927723
2f	General remarks of inspecting officers on development of pit w.r.t. type of deposit etc		The working has been carried out as per the proposal. Separate benches were made in ore and OB. No topsoil removal was proposed in the present plan period.

Exploitation:

Sl.No.	Item	Propasals	Actual work	Remarks
3a	Number of pit proposed for production	Two pits were proposed in the year 2016-17. One pit in the Pandava Shetavoril sodo lease and one in Mainatil Murdi lease.	in the year 2016-17 working has been carried out in both the pits of Kalay mine as per the proposal.	
3b	Quantity of ROM mineral production proposed	438000 tons (from kalay lease for both the leases)	378575 tons (from the both the leases)	Since the leases are amalgamated production is given combindly.
3c	Recovery of sailable/usable mineral from ROM production	90%	90%	
3d	Quantity of mineral reject generation	Nil	Nil	
3e	Grade of mineral rejects generation and threshold value declared.	NA	NA	No mineral rejected is generated.
3f	Quantity of sub grade mineral generation.	Nil	Nil	
3g	Grade of sub grade mineral generation	NA	NA	

3h	Manual / Mechanised method adopted for segregating from ROM	Mechanical	Mechanical only dry screening.	
3i	Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects.	Nil	Nil	
3j	Provision of drilling and blasting in mineral benches	No drilling and blasting proposals	Hard strata was loosened by ripper dozer.	
3k	Provision of mining machineries in mineral benches	Six excavators , one ripper dozer was proposed combin dly for both the leases.	However lessee has utilized ten excavators and two dozers as per the annual return submitted for the year 2016-17.	On the day of inspection no mining operation was observed and no machineries were found in working area.
3l	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Proposed height of the benches was 6mts	Benches were maintained as per the proposal.	
3m	Total area covered under excavation/pits	working was proposed in broken up area and about 5.7242 Ha was additionally taken for mining in the approved plan period.	About 3.00 to 3.5 ha additionaaly taken for mining in the plan period.	Total area under mining upto 2016- 17 was 75.48ha for both the leases as per annual returns 2016-17.
3n	Ore to OB ratio for the pit/mine during the year.	1:5.24	1:4.25	
3o	Total area put in use under different heads at the end of year		Area under mining 75.484 Ha, Reclaimed and Rehabilitated area- 15.49Ha, Waste dumping- 23.23Ha and area occupied by plant and infrastructure is 10.84Ha.	

3p	Production of ROM mineral during the last five year period as applicable	T.C.No-12/52	T.C.No-12/52
		2013-14	2013-14
		Nil	nil
		2014-15	2014-15
		Nil	nil
		2015-16	2015-16
		148000 tons	nil
		2016-17	2016-17
		248000 tons	194442 tons
	2017-18	2017-18(july 17)	
	148000 tons	66668 tons	
	T.C.No-40/51		
	2013-14	T.C.No-40/51	
	nil	2013-14-nil	
	2014-15	2014-15	
	nil	nil	
	2015-16	2015-16	
	190000 tons	nil	
2016-17	2016-17		
190000 tons	184133 tons		
2017-18	2017-18(upto july 17)		
190000 tons	16166 tons		

3q	General remarks of inspecting officers on method of mining etc.	The benches were systematically developed and as per the proposals. Lessee is using ripper and dozed for loosening hard strata to avoid blasting.
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Solid Waste Management - Dumping:

Sl.No.	Item	Propasals	Actual work	Remarks
4a	Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)	Both surface dumping and Temprory backfilling was proposed.	There was no proposal for handling of topsoil hence no topsoil dump was made. However little deviation was observed in the temprory backfilling of the OB.	Violation was pointedout for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.

4b	Location of topsoil, OB and mineral reject dumps	Temporary backfilling was proposed b/w co-ordinates-N 1690250 to N 1690675 and easting E 409250 to E 409550 iT.C.No 40/51 and in T.C.no- 12/52 backfilling was proposed b/w co-ordinates N-1691320 to N-1691120 and E-409200 to E 408900.	Actual dumping was made b/w N-1691250 to N-1691650, E-409140 to E-409350 and N-1691300 to 1691430 E-408900 to E 408990.	
4c	Number of dumps within lease area and outside of lease area		Total seven waste dumps are exist out of seven five are within the lease area and two most of the dump is outside the lease and partially inside.	
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)		waste is temporarily dumping and backfilling within UPL only.	
4e	Number of active and alive dumps.	One	one and temporary backfilling is done. six dead dumps were exist within the lease area.	
4f	Number of dead dumps.		six dead dumps were exist within the lease area.	
4g	Number of dumps established.	Temporary backfilling was proposed with small quantity for external dumping.	Small quantity was dumped on existing dump and most of the waste was backfilled temporarily.	Total seven dumps were exist in the kalay mine.

4h	Whether Retaining wall or garland drain all along dumps are there.	one rubble wall was proposed with dimension of 260m x 1.5m x 1.5m	The length of the rubble was less than the proposal.	Violation was pointed out for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.
4i	Length of Retaining wall or garland drain all along dumps	A retaining wall and laterite bund of 260m x 1.5mx 1.5mtr were proposed.	Laterite bund is made as per the proposal and retaining wall was not constructed as per the proposal.	Violation was pointed out for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.
4j	Number of settling ponds	Nil	Nil	
4k	Specific comments of inspecting officer on waste dump management		The waste generated during the year 2016-17 and 17-18 was temporarily backfilled in the pits and some quantity was dumped on the existing surface dump. Little deviation was noticed in the backfilling so violation was pointed out for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.	

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.		Mineral is not fully extracted hence only temporary backfilling was proposed.	
5b	Area under backfilling of mined out area	Only temporary backfilling proposed.	Only temporary backfilling done.	Previously about 7.98 ha was fully reclaimed where mineral is exhausted.

5c	Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)	Nil	Nil
5d	Total area fully reclaimed and rehabilitated	Nil	Nil
5e	General remarks of inspecting officers on backfilling and reclamation etc.		Since no area was left for duming waste on the surfce systematically. waste is temproraly backfilling in the existing pits.

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).	Not submitted	Violation was pointedout for the same on 29.08.2017 based on the inspection dated 09.08.2017. So no fresh violation is pointed out.	
6b	Area available for rehabilitation (ha) .	Nil	Nil	
6c	afforestation done (ha).		5.88ha in the year 2016-17	
6d	No. of saplings planted during the year	Total 2000 plants were proposed in the year 2016-17 for kalay iron ore mine.	7400 saplings were planted in the year 2016-17 in kalay iron ore mine.	
6e	Cumulative no .of plants		Total 68190 saplings were planted so far.	
6f	Any other method of rehabilitation	Nil	Nil	
6g	Cost incurred on watch and care during the year		0.6 lakh per annum	

6h	Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (Lx B x D	Nil	Nil	only temporary backfilling done.
6i	Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings	Nil	Nil	only temporary backfilling done.
6j	Compliance on reclamation and rehabilitation by backfilling (iii) Afforestation on backfilled area	Nil	Nil	
6k	Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir	Nil	Nil	
6l	Compliance on reclamation and rehabilitation by backfilling (v) any other specific means.	Nil	Nil	
6m	Compliance of rehabilitation of waste land within lease (i) afforestation	Nil	Nil	plantation made in buffer zone and Gap filling.
6n	Compliance of rehabilitation of waste land within lease (ii) Area rehabilitation (ha)	Nil	Nil	
6o	Compliance of rehabilitation of waste land within lease (iii) Method of rehabilitation	Nil	Nil	

6p	Compliance of environmental monitoring (core zone and buffer zone)	Lessee is regularly monitoring air, water and noise and all parameters are within permissible limit.
6q	General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.	Lessee is regularly monitoring air, water and noise and all the parameters are within permissible limit. Since area is not available for dumping lessee is temporarily back filling waste in the working pits. plantation is made more than the proposal in the buffer zone and gap filling.

Mineral Conservation:

Sl.No.	Item	Proposals	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area		About 220029 tons of fines having Fe% below 55 is despatched in the year 2016-17 and about 58364 tons of lumps with Fe% below 55 and about 13527 tons of lumps with Fe% 55 to 58 is also despatched in the year 2016-17.	
7b	Method of grade-wise mineral sorting i.e. manual or mechanical.	Mechanical	Mechanical	
7c	Different grade of mineral sorted out at mines.		Below 55% Fe and above 55-58% Fe.	
7d	Any beneficiation process at mines .	No wet beneficiation/ processing are adopted within lease area to upgrade ROM. Dry screening process is adopted for sorting of ROM.	Lessee is sorting two types of ores one below 55% Fe and other 55 to 58% Fe. Lessee is adopted dry screening process for sorting of ore.	

7e	General remarks of inspecting officer on Mineral conservation and beneficiation issues	Lessee is sorting two types of ores one below 55% Fe and other 55 to 58% fe. Lessee is adopted dry screening process for sorting of ore.
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Environment:

Sl.No.	Item	Propasals	Actual work	Remarks
8a	Separate removal and utilization of topsoil (Rule 32)	Nil	Nil	
8b	Concurrent use or storage of topsoil	Nil	Nil	
8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)		OB and ores are stacked separately.	
8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	Nil	Nil	
8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	Nil	Nil	
8f	Baseline information on existence of plantation and additional plantation done (Rule 41)		Total 68190 saplings were planted in the kalay iron ore so far.	
8g	Survival rate		70 to 80%	

8h	Water sprinkling on roads to control airborne dust	Water sprinkling is undertaken on working area and transportation road by water tanker having 8000 ltr capacity.
8i	General remarks of inspecting officer on aesthetic beauty in and around mines area	Benches are systematically developed. Lessee is planted about 68000 plants in the kalay lease area. To control dust lessee is engaged water tanker of 8000 ltr capacity for sprinkling water in the working area regularly.

Compliance of Rule 45:

Sl.No.	Item	Propasals	Actual work	Remarks
9a	Status of submission of Monthly and Annual returns		Lessee is regularly submitting monthly and annual returns for kalay iron ore mine.	
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Mining enginner is shown as Mr.Sanjay Kumar and Geologist Mr Amit Gogale.	The details of mining engineer and geologist are correct.	
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	Area under current working - 75.48ha, under wate disposal- 23.23ha and Infrastructure -10.848ha	Details of land use pattern are matching. (The details are given for kalay iron ore mine)	
9d	Scrutiny of Annual return on afforestation	About 5700 plantaion was shown in the annual returns submitted for the year 2016-17.	plantation was made in the buffer zone and gap filling and figures are almost matching.	

9e	Scrutiny of Annual return on mineral reject generation (Grade and quantity)	Nil	Nil
9f	Scrutiny of Annual return on ROM stock and/or graded ore	closing stack of lumps is shown as 18258 tons of below 55% fe and 7263 tons of 55 to 58%fe ore and fines 3845 tons of below 55%fe grade.	The stack position was almost matching.
9g	Scrutiny of Annual return on sale value, Ex. Mine price and production cost	Sale value for lowgrade fines of below 55% fe is shown as Rs- 695/ton and exmine price is also shown same and cost of production was shown as Rs 636/ton.	The details of sale price exmine price and cost of production are matching.
9h	Scrutiny of Annual return on fixed assets	Value of fixed asset is shown as Rs- 14481224.	
9k	Scrutiny of Annual return on mining machineries	Shovel-10 number, wheel loader-02, dozer-01, dumpers-14.	Mining machineries is given for kaly iron ore mine and it is matching.

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

Date :

(KALMATA M.K.)

Indian Bureau of Mines