

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

MCDR INSPECTION REPORT

Bhubaneshwar regional office

Mine file No : ORI/BXT/KPT/MCDR-1/BBS

Mine code : 07ORI09001

- (i) Name of the Inspecting : **S010**) **SHRI G.C. SETHI**
Officer and ID No.
- (ii) Designation : Deputy Controller Mines
- (iii) Accompanying mine : Shri B.K Dash, DGM(Mines) & Shri S.K.Patnaik, AGM (EN
Official with
Designation
- (iv) Date of Inspection : 07/01/2018
- (v) Prev.inspection date : 22/02/2013

PART-I : GENERAL INFORMATION

1. (a) **Mine Name** : **PANCHPATMALI (C&N BLOCK)**
- (b) **Registration NO.** :
- (c) Category : A Mechanised
- (d) Type of Working : Opencast
- (e) Postal address
- State : ORISSA
- District : KORAPUT
- Village : PANCHPATMALI
- Taluka : POTTANGI
- Post office : DAMANJODI
- Pin Code : 763008
- FAX No. : 06853- 55002, 55003
- E-mail : sbnayak@nalcoindia.co.in,
- Phone : 06853- 34514
- (f) Police Station :
- (g) First opening date : 18/03/1983
- (h) Weekly day of rest : SUN
2. Address for : PANCHPATMALI BAUXITE MINE, M/S.NALCO LTD
correspondance AT & PO. DAMANJODI, PANCHPATMALI,
KORAPUT: 763 008
3. (a) Lease Number : ORI0227
- (b) Lease area : 1244
- (c) Period of lease : 30
- (d) Date of Expiry : 20/07/2009
4. Mineral worked : BAUXITE Main

5. Name and Address of the

Lessee : M/S NALCO LTD
 NALCO Bhavan P/1,Nayapalli
 BHUBANESWAR KHURDA ORISSA
 Phone:
 FAX :

Owner : M/S.Nalco
 P/1,Nayapalli Bhubaneswar
 KHURDA ORISSA
 Phone: 0674 442301,2.3
 FAX : 06853 32214,32

Agent : Sri.S.B.Pattnaik.
 Patchmatmali bauxite mine
 Agent-I,M&R Complex,
 Damanjodi, KORAPUT ORISSA
 Phone: 06853-32505,32366
 FAX : 06853-32214,322

Mining Engineer

Name : C.M.D.MURTHY,Full Time
 Qualification : BE(Mining),Ist Class MMCertificate
 Appointment/ :
 Termination date

Mining Engineer

Name : E.SAHOO,Full Time
 Qualification : BE MINING, IST CLASS COMPETENCY
 Appointment/ : 20/07/1999
 Termination date

Geologist

Name : P.K.BEHERA,Full Time
 Qualification : MSC GEOLOGY
 Appointment/ : 08/08/2002
 Termination date

Manager

Name : A.CHAKRABORTY
 Qualification : B.Tech(Mining) & FCC Metal,MMR 1961
 Appointment/ : 20/11/1999
 Termination date

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|-------------------------------|---|--------------------------------|------------|
| 6. Date of approval of Mining | : | Mining Scheme rule 12 MCDR1988 | 25/01/2000 |
| Plan/Scheme of Mining | : | Mining Scheme rule 12 MCDR1988 | 30/04/2004 |
| | : | Mining Scheme rule 12 MCDR1988 | 19/12/2008 |
| | : | FMCP under 23C(1) | 11/06/2012 |
| | : | Renewal under rule 24 MCR1960 | 10/07/2012 |
| | : | Modif.of approved Mining Plan | 01/05/2015 |
| | : | Modif.approved Mining Scheme | 01/05/2015 |
| | : | Mining Scheme rule 12 MCDR1988 | 11/11/2016 |
| | : | Modif.approved Mining Scheme | 05/01/2017 |

PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

Exploration :

| Sl.No. | Item | Proposals | Actual work | Remarks |
|--------|---|--|--|---------|
| 1a | Backlog of previous year | In the year 2016-17, it was proposed to drill 240 nos. of bore holes for pre-production drilling as envisaged in the modification of approved mining plan. | During the year 2016-17, 240 nos. of holes for pre-production drilling were drilled as per the modification of approved mining plan. | Nil |
| 1b | Exploration over lease area for geological axis 1 or 2 | G1 level: 1075.722ha & un-explored area: 239.542ha | G1 level: 1075.722ha & un-explored area: 239.542ha. | Nil |
| 1c | Exploration Agencies and Expenditure in lakh rupees during the year | The lessee M/s NALCO Ltd is the exploration agency for the mine and there is no specific proposal for expenditure on account of exploration. | During the year 2016-17, 240nos. of boreholes were drilled in the mine. | Nil |
| 1d | Balance area to be explored to bring Geological axis in 1 or 2 | 239.542ha | 239.542ha | Nil |

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|----|--|---|--|-----|
| 1e | Balance reserve as on 01/04/20 | In the review of mining plan, approved on 11.11.2016 for the period from 2017-18 to 2021-22, the reserves/resources for Bauxite estimated is as follows:- Proved reserves (111): 126.44 million tonnes & remaining resources of 17.33 million tonnes. | The reserves/resources for Bauxite as on 11.11.2016 is as follows:- Proved reserves (111): 126.44 million tonnes & remaining resources of 17.33 million tonnes. | Nil |
| 1f | General remarks of inspecting officers on geology, exploration etc | No comments. | The ML area of north & central block is a part of Panchpatmali hill, which is characterised by north-south trending Bauxite capping surrounded by Khondalite on the slopes. Highest & lowest altitudes located inside the ML area are at 1366m above MSL and 880m MSL respectively. The Bauxite occurs mainly on the flat portion of the plateau from 1266m to 1185m above MSL. The level of exploration in the lease area is as follows:- G1 level: 1075.722ha & un-explored area: 239.542ha. | Nil |

Development :

| Sl.No. | Item | Proposals | Actual work | Remarks |
|--------|------|-----------|-------------|---------|
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|----|---|---|--|---|
| 2a | Location of development w.r.t.lease area | E/W 21650 to E/W 22680 & N/S 21800 to N/S 24220. | E/W 21650 to E/W 22270 & N/S 22220 to N/S 23820. | Nil |
| 2b | Separate benches in topsoil, overburden and minerals (Rule 15) | Separate benches for, topsoil, overburden & Bauxite zone are envisaged in the modification of approved mining plan. | Separate benches in topsoil, overburden & Bauxite are being made. | Nil |
| 2c | Stripping ratio or ore to OB ratio | 1:0.37 | 1:0.20 | Nil |
| 2d | Quantity of topsoil generation in m3 | 420000 tonnes in 2016-17. | 175130 tonnes during 2016-17. | The topsoil generation is due to reduction in thickness in the area under excavation. |
| 2e | Quantity of overburden generation in m3 | 2520000 tonnes of over burden material was generated in the year 2016-17. | During the year 2016-17, only 1354520 tonnes of overburden material was generated. | Nil |
| 2f | General remarks of inspecting officers on development of pit w.r.t. type of deposit etc | No comments. | Concurrent backfilling followed by plantation on the backfilled area is in practice as per the proposal. | Nil |

Exploitation:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|---|----------------|--|---------|
| 3a | Number of pit proposed for production | One | One | Nil |
| 3b | Quantity of ROM mineral production proposed | 6825000 tonnes | During the year 2016-17, 6825000 tonnes of bauxite was produced. | Nil |

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|----|---|---|--|-----|
| 3c | Recovery of sailable/usable mineral from ROM production | 100% | 100% | Nil |
| 3d | Quantity of mineral reject generation | Nil | Nil | Nil |
| 3e | Grade of mineral rejects generation and threshold value declared. | No such proposal. | Not applicable. | Nil |
| 3f | Quantity of sub grade mineral generation. | Nil | Nil | Nil |
| 3g | Grade of sub grade mineral generation | Not applicable. | No sub-grade was generated during the year 2016-17. | Nil |
| 3h | Manual / Mechanised method adopted for segregating from ROM | Mechanised method. | Mechanised method. | Nil |
| 3i | Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects. | No such proposal. | Nil | Nil |
| 3j | Provision of drilling and blasting in mineral benches | Provisions for sub-grade drilling & blasting is proposed. | The drilling & blasting are being practised as per the approved document. | Nil |
| 3k | Provision of mining machineries in mineral benches | A good number of heavy earth moving mining machineries are proposed to be deployed as the mining operations are by fully mechanised opencast methods. | A good number of heavy earth moving mining machineries were deployed for carrying out mining operations. | Nil |

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| 3l | Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM | The proposed height of the benches are 4m overburden and the same for Bauxite ore zone is for 8m. The width of the benches about 75m. | The height of the benches are 4m overburden and the same for Bauxite ore zone is for 8m. The width of the benches about 75m. | Nil |
| 3m | Total area covered under excavation/pits | 30.94ha | 24.52ha. | Nil |
| 3n | Ore to OB ratio for the pit/mine during the year. | 1:0.37 | 1:0.20 | Nil |
| 3o | Total area put in use under different heads at the end of year | The item wise land use under different heads for the year 2016-17 has not been furnished. However, the land use at the end of the modification period i.e. 2016-17 is as given below:- (i) Area to be excavated: 436.230ha (ii) Overburden/dump(old) : 3.565ha (iii) Infrastructure : 165.7ha & (iv) Road: 6.00ha. | The item wise land use under different heads for the year 2016-17 as per the annual return submitted by the party for the year 2016-17 is as given below:- (i) O/C working: 190.500ha (ii) Reclaimed/rehabilitated: 295.640ha (iii) plant, buildings etc. : 165.700ha & (iv) PMCP: 20.750ha. | Nil |

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| 3p | Production of ROM mineral during the last five year period as applicable | As per the modification of the mining plan for the period from 2014-15 to 2016-17, the production proposed for the period from 2014-15 to 2016-17 is as given below:-2014-15: 6825000 tonnes, 2015-16: 6825000 tonnes & 2016-17 : 6825000 tonnes. | Actual production achieved during the period from 2014-15 to 2016-17 is as given below:- 2014-15: 5739120 tonnes, 2015-16: 6340142 tonnes & 2016-17: 6825000 tonnes | Nil |
| 3q | General remarks of inspecting officers on method of mining etc. | The method of mining was proposed for fully mechanised opencast methods. | The mining operations were carried out by fully mechanised open cast method as per the proposal envisaged in the modification of mining plan. | Nil |

Solid Waste Management - Dumping:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|--|---|--|---------|
| 4a | Separate dumping of topsoil, OB and mineral rejects (Rule 32,33) | No generation proposal for mineral reject. However, the overburden material is proposed for concurrent backfilling and the toipsoil is spread over the backfilled area. | The top soil so generated was spread over the backfilled area during the year 2016-17 & no separate dump for the same was made. The OB & waste generated was backfilled in the mined out areas concurrently. | Nil |

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| 4b | Location of topsoil, OB and mineral reject dumps | The OB & waste was proposed to be backfilled concurrently and no proposal for mineral rejects generation. | The OB & waste generated was backfilled concurrently in the mined out areas. | Nil |
| 4c | Number of dumps within lease area and outside of lease area | Only one existing old dump. | Only one existing old dump. | Nil |
| 4d | Location of dumps w.r.t. ultimate pit limit (Rule 16) | Eastern side of the lease area beyond the UPL. | Eastern side of the lease area beyond the UPL. | Nil |
| 4e | Number of active and alive dumps. | Nil | Nil | Nil |
| 4f | Number of dead dumps. | One. | One. | Nil |
| 4g | Number of dumps established. | Nil | Nil | Nil |
| 4h | Whether Retaining wall or garland drain all along dumps are there. | Nil | Nil | Nil |
| 4i | Length of Retaining wall or garland drain all along dumps | Nil | Nil | Nil |
| 4j | Number of settling ponds | Nil | Nil | Nil |
| 4k | Specific comments of inspecting officer on waste dump management | No Comments. | Concurrent backfilling is done in the mined out areas. | Nil |

Solid Waste Management - Backfilling:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|------|-----------|-------------|---------|
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| 5a | Status of part or full extraction of mineral from mined out area before starting backfilling. | Concurrent backfilling of mined out area is proposed. | Concurrent backfilling in the mined out area is being practised. | Nil |
| 5b | Area under backfilling of mined out area | 25.21ha. | 16.26ha | Nil |
| 5c | Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32) | spread over the reclaimed/back filled area. | spread over the reclaimed/backfilled area. | Nil |
| 5d | Total area fully reclaimed and rehabilitated | 295.64ha | 295.64ha | Nil |
| 5e | General remarks of inspecting officers on backfilling and reclamation etc. | No comments. | Concurrent backfilling of mined out areas is being practised as the environmental protection measures. | Nil |

Progressive Mine Closure Plan:

| Sl.No. | Item | Proposals | Actual work | Remarks |
|--------|--|---|--|--|
| 6a | Whether Annual report on PMCP submitted on time and correctly. Rule 23 E(2). | No such proposal. | The annual report on PMCP for the year 2016-17 has been submitted by the party under rule 26(2) of MCDR, 2017. | Nil |
| 6b | Area available for rehabilitation (ha) . | No such specific proposal in the approved document. | Nil | Nil |
| 6c | afforestation done (ha). | 25.21ha | 16.26ha. | Nil |
| 6d | No. of saplings planted during the year | 63025 saplings. | 102314 sapling | More number of saplings were planted during 2016-17. |

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| 6e | Cumulative no .of plants | No such proposal. | 15,79,637 nos. of saplings were planted as on 07.01.2018. | Nil |
| 6f | Any other method of rehabilitation | Nil | Nil | Nil |
| 6g | Cost incurred on watch and care during the year | No such proposal. | Not available. | Nil |
| 6h | Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling (L x B x D | An extent of 25.21ha of mined out area was proposed to be backfilled in the year 2016-17. | An extent of 16.26ha of mined out area was backfilled in the year 2016-17. | Nil |
| 6i | Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings | An extent of 25.21ha of mined out area was proposed to be backfilled in the year 2016-17. | 16.26ha was backfilled during the year 2016-17. | Nil |
| 6j | Compliance on reclamation and rehabilitation by backfilling (iii)Afforestation on backfilled area | An extent of 25.21ha of mined out area was proposed to be backfilled in the year 2016-17. | 16.26ha was backfilled during the year 2016-17. | Nil |
| 6k | Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir | No such proposal. | No water reservoir by way of rehabilitation measures has been made and no such proposal is given in the modification of approved of mining plan. | Nil |
| 6l | Compliance on reclamation and rehabilitation by backfilling (v)any other specific means. | No any other specific proposal. | Nil | Nil |

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|----|---|--|--|-----|
| 6m | Compliance of rehabilitation of waste land within lease (i)afforestation | Nil | Nil | Nil |
| 6n | Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha) | Nil | Nil | Nil |
| 6o | Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation | No such proposal. | Nil | Nil |
| 6p | Compliance of environmental monitoring (core zone and buffer zone) | The ambient air quality, water quality, noise level, vibration level etc. for core zone and buffer zone has been furnished in the modification of mining plan. | The ambient air quality, water quality, noise level, vibration level etc. were being monitored in every quarter and found within the permissible limits. | Nil |
| 6q | General remarks of inspecting officers on PMCP compliance and progressive closure operations etc. | No comments. | The reclamation over an extent of 16.26ha of mined out area was completed during the year 2016-17. | Nil |

Mineral Conservation:

| Sl.No. | Item | Propasals | Actual work | Remarks |
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| 7a | ROM Mineral dispatch or grade-wise sorting within lease area | The entire ROM Bauxite produced from the mine is proposed to be dispatched to their Alumina refinery through belt conveyor. | The entire ROM Bauxite produced from the mine is being dispatched to their Alumina refinery through belt conveyor. | Nil |
| 7b | Method of grade-wise mineral sorting i.e. manual or mechanical. | The entire ROM Bauxite produced from the mine is proposed to be dispatched to their Alumina refinery through belt conveyor. | The entire ROM Bauxite produced from the mine is being dispatched to their Alumina refinery through belt conveyor.. | Nil |
| 7c | Different grade of mineral sorted out at mines. | The grades of the Bauxite contains 42.72% Al ₂ O ₃ . | 42.72% Al ₂ O ₃ . | Nil |
| 7d | Any beneficiation process at mines | No such proposal. | Nil | Nil |
| 7e | General remarks of inspecting officer on Mineral conservation and beneficiation issues | No comment. | The ROM produced from the mining operations are supplied to the Alumina plant of M/s NALCO located at about 16 km from the mine. | There is no mineral conservation problems in the mine. |

Environment:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|------|-----------|-------------|---------|
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| 8a | Separate removal and utilization of topsoil (Rule 32) | Scrapping of topsoil and spreading the same over the backfilled area was proposed in the modification of mining plan. | The same practice is being followed. | Nil |
| 8b | Concurrent use or storage of topsoil | Spreading over the backfilled area was proposed. | The same practice is being followed. | Nil |
| 8c | Separate dumps for overburden, waste rock, rejects and fines (Rule 33) | No dumping proposal. | concurrent backfilling of minrd out area is in practice as per the propopsal. | Nil |
| 8d | Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use | Concurrent backfillig. | Concurrent backfillig. | Nil |
| 8e | Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc) | Phased restoration was not proposed. However, concurrent backfilling of mined out area was proposed. | Concurrent backfilling is a regularpractice in the mine but no phase restoration done. | Nil |
| 8f | Baseline information on existence of plantation and additional plantation done (Rule 41) | The status of existing plantation is not given. However, 63025 nos. of saplings were proposed to be planted in 2016-17. | During the year 2016-17, there are 102314 nos. of saplings were planted. | The actual plantation done was in higher side of the proposed number given in the modification of mining plan. |

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|----|--|---|--|-----|
| 8g | Survival rate | No specific proposal for survival rate of plantation furnished in the approved document | The reported survival rate of plantation was about 80% | Nil |
| 8h | Water sprinkling on roads to control airborne dust | Water sprinkling was proposed on the haul road to control the airborne dust. | Water sprinkling was a regular practice as reported during the field visit. | Nil |
| 8i | General remarks of inspecting officer on aesthetic beauty in and around mines area | No comment. | Concurrent backfilling of the mined out area followed by plantation enhances the aesthetic beauty of the area. | Nil |

Compliance of Rule 45:

| Sl.No. | Item | Propasals | Actual work | Remarks |
|--------|---|--|--|---------|
| 9a | Status of submission of Monthly and Annual returns | As per the rule 45 of MCDR, 2017, the monthly and annual returns to be submitted. | The submission status of all the returns has been verified and found in order for the year 2016-17. | Nil |
| 9b | Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager | The employment status of mining engineer, geologist & mine manager have been furnished in the annual return submitted by the party for the year 2016-07. | The employment status of mining engineer, geologist & mine manager was verified in the field & found in order. | Nil |

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|----|---|--|---|-----|
| 9c | Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc. | The land use pattern in different counts furnished in the annual return 2016-17 is as given below:- (i) Covered under current (O/C) workings: 190.500ha (ii) Reclaimed/rehabilitated: 295.640ha (iii) Occupied by plant, bulidings etc. : 165.700ha & (iv) progressive mine closure plan: 20.750ha | The same was verified and found to be in order. | Nil |
| 9d | Scrutiny of Annual return on afforestation | As per the annual return 2016-17, 102314 nos. of saplings were planted in the lease area. | The same is found to be in order. | Nil |
| 9e | Scrutiny of Annual return on mineral reject generation (Grade and quantity) | The generation status of mineral rejects has not been furnished in the annual return as no mineral reject was generated during 2016-17. | No mineral reject was generated during 2016-17. | Nil |
| 9f | Scrutiny of Annual return on ROM stock and/or graded ore | During the year 2016-17, 6825000 tonnes of Bauxite was produced from the mine. | Vreified and found in order. | Nil |

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|----|---|--|--|-----|
| 9g | Scrutiny of Annual return on sale value, Ex. Mine price and production cost | The ex-mine price & cost of production for Bauxite is mentioned to be for Rs. 599.55 a in the annual return submitted by the party for the year 2016-17. | The ex-mine price & cost of production are appears to be correct. | Nil |
| 9h | Scrutiny of Annual return on fixed assets | The value of the fixed assets is mentioned to for Rs. 2337952838.00 | The value of the fixed assets furnished in the annual return was not available for verification. | Nil |
| 9k | Scrutiny of Annual return on mining machineries | A good number different mining machineries are deployed in the mine as indicated in the annual return 2016-17. | The deployment status of all the mining machineries are found to be satisfactory. | Nil |

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 :

(SHRI G.C. SETHI)

Indian Bureau of Mines