22/06/2011
M.S. Pradhan
Sr Mgr (HRT)

No. J-11015/78/2010-IA.II(M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhavan,
C.G.O. Complex, Lodi Road,
New Delhi-110 003.

Dated the 28th February, 2011

To

M/s National Aluminium Company Limited (NALCO)
NALCO-Bhavan, P/1,
Nayapalli,
Bhubneswar-751 061
Odisha
E-mail: aksharma@nalcolindia.co.in

Subject: Panchpatmali Bauxite (South Block) Mining Project of M/s National Aluminium Company Limited (NALCO) located in Village Damanjodi, Tehsil and District Koraput, Odisha- environmental clearance regarding.

Sir,

This has reference to your letter No. NBC/SH&E/Mines/38/411 dated 10.09.2010 and subsequent letters dated 13.09.2010 and 12.10.2010 on the subject mentioned above. The project was earlier prescribed Terms of Reference (TORs) by the Ministry of Environment and Forests on 28.04.2010 for undertaking detailed EIA study for the purpose of obtaining environmental clearance. The proposal is for renewal of mining lease for production of 3.15 million tonnes per annum(million TPA) of bauxite from the mine lease which will be worked from 2019-2020.

2. The total mine lease area of the project is 528.262ha, out of which 189.552ha is forestland and 338.71ha is others non-forestland. Area proposed for mining is 417.962ha, an area of 90.30ha is kept for Infrastructure and 20ha is for roads.

3. No national park/wildlife sanctuary/biosphere reserve/tiger reserve/elephant reserve etc. is reported to be located in the core and buffer zone of the mine and that the area does not report to form corridor for Schedule-I fauna. In support of this, a map duly authenticated by the DFO cum Wildlife Warden, Koraput Forest Division has been provided showing that no National Park / Sanctuary and no Wildlife Corridor exist within 10 km of the mine lease. The Budapansh DPF(5km), the PindamaliPRF(6.5km), the Hatimoli DPF(7km) and the Baghamundi RF(9km) are reported to be located in the buffer zone of the mine. The proponent has prepared a site specific Wildlife Conservation Plan.

4. The mine working will be opencast by mechanized method involving drilling and blasting. The targetted production capacity of the mine is

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3.15million TPA of bauxite and the life of mine is 20years. It has been envisaged that the mining operation in the instant mine will commence from the year 2019-20, till then, it will be used to provide infrastructure in terms of conveyor corridor and approach road to the adjoining mine (Northern and Central block of Panchpatmali Bauxite Deposit). The bauxite will be transported to the Alumina Refinery by cable belt conveyor. The Panchpatmali Hill is an elongated plateau reported to lies between $18^0 46'$ to $18^0 55'$ N Latitude and $82^0 57'$ to $83^0 04'$ E Longitude in Survey of India topo sheets No. 65J/13&65N/1 and 65J/14 & 65N/2 at a height of 1300m AMSL. The ultimate working depth of mine will be 30m bgl. The groundwater table in the core zone reported to vary between 75m-100m bgl. The mine working will not intersect the groundwater table. The peak water requirement of the project is estimated as $1000m^3$ per day, which will be sourced from the Jhulaguda stream. It has been reported that there is no population in the core zone, displacement of population and R&R has not been envisaged, therefore. It is estimated that $68,51,250m^3$ of over burden(OB) will be generated during the life of the mine, which will be used for backfilling, commencing from the year 2021-22. It has been stated that the entire excavated area will be backfilled and covered under plantation. At the conceptual stage, it has been reported that the entire mine lease area of 528.262ha will be covered under plantation.

5. The Consent to establish from the State Pollution Control Board Orissa obtained on 06.10.2010 for renewal of mine lease for production of 3.15million TPA bauxite over mine lease hold area of 528.262ha. The public hearing of the project was held on 11.08.2010 for enhancement of for renewal of mine lease for production of 3.15million TPA bauxite over mine lease hold area of 528.262ha. The Indian Bureau of Mines had approved the mining plan alongwith PMCP of the project on 24.05.2010 for mine lease area of 528.262ha. The Ministry of Environment and Forests has accorded Stage-I approval for diversion of 110.30ha forestland in 1st renewal of mine lease in Panchpatmali South Block on 14.01.2001. The capital cost of the project is Rs.250Crores and the capital cost for the environmental protection measures is proposed as Rs.20.5Crores.The annual recurring cost towards the environmental protection measures is proposed as Rs.1.525 Crores. It has been stated that there is no court case to the project or related activity.

6. The Ministry of Environment and Forests has examined the application in accordance with the EIA Notification, 2006 and hereby accords environmental clearance under the provisions thereof to the above mentioned Panchpatmali Bauxite (South Block) Mining Project of M/s National Aluminium Company Limited (NALCO) for an annual production capacity of 3.15million tonnes of bauxite by the opencast mechanized method involving total mine lease area of 528.262ha, subject to implementation of the following conditions and environmental safeguards.

A. Specific Conditions

(i) All the conditions stipulated by the State Pollution Control Board, Odisha in their Consent to Establish shall be effectively implemented.

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(ii) The project proponent shall obtain Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.

(iii) Environmental clearance is subject to grant of forestry clearance. Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 189.552ha forestland involved in the project shall be obtained before starting mining operation in that area. No mining shall be undertaken in the forest area without obtaining requisite prior forestry clearance.

(iv) The project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations. Adequate measures shall be taken while diverting seasonal channels emanating from the mine lease, during the course of mining operation.

(v) The mining operations shall be confined to the hill tops only and restricted to above ground water table and it should not intersect the groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for which a detailed hydro-geological study shall be carried out.

(vi) The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.

(vii) The over burden (OB) generated during the mining operation shall be temporarily stacked in the identified sites for backfilling. Backfilling shall commence from the year 2021-22 and there shall be no external over burden dumps. The entire excavated area shall be progressively reclaimed by backfilling and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.

(viii) Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, temporary soil, OB and mineral dumps to prevent run off of water and flow of sediments directly into the water bodies. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted, particularly after the monsoon, and maintained properly.

Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, temporary soil, OB and mineral dumps to prevent run off of water and flow of sediments directly into the water bodies and sump capacity shall be

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designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.

(ix) Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on the rainfall data.

(x) The project proponent shall develop a 7.5m wide green belt in the safety zone all around the mining lease. In addition, plantation shall be raised in the backfilled and the reclaimed area, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.

(xi) Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

(xii) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.

(xiii) Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective safeguardmeasures shall be taken in consultation with the Central Ground Water Authority.

(xiv) The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for

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rainwater harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.

(xv) The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water, if any) required for the project.

(xvi) Vehicular emissions shall be kept under control and regularly monitored and checked. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.

(xvii) Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.

(xviii) Drills shall either be operated with dust extractors or equipped with water injection system.

(xix) Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

(xx) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.

(xxi) Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.

(xxii) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

(xxiii) The project proponent shall take all precautionary measures during mining operation for conservation and protection of flora and fauna found in the study area. All the safeguard measures brought out in the Wildlife Conservation Plan prepared specific to this project site shall be effectively implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be

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included in the project cost. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.

(xxiv) Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubneswar.

(xxv) The critical parameters such as RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NO_X in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically . Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.

(xxvi) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

B. General conditions

(i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.

(ii) No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.

(iii) Atleast four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10micron i.e., PM_{10}) and NO_X monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.

(iv) Data on ambient air quality [(RSPM(Particulate matter with size less than 10micron i.e., PM_{10}) and NO_X] should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.

(v) Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.

(vi) Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.

(vii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.

(viii) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.

(ix) A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.

(x) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.

(xi) The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

(xii) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.

(xiii) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload

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the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.

(xiv) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.

(xv) The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.

(xvi) The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubneswar by e-mail.

(xvii) The project authorities should advertise at least in two local newspapers of the District or State in the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter, informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at **http://envfor.nic.in** and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.

7. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

8. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

9. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and

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the Public Liability Insurance Act, 1991 along with their amendments and rules made thereunder and also any other orders passed by the Hon'ble Supreme Court of India/ High Court of Orissa and any other Court of Law relating to the subject matter.

28/2/2011

(SATISH C. GARKOTI)
Scientist 'F'

Copy to:

(i) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.

(ii) The Secretary, Department of Environment, Government of Orissa, Secretariat, Bhubaneswar.

(iii) The Secretary, Department of Mines and Geology, Government of Orissa, Secretariat, Bhubaneswar.

(iv) The Secretary, Department of Forests, Government of Orissa, Secretariat, Bhubaneswar.

(v) The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.

(vi) The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3 Chandrashekharpur, Bhubaneshwar-751023.

(vii) The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneshwar-751012.

(viii) The Controller General, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440 001.

(ix) The Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.

(x) The District Collector, Koraput District, Government of Orissa.

(xi) EI Division, Ministry of Environment & Forests, EI Division, New Delhi.

(xii) Monitoring File.

(xiii) Guard File.

(xiv) Record File.

By Speed Post/Online

No. J-11015/78/2010-IA.II(M)
Government of India
Ministry of Environment, Forest and Climate Change
Impact Assessment Division
***

Indira Paryavaran Bhavan,
Aliganj, Jor Bag Road,
New Delhi-110 003

Dated: 26th October, 2018

To,

M/s National Aluminum Company Limited (NALCO)
NALCO Bhawan, P/1,
Nayapalli,
Bhubneswar-751061,
Odisha
Email: aksharma@nalcoindia.co.in.

Sub.: Amendment of EC w.r.t. installation of Overland Conveyor for transportation of Bauxite and change in mining equipment/ machineries for sizing in South Block Mining lease of Panchpatmali Bauxite mines by M/s National Aluminum Company Limited (NALCO), located at Damanjodi village, Koraput Tehsil, Koraput District, Odisha (MLA: 528.262 Ha & 3.15 MTPA)-Amendment of EC

Sir,

This has reference to your online application of M/s National Aluminium Company Limited (NALCO) for amendment in EC vide no. J-11015/78/2010-IA. II (M) dated 28.02.2011 w.r.t. installation of overland conveyor for transportation of bauxite and change in mining equipment/ machineries for sizing of south block mining lease in Panchpatmali Bauxite mines of M/s National Aluminium Company Limited (NALCO) located at Damanjodi village, Koraput Tehsil, Koraput District, Odisha in mining lease area of 528.262 Ha.

2. The Ministry has accorded the Environmental Clearance vide letter no J-11015/78/2010-IA. II (M) dated 28.02.2011 to M/s National Aluminium Company Limited (NALCO) for Panchpatmali Bauxite (South Block) Mining Project for production capacity of 3.15million tonnes of Bauxite in the mine lease area of 528.262ha.

3. The proposal was earlier considered in EAC in its meetings held during May 29-30, 2017, September 18-19, 2017 and January 18-19, 2018 wherein the Committee deferred the proposal and sought certain information. PP submitted that the amendment is sought for the purpose of installation of additional overland conveyor, apron feeder, crusher etc. for additional transportation of 3.15 MTPA bauxite from the central & south blocks of Panchpatmali Mining Lease. The mining

infrastructure and other new facilities, apart from the overland conveyor, are proposed to be installed within the existing lease area. The EAC, while deliberating on the proposal, noted that EIA was earlier done considering the transportation of ore through cable belt conveyor. However, the PP now intends to change the transportation mode to overland conveyor system along with installation of Crusher of 1100 TPH with associated equipment's and machineries which shall have impact of environment. Hence, the PP was asked to conduct an EIA Addendum Study to assess the impact of the crusher and conveyor system and prepare a mitigation/ management plan.

4. Based on the information submitted by PP vide their letter dated 22.03.2018, the proposal was reconsidered by the EAC in its meeting held during April 23-24, 2018 wherein the Committee **recommended** the proposal for amendments in Environmental Clearance No. J-11015/78/2010-IA-II(M) dated 28.02.2011 w.r.t. installation of Overland Conveyor for transportation of Bauxite and change in mining equipment/machineries for sizing in South Block Mining lease of Panchpatmali Bauxite mines subject to comments of FC division for ascertaining whether PP has made any violations related to FC Act, 1980 or not along with the additional conditions.

5. The matter was examined in the Ministry and sought the comments of FC Division and accordingly a meeting was held in the Ministry on 14th August 2018 whereinthe representative of FC Division, IA Division and M/s NALCO were present and it emerged that the total mine lease area is 528.262ha which comprises of 189.552 ha forest land and 338.71ha is non-forest land. The Stage-II forest clearance for 110.30ha has been accorded by the Ministry on 20.07.2011 and Stage-I forest clearance for balance forest land of 79.252 ha has been accorded by the MoEF&CC on 19.04.2018. PP also reported that they had deposited Rs. 11,86,59,552/ towards NPV for the entire forest land of 189.552ha. The mining activity carried out by the PP from 22/05/2017. Hence the said proposal is not covered under the violations related to Forest (Conservation) Act, 1980.

6. The matter has been examined in the Ministry based on the recommendations of the EAC and the undersigned is hereby directed to say that the said EC letter no.J-11015/78/2010-IA. II (M), dated 28.02.2011 has been amended w.r.t. installation of Overland Conveyor for transportation of Bauxite and change in mining equipment/machineries for sizing in South Block Mining lease of Panchpatmali Bauxite mines along with following Additional Conditions.

(i) This Amendment of Environmental Clearance will not be operational till such time the Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors..

(ii) The Department of Mining & Geology, State Government shall ensure that mining operation shall not commence till the entire compensation levied, for

illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.

(iii) The Proponent shall install online Ambient Air Quality Monitoring System and there should be system for display of digital AAQ data within 03 months at least at three locations as per wind direction. Online provisions of pH and turbidity meters atdischarge points of STP and ETP and also at water storage ponds in the mining area may be made. Project Proponent should display the result digitally in front of the main Gate of the mine site.

(iv) Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups forworkers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken oncein six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented; The prevention measure for burns, malaria and provisionof anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.

(v) PP shall run an awareness campaign on sanitation for women and utilization of Sanitary Napkin and also to distribute the Sanitary Napkin/pads to the women and provide the training for proper disposal.

7. All other terms and conditions mentioned in this Ministry's EC letter no.J-11015/78/2010-IA. II (M), dated 28.02.2011 shall remain the same.

8. This issues with the approval of the Competent Authority.

Yours faithfully,

(Dr. R. B. Lal)
Addl. Director/Scientist 'E'

Copy to:-

(i) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
(ii) The Secretary, Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.
(iii) The Secretary, Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.

(iv) The Secretary, Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.
(v) The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
(vi) The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandersekharpur, Bhubaneswar – 751023.
(vii) The Chairman, Odisha State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneshwar-751012.
(viii) The Controller General, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440 001.
(ix) The Member Secretary, Central Ground Water Authority, 18/11, Jam Nagar House, Man Singh Road, New Delhi-110011.
(x) The District Collector, KoraputDistrict, State of Odisha.
(xi) Guard File.
(xii) MoEF&CC Website.

(Dr. R. B. Lal)
Addl. Director/Scientist 'E'

नालको NALCO
NATIONAL ALUMINIUM COMPANY LIMITED
(A Public Sector Undertaking)
Panchpatmali Bauxite Mine
D A M A N J O D I – 763008
Dist. KORAPUT (ORISSA)
Ph-06853-268001

Ref-NAL/MIN/GGM(Mines)/2023/90 Date: 01.12.2023

To,

The Deputy Director General of Forests (C),
Ministry of Environment, Forest and Climate Change, Regional Office,
A/3, Chandersekharpur, Bhubaneswar – 751023

Sub : Submission of six monthly compliance status report on Environmental Clearance conditions for the period 1st April 2023 to 30th September 2023 in respect of Panchpatmali South Block Bauxite Mine, NALCO

Ref.: (1) Env. Clearance Letter no. No. J-11015/78/2010-IA. II(M) Dt. 28-02-2011from MoEF&CC, GOI.
(2) Env Clearance No. J-11015/78/2010-IA. II(M) Dt. 26-10-2018 from MoEF &CC, GOI

Dear Sir,

Please find enclosed herewith the six monthly compliance reports against the conditions of above referred Environmental Clearances for the period 1st April 2023 to 30th September 2023 in respect of Panchpatmali South Block Bauxite Mine, NALCO. This is for your kind information and perusal please.

Thanking you,

Yours' faithfully,
01/12/23
(Rasheed Waris)
Group General Manager(Mines)
RASHEED WARIS
Group General Manager(Mines)
NALCO Mines, Damanjodi

Encl- As stated

Copy-(1) The Additional Secretary (IA) -for kind information
Ministry of Environment, Forests
& Climate Change, Govt of India,
Indira Paryavaran Bhawan,Aliganj,
Jorbagh Road, New Delhi-110 003
(2) The Member Secretary, -for kind information
State Pollution Control Board, Odisha
A/118, Nilakantha Nagar,
Bhubanewar- 751 012
(3) The D.F.O. -for kind information
Koraput Division,Koraput

STATUS OF COMPLIANCE TO THE CONDITIONS STIPULATED IN ENV. CLEARANCE FOR BAUXITE PRODUCTION @ 3.15 MTPY WITH RESPECT TO PANCHPATMALI SOUTH BLOCK BAUXITE MINE ,NALCO

(Ministry Letter No. J-11015/78/2010-IA. II(M) Dt. 28-02-2011)

<table>
<tr><th>Sl.No.</th><th>A. Special Conditions</th><th>Status of Compliance as on 30.9.2023</th></tr>
<tr><td>I</td><td>All the conditions stipulated by State Pollution Control Board Odisha in their Consent to Establish shall be effectively implemented.</td><td>The consent to establish for 3.15 MTPY production capacity for South Block was obtained from SPCB, Odisha vide letter no. 16733/Ind-II-NOC-6041, DTD. 21-11-2016. The operation project (South Block) has started operation from 22.5.2017. All the conditions prescribed by SPCB, Odisha are being effectively implemented.</td></tr>
<tr><td>II</td><td>The project proponent shall obtain Consent to Operate from the State Pollution Control Board and effectively implement all the conditions stipulated therein.</td><td>The consent to operate from State Pollution Control Board ,Odisha for operation of South Block has been obtained vide SPCB order No.-. 3515 /IND-I-CON-6387 ,Dtd. 8-03-2022/ CONSENT ORDER NO. 2837, which is valid till 31.3.2024. All the conditions stipulated therein are being implemented.</td></tr>
<tr><td>III</td><td>The environmental clearance is subject to grant of forestry clearance. Necessary forestry clearance under the Forest (Conservation) Act,1980 for an area of 189.552 ha forest land involved in the project shall be obtained before starting mining operation in that area. No mining shall be undertaken in the forest area without obtaining requisite prior forest clearance.</td><td>Stage-II Forest clearance over 110.3 ha of forest land for South Block has already been accorded by MOEF&CC vide Letter No. 8-330/1983-FC (Pt-I) dated 20th July 2011. The Stage-I forest clearance for balance 79.252 Ha was issued by MoEF&CC vide letter No. 8-29/2015-FC Dtd. 19th April 2018. The compliance of the conditions are under progress.</td></tr>
<tr><td>IV</td><td>The project proponent shall ensure that no natural watercourse and / or water resources are obstructed due to any mining operations. Adequate measures shall be taken while diverting seasonal channels emanating from the mine lease, during the course of mining operation.</td><td>No Natural water course exists on hilltop/ plateau top. Mining operation is confined to hill top shall in no way obstruct natural water course. No rain water from the mining area is allowed to flow down below the valley by making provisions for peripheral barriers.</td></tr>
<tr><td>V</td><td>The mining operations shall be confined to the hill tops only and restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out</td><td>It is revealed from a study by RAMKY (in Year 2010) that the ground water table exists below 80 mtr. from the plateau top. As the Mining activities would be limited to only 35 Mtrs from the surface, there will be no impact of Mining operation on the ground water / aquifers.</td></tr>
<tr><td>VI</td><td>The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.</td><td>Initially top soil was being removed and was being stored temporarily to be used for concurrent land reclamation and rehabilitation. However these have been started to be reused concurrently from 2020-21.
The top soil generated and stored for reclamation are as follows.
<table>
<tr><th>Year</th><th>Top soil generated (MT)</th><th>Top soil utilized (MT)</th><th>Top soil stored (MT)</th></tr>
<tr><td>2018-19</td><td>31250</td><td>Nil</td><td>31250</td></tr>
<tr><td>2019-20</td><td>14050</td><td>Nil</td><td>14050</td></tr>
<tr><td>2020-21</td><td>41,600</td><td>41,600</td><td>Nil</td></tr>
<tr><td>2021-22</td><td>Nil</td><td>Nil</td><td>Nil</td></tr>
<tr><td>2022-23</td><td>Nil</td><td>Nil</td><td>Nil</td></tr>
</table></td></tr>
</table>

		2023-24 upto Sep 2023	Nil	Nil	Nil
VII	The overburden (OB) generated shall be temporarily stacked in the identified sites for backfilling. Backfilling shall start from 2021-22 and there shall be no external over burden dumps. The entire excavated area shall be progressively reclaimed by backfilling and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubaneswar on six monthly basis.	In the initial stages of excavation for the first three years i.e till 2019-20, overburden (Top soil + Laterite) was being excavated and was stacked at designated places, which has started to be rehandled for backfilling of the mined out area from 2020-21. The entire excavated is progressively reclaimed by backfilling and is rehabilitated with afforestation. The plantation in the rehabilitated area will be maintained till the vegetation becomes self sustaining. Compliance status is being submitted to MOEF every six months. The OB generated (including top soil) and stored for reclamation are as follows.			
		Year	OB generated (MT)	OB utilized (MT)	OB stored (MT)
		2018-19	104700	Nil	104700
		2019-20	119950	Nil	119950
		2020-21	158500	158500	Nil
		2021-22	1,65,000	1,65,000	Nil
		2022-23	153390	153390	Nil
		2023-24 upto Sep 2023	72160	72160	Nil
viii	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil and mineral dumps to prevent run off of water and flow of sediments directly into the water bodies. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. the drains shall be regularly desilted, particularly after the monsoon, and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, topsoil dumps and the mineral dumps to prevent run off of water and flow of sediments directly into the water bodies and sump capacity shall be designed keeping 50 % safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals	Siltation ponds of adequate size has been provided to collect sediments from the mineral stock pile area during rain through drains. Rain water accumulated in the sedimentation ponds cannot go out due to peripheral barrier and percolates down through porous mined out surface. Peripheral barriers have been provided on the sides which will prevent any rain water carrying mud and silt from going outside. Inside the mine, sedimentation pits of adequate size are being kept which collect water through drains with natural gradient. Due to porous nature of the mined out surface, the rain water percolates down to recharge the ground water. There will be no waste dumps or OB dumps as concurrent reclamation method has been adopted. The sedimentation pits will be cleaned periodically to maintain the sump capacity to hold water.			
Ix	Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on the rainfall data.	No retaining wall is required as the height of initial OB dump would not be more than 4 mtr & all OB excavated shall be used for backfilling.			
X	The project proponent shall develop a 7.5 m wide green belt in the safety zone all around the mining lease. In addition, plantation shall be raised in the backfilled	A green belt having minimum width of 7.5 mtr is being developed all around the Mined out area in the safety zone from 2017-18 as per scheme developed in consultation with DFO, Koraput. Native species			

<table>
<tr><td></td><td>and the reclaimed area, around void roads etc. by planting the native species in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2500 plants per ha. Green belt shall be developed all around the mining lease area in a phased manner and shall be within first five years.</td><td>like Jamun,Rose Apple, Guava, Mangos, Jackfruit ,Tamarind , Karanj, etc are being planted @ 2500 plants /ha for development of the green belt in consultation with DFO. In addition to that plantation is also carried out in the backfilled/reclaimed area. Further the CPCB guideline for green belt development is also taken into account.

At present plantation is going on for South Block. As on 31.3.2023 the plantation carried out in different areas are as follows.
(i)Backfilled area: 9,990
(i) Conveyor corridor: 1,32,684
(ii)Access road: 1,20,177
(iii)Unused area and under 33 KV line: 87,928.
(iv)Hill slopes: 1,82,894
(v) Mining area, safety zone: 50,330

Total trees planted in South Block as on 31.3.2023 is 5, 84,003.</td></tr>
<tr><td>Xi</td><td>Effective safeguard measures such as Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around loading and unloading point and all transfer point. Extensive water sprinkling shall be carried out on haul roads. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.</td><td>Regular water sprinkling is being done using self propelled mobile water tankers.
From January 2017, AAQ monitoring for South Block has been started at 5 locations. These are A11 (View Point,South Block), A12 (Putraghati Village), A13(Bhitara Bhejaput Village), A14(Lachumani Village) and A15(Mundagahrati Village). The AAQ monitoring results conform to the norms prescribed by CPCB.

The latest results of ambient air analysis are given at Annexure-I.</td></tr>
<tr><td>Xii</td><td>The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</td><td>The plateau top , where the mining operation is confined, stands out about 300 mtr above the surrounding valley areas. The permanent ground water table exists at a depth of below 80 mtr.

At present, 2 nos. of rain water harvesting reservoirs have been developed atop the mines. The capacity of the two nos of ponds are as follows.

<table>
<tr><th>Sl No.</th><th>Decription</th><th>Capacity of storage in cum.</th></tr>
<tr><td>1</td><td>Pond-no-1</td><td>6156</td></tr>
<tr><td>2</td><td>Pond no-2</td><td>6300</td></tr>
</table>

Also, rooftop rainwater harvesting structures for the Administration Building , Mine Manager's Building and MVT centre have been provided to augment ground water recharging.

Further, the method of Mining & the peripheral barrier all around will not allow the storm water from within the mining area to go outside valley areas. The water thus trapped, will percolate down & recharge the ground water.

Further as per advice of CGWB, Bhubaneswar , a suitable agency (M/s Geoenvitech Research & Services Pvt Ltd , Bhubaneswar) was appointed for carrying out a hydro-geological study for suggesting measures for rain water harvesting and augmentation of ground water resources. The report has been prepared and recommendations are implemented.</td></tr>
<tr><td>xiii</td><td>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing</td><td>The ground water level was monitored by M/s RAMKY (in Yr 2010) by construction of borewells. It was found that the ground water table exists at a great depth i.e. below 80 mtr. from the plateau top.</td></tr>
</table>

<table>
<tr><td></td><td>new piezometers during the mining operation. The monitoring shall be carried out four times in a year, pre-monsoon (April-May) , monsoon (August), Post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to the Ministry of Environment and Forest and its Regional Office, Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.</td><td>The ground water quality monitoring is done during April, August, November and January every year. The monitoring locations are (15 nos) MetingiVillage,Chhatamba Village, Jharhiapadar Village, Tentulipadar Village, Ichhapur Village, Mundagarhati Village, Bijaghati Village, Putraghati Village, Putraghati Village, Chararha Village, Kapsiput Village, Jambagurha Village, Shriguda Village, KakirigumaVillage,and Sorishapadar Village below the hills.These villages come in the impact zone of both Central and North Block as well as in the South Block. The results for the period Apr23-Sep23 are given at annexure-II.

The parameters mostly conform to the permissible values as per IS 10500:2012. (drinking water standard). No adverse impact on the water resources of tube wells have been observed.

One no of piezometer has been constructed for monitoring of ground water level.</td></tr>
<tr><td>xiv</td><td>The project authorities shall practice suitable rainwater harvesting measures on long term basis and shall work out a detailed scheme in consultation with the Regional Director, Central Ground Water Board</td><td>The plateau top , where the mining operation is confined, stands out about 300 mtr above the surrounding valley areas. The permanent ground water table exists at a depth of below 80 mtr.

At present, 2 nos. of rain water harvesting reservoirs have been developed atop the mines. The capacity of the two nos of ponds are as follows.

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Further as per advice of CGWB, Bhubaneswar , a suitable agency (M/s Geoenvitech Research & Services Pvt Ltd , Bhubaneswar) was appointed for carrying out a hydro-geological study for suggesting measures for rain water harvesting and augmentation of ground water resources. The report has been prepared and recommendations are implemented.</td></tr>
<tr><td>Xv</td><td>The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) required for the project</td><td>Permission for 0.22 MGD for South Block has been received from State Water Resources Dept Govt of Odisha vide order No. 28682/WR Dtd. 11/12/2019 for drawal of water from Jholaguda Stream.</td></tr>
<tr><td>xvi</td><td>Vehicular emissions shall be kept under control and regularly monitored and checked. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.</td><td>At present monitoring of exhaust emission of all the vehicles operating at mine is conducted once in six months through an outside agency authorized by SPCB, Odisha.

Measures are being taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles carrying the mineral are not overloaded.</td></tr>
</table>

xvii	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting has not yet started. In future in case , blasting will be done during shift change over between 1.15PM to 2PM .No blasting will be done beyond day light hours .Further, controlled blasting will be practiced with use of NONELs for sequential blasting to reduce fly rocks, boulders & ground vibration. However there is a plan not carry out any blast in future.
xviii	Drills shall either be operated with dust extractors or equipped with water injection system	Drill are being operated with vaccum dust extraction system with provision of water injection for dust suppression.
xix	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Crushing & Conveying system is provided with dry fog system. Loading and unloading areas including all the transfer points have efficient dust control arrangements. These are properly maintained and operated. The conveyor to Alumina Refinery is completely covered.
Xx	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation	The Mine & Refinery combined township exists 20KM away at Damanjodi where sewerage treatment plant is provided whereas the mine is operating a zero discharge system for effluents where all the waste water is treated,analysed and reused for sprinkling on the haul road for dust suppression and plantation. Effluents from the Mechanical Workshop area is being chanelized through well-designed oil-water separation tank where oil is collected and the clear water is collected in zero discharge sump. There is a canteen waste water disposal system (biological treatment unit) designed, constructed and maintained to treat the canteen waste water. All the treated waste water from canteen and HEMM workshop is used for horticulture & dust suppression.
xxi	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and following accordingly.	Pre-placement medical examination and periodic medical examination is being done for all employees of Central and North and South Block. During April 2023-Sep 2023 , 278 employees have been covered under PME. No occupational diseases have so far been detected.
xxii	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. the housing may be in the form of temporary structures to be removed after the completion of the project.	All construction laborers /workers come from nearby villages and hence no housing is required.
xxiii	The project proponent shall take all precautionary measure during mining operation for conservation and protection of endangered flora and fauna found in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the fund so allocated shall be included in the project cost. A	Site specific wild life conservation plan has been approved by PCCF (Wild life), Bhubaneswar vide letter no.FWL-C-SSP-273/2010/9639 dated 09-11-2010 with a financial implication of Rs 10.43 Cores. The aforesaid amount has already been deposited in Adhoc- CAMPA by NALCO, for implementation of the plan. (Rs 8.15 Crore on 03.12.2010 and Rs 2.28 Crore on 30.3.2011, paid through DD & RTGS, respectively. . The conservation measures suggested are under process of implementation. The copy of action plan has been submitted to MoEF&CC vide letter No. NAL/MIN/GM(Mines)2017/630, Dtd.

	copy of action plan shall be submitted to the Ministry of Environment and Forest and its Regional Office, Bhubaneswar.	12.9.2017. The status of implementation of conservation measures are given in **Annexure-III**.
xxiv	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar	A digital land-use map (shape file) as on 31.3.2021 has been submitted to MoEF&CC, Bhubaneswar on 1st July 2021 vide mail
xxv	The critical parameters such as RSPM (particulate matter with particle size less than 10 µm i.e PM10) and Nox in the ambient air within the impact zone, peak particle velocity at 300 m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further the quality of discharge water shall also be monitored.[TDS, DO,pH, and Total suspended solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the company in the public domain. The circular No.- J-20012/1/2006-IA.II(M) dtd. 27.5.2009 issued by the Ministry of Environment & Forests , which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	The ambient air quality in and around the Panchpatmali South Block Bauxite Mine is measured at 5 locations every month for RSPM, NOx and SO_2. The treated waste water from canteen and oil water separator are analysed as per general waste discharge standards every month. The results are well within the prescribed parameters. The data is being uploaded in company website www.nalcoindia.com along with half yearly status of environmental clearance.
xxvi	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	These shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.
B	GENERAL CONDITIONS	
I	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests	The user agency (NALCO) undertakes that there shall be no change in technology and scope of work without prior approval from MoEF&CC.
Ii	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	The user agency (NALCO) undertakes that there shall be no change in calendar plan including excavation, quantum of Bauxite, Waste/OB generation of work without prior approval from competent authority.
Iii	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM(particulate matter with particle size less than 10 µm i.e PM10)&NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecological sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	The ambient air quality in and around the Panchpatmali South Block Bauxite Mine is measured at 5 locations every month for PM2.5, PM10, NOx and SO_2 and CO.

Iv	Data on ambient air quality [RSPM (particulate matter with particle size less than 10 µm i.e PM10)&NOx] should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six month.	Data on air quality for the present mining operations is being collected once in every month. Records submitted to statutory authorities once in six months. From January 2017, AAQ monitoring for South Block has been started at 5 locations. These are A11 (View Point,South Block), A12 (Putraghati Village), A13(Bhitara Bhejaput Village), A14(Lachumani Village) and A15(Mundagahrati Village). The AAQ monitoring results conform to the norms prescribed by CPCB. The latest results of ambient air analysis are given at **Annexure-I.**
V	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water spraying on haul road is being carried out with mobile sprinklers and fixed sprinklers. Loading points of crusher house is provided with dry fog system. Transportation of Bauxite ore is being carried out through a cable belt conveyor provided with hood all along. One fog cannon has been deployed near stockpile for suppression of dust.
Vi	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Noise monitoring in the present work environment is taken up once every year in the existing work areas. The results are within prescribed norm. Workers are provided with ear plugs /muffs. Besides ambient noise level is also measured at 13 locations. Ambient Noise level monitoring for the period Apr 23 to Sept 23 is available at **annexure-IV.**
Vii	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	The Mine is operating a zero discharge system for effluents where all the waste water is treated, analysed and reused for sprinkling on the haul road for dust suppression and plantation. Effluents from the Mechanical Workshop area is being chanelized through well-designed oil-water separation tank where oil is collected and the clear water is collected in zero discharge sump. There is a canteen waste water disposal system (biological treatment unit) designed, constructed and maintained to treat the canteen waste water. All the treated waste water from canteen and HEMM workshop is used for horticulture & dust suppression. The treated waste water from canteen and HEMM workshop area are analysed before being reused. The analysis results for Apr 23-Sept 23 are available at **Annexure-V**. The above treated water is completely reused without discharging outside.
viii	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed	For South Block mine, all employees and contract workers are provided with protective devices. Regular training programmes are held in MVT Center on health and safety aspects for contract workers as well as employees. Pre-placement medical examination and periodic medical examination is being done for all employees of Central and North and South Block. During April 2023-Sept 2023 , 278 employees have been covered under PME. No occupational diseases have so far been detected.
Ix	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A Separate Environmental Management Cell being headed by GM(Env), who is reporting directly to GGM(Mines), exists for management of environment.
X	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the	Being a public sector, the system does not allow for creating a separate account for environmental protection measures. However adequate fund is provided under the budget of executing departments for installation and maintaining various pollution control measures.

<table>
<tr>
<td></td>
<td>Ministry of Environment and Forests and its Regional Office located at Bhubaneswar</td>
<td>The fund earmarked for environmental protection measures is never diverted for any other purpose. Adequate fund is always allocated to meet the capital & recurring expenses to implement the environmental control measures inclusive of plantation. Many expenditures for Central and North Block and South Block on environment are carried out through common contracts. The capital expenditure till date and the recurring expenditure for protection of environment at Panchpatmali Bauxite Mine for the last three years are as follows

a. Capital Cost for Environmental Pollution control incurred during 2022-23 - Rs. 225 Lakh
b. Recurring cost
<table>
<tr><th>S. No</th><th>Activity</th><th>2020-21 (Rs)*</th><th>2021-22 (Rs)*</th><th>2022-23 (Rs)**</th></tr>
<tr><td>1.</td><td>Backfilling and land reclamation*</td><td>4,74,00,990</td><td>7,44,68,438</td><td>119,43,795.88</td></tr>
<tr><td>2.</td><td>Environmental Pollution Control</td><td>22,78,520</td><td>40,41,193</td><td>9,38,872.58</td></tr>
<tr><td>3.</td><td>Plantation and Horticulture</td><td>67,36,291</td><td>94,23,930</td><td>13,20,017.00</td></tr>
<tr><td>4</td><td>Operation and maintenance of Water Sprinkling system & zero discharge system</td><td>12,00,000</td><td>15,48,846</td><td>1,55,082.98</td></tr>
<tr><td></td><td>Total</td><td>5,76,15,801.00</td><td>8,94,82,407.00</td><td>1,43,57,768.85</td></tr>
</table>
Note- Backfilling and land reclamation cost is calculated based on the proportionate cost for diesel incurred in handling of overburden material as compared to the total excavation.
* The values contain combined expenditure for South Block and Central and North Block.
* * The values contain expenditure for South Block only.</td>
</tr>
<tr>
<td>Xi</td>
<td>The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work</td>
<td>The MoEF&CC Regional Office shall be kept informed as required.</td>
</tr>
<tr>
<td>Xii</td>
<td>The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports</td>
<td>NALCO undertakes that all co-operations will be extended to the officers of the Regional Office of the Ministry located at Bhubaneswar by furnishing requisite data, information/ monitoring reports.</td>
</tr>
<tr>
<td>xiii</td>
<td>The project proponent shall submit six monthly report on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar,</td>
<td>Six monthly report on the status of the implementation of the stipulated environmental safeguards for present mining operations of South Block is submitted to MoEF, Govt. of India and State Pollution Control Board. The same is uploaded in the website of NALCO (www.nalcoindia.com) as directed.</td>
</tr>
</table>

	the respective zonal office of Central Pollution Control Board and State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions , including results of monitored data on their website and update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment & Forests, Bhubaneswar , the respective zonal office of the Central Pollution Control Board and the State Pollution Control Board.	
xiv	A copy of clearance letter shall be marked to concerned Panchyat /ZilaParishad/ Municipal corporation , Urban local body and the Local NGO, if any, from whom suggestion / representation has been received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	No such suggestions / representation have been received from the Panchayat / local NGO, while processing the clearance proposal. The EC has been displayed in the website of NALCO. (www.nalcoindia.com).
Xv	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office / Tahsildar's Office for 30 days	Complied.
xvi	The environmental statement for each financial year ending 31st March in Form-V is mandated to be submitted by project proponent to the concerned State Pollution Control Board as prescribed under Environment Protection Act, 1986 ,as amended subsequently, shall also be put on the website of the company along with status of compliance of environment clearance conditions and shall also be sent to the respective Regional Office of Ministry of Environment & Forests , Bhubaneswar by e-mail.	The environment statement for South Block was sent for the year 2022-23 to State Pollution Control Board, Odisha on 30th September 2023 and is also displayed in NALCO's website.
xvii	The project authorities should advertise at least in two local newspapers of the district or state in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forest at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of the Ministry located at Bhubaneswar.	Complied.

(Rasheed Waris)
Group General Manager(Mines)

STATUS OF COMPLIANCE TO THE CONDITIONS STIPULATED INAMENDED ENV. CLEARANCE FOR INSTALLATION OF OVERLAND CONVEYOR FOR TRANSPORTATION OF BAUXITE PRODUCTION AND CHANGE IN MINING EQUIPMENT/MACHINERIES FOR SIZING IN PANCHPATMALI SOUTH BLOCK BAUXITE MINE, NALCO

(Ministry Letter No. J-11015/78/2010-IA. II(M) Dt. 26-10-2018)

Sl.No.	Additional Conditions	Status of Compliance as on 30.9.2023
I	Amendment of Environmental Clearance will not be operational till such time the Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors..	Noted.
Ii	The Department of Mining & Geology, State Government shall ensure that mining operation shall not commence till the entire compensation levied, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.	Noted. No compensation has been levied on Panchaptmali South Block Bauxite Mine for illegal mining.
Iii	The Project Proponent shall install online Ambient Air Quality Monitoring System and there should be system for display of digital AAQ data within 03 months at least at three locations as per wind direction. Online provisions of pH and turbidity meters at discharge points of STP and ETP and also at water storage ponds in the mining area may be made. Project Proponent should display the result digitally in front of the main Gate of the mine site.	Three nos of online ambient air quality monitoring station have been procured and installed in the core zone and buffer zone of the mine. The waste water from canteens and vehicle wash areas are treated and reused for dust suppression purpose inside Mines and are not discharged outside. Hence installation of online pH and turbidity meters are not applicable in our case.
Iv	Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for Mine workers shall be implemented; The prevention measure for burns, malaria and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.	The PME of all employees for specified diseases is carried out regularly. During Apr 23-Sep23 ,278 nos of employees of south block have undergone PME at Panchpatmali Bauxite Mine NALCO. No specified occupational diseases have been detected so far. There is a first aid centre at Mines to render initial medical services and a full-fledged hospital at Township for complete treatment of diseases.
V	Project Proponent shall run an awareness campaign on sanitation for women and utilization of Sanitary Napkin and also to distribute the Sanitary Napkin/pads to the women and provide the training for proper disposal.	Regular awareness is carried out in surrounding villages including women regarding good sanitation practices under Swachh Bharat Mission. Sanitary kits/napkins are being disbursed periodically.

01/12/22

(Rasheed Waris)
Group General Manager(Mines)

RASHEED WARIS
Group General Manager(Mines)
NALCO Mines, Damanjodi

ANNEXURE-I

AMBIENT AIR QUALITY ANALYSIS AT PANCHPATMALI SOUTH BLOCK BAUXITE MINE NALCO

(2023-24)

Sl. No.	Monitoring station	Parameter	Norm	Apr'23	May'23	Jun'23	Jul'23	Aug'23	Sep'23	Oct'23	Nov'23	Dec'23	Jan'24	Feb'24	Mar'24	Avg
1	A11 (View point South Block)	RPM (µg / m3)														
		PM 2.5(60µg / m3)	60	28.39	30.5	31.26	24.33	24.36	26.49							27.56
		PM10(100µg / m3)	100	49.62	52.15	51.09	42.52	44.32	45.32							47.50
		NRPM (µg /m3)		53.41	55.74	56.22	45.15	49.16	48.23							51.32
		SPM(µg /m3)		103.03	107.89	107.31	87.67	93.48	93.55							98.82
		SO_2 (80 µg /m3)	80	9.37	10.24	9.24	9.27	7.25	7.43							8.80
		NO_X (80µg /m3)	80	17.8	19.32	20.16	15.72	11.23	10.72							15.83
		CO (2 mg /m3)	2000	0.4	0.41	0.56	0.27	0.27	0.29							0.37
2	A12 (Putraghati village)	RPM (µg / m3)														
		PM 2.5(60µg / m3)	60	27.18	26.42	25.59	18.1	20.57	24.67							23.76
		PM10(100µg / m3)	100	47.51	46.45	47.12	28.45	39.85	41.56							41.82
		NRPM (µg /m3)		52.63	52.46	53.15	34.91	43.25	43.51							46.65
		SPM(µg /m3)		100.14	98.91	100.27	63.36	83.1	85.07							88.48
		SO_2 (80 µg /m3)	80	8.84	9.32	9.86	8.15	6.43	6.84							8.24
		NO_X (80µg /m3)	80	14.59	16.84	15.09	13.45	9.17	10.46							13.27
		CO (2 mg /m3)	2000	0.31	0.36	0.48	0.2	0.21	0.26							0.30
3	A13 (Bhitara Bhejaput village)	RPM (µg / m3)														
		PM 2.5(60µg / m3)	60	29.34	28.24	27.06	19.72	23.45	25.78							25.60
		PM10(100µg / m3)	100	50.16	48.24	48.99	30.28	42.69	46.27							44.44
		NRPM (µg /m3)		56.71	53.2	53.19	36.48	46.89	47.89							49.06
		SPM(µg /m3)		106.87	101.44	102.18	66.76	89.58	94.16							93.50
		SO_2 (80 µg /m3)	80	8.65	8.69	9.97	8.59	5.72	6.58							8.03
		NO_X (80µg /m3)	80	15.48	14.57	15.16	13.61	8.31	9.67							12.80
		CO (2 mg /m3)	2000	0.37	0.32	0.36	0.21	0.18	0.24							0.28
4	A14 (Lachumani village)	RPM (µg / m3)														
		PM 2.5(60µg / m3)	60	30.53	25.37	25.96	17.28	22.34	22.84							24.05
		PM10(100µg / m3)	100	51.37	47.38	46.93	27.53	41.97	35.21							41.73
		NRPM (µg /m3)		54.94	52.19	52.66	35.23	45.74	37.46							46.37
		SPM(µg /m3)		106.31	99.57	99.59	62.76	87.71	72.67							88.10
		SO_2 (80 µg /m3)	80	9.02	9.06	8.95	7.82	6.81	5.49							7.86
		NO_X (80µg /m3)	80	17.66	15.26	16.02	12.89	10.85	8.73							13.57
		CO (2 mg /m3)	2000	0.35	0.34	0.41	0.22	0.2	0.28							0.30
5	A15 (Mundagahrati Village)	RPM (µg / m3)														
		PM 2.5(60µg / m3)	60	26.18	27.81	28.02	20.53	21.93	23.56							24.67
		PM10(100µg / m3)	100	46.95	49.68	49.82	32.92	38.26	37.65							42.55
		NRPM (µg /m3)		51.82	53.76	54.06	38.57	43.61	39.24							46.84
		SPM(µg /m3)		98.77	103.44	103.88	71.49	81.87	76.89							89.39
		SO_2 (80 µg /m3)	80	8.25	8.48	8.55	8.26	6.37	6.25							7.69
		NO_X (80µg /m3)	80	13.27	15.18	15.96	14.38	9.72	10.51							13.17
		CO (2 mg /m3)	2000	0.34	0.33	0.35	0.19	0.23	0.27							0.29

SANJAYA KUMAR PATNAIK
General Manager(Env.)
Panchpatmali Bauxite Mine
NALCO, Damanjodi-763008

ANNEXURE-II

GROUND WATER QUALITY ANALYSIS AROUND PANCHPATMALI SOUTH BLOCK BAUXITE MINE (2023-24)

For April 2023

Sl. No	Name of Tests	Permissible Limits	GW-1 Metingi Village	GW-2 Chhatamba Village	GW-3 Panasaput	GW-4 Jhariapadar	GW-5 Tentulipadar	GW-6 Ichhapur	GW-7 Mundagadati	GW-8 Bijaghati Village	GW-9 Putraghati Village	GW-10 Chararha Village	GW-11 Kapsiput Village	GW-12 Jambagurha Village	GW-13 Shriguda Village	GW-14 Kakirigumа Village	GW-15 Sorishapadar Village
1	pH at 30°C	6.5-8.5	6.9	6.9	6.8	6.8	6.8	6.8	6.9	6.9	6.9	6.8	6.7	6.8	6.8	6.9	6.8
2	D.O. (mg/l)	-	3.5	3.8	3.6	3.9	4	3.9	3.8	3.5	3.7	3.5	3.9	3.6	3.7	3.8	3.9
3	T.D.S (mg/l)	2000	205	93	89	260	85	79	329	205	107	120	137	14	73	138	68
4	Total Hardness. as $CaCo_3$	600	100	56	64	92	40	72	108	100	48	84	84	56	44	84	44
5	Total Alkalinity (as $CaCo_3$) (mg/l)	600	36	56	44	88	40	48	76	36	36	92	32	72	48	44	48
6	B.O.D.	30	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
7	Nitrate as No_3 (mg/l)	45	3.2	1.2	1	2.8	1.2	1.1	2.3	3.2	2.8	1.9	4.6	2.3	1.9	1.8	1.2
8	Chlorides as Cl (mg/l)	1000	40	4	8	48	4	4	72	40	20	4	16	28	4	20	4
9	Sulphate as SO_4 (mg/l)	400	18	3	2	10	4	3	45	18	2	<1.0	12	<1.0	<1.0	7	<1.0
10	Calcium as Ca (mg/l)	200	24	11.2	12.8	25.6	11.2	11.2	28.8	24	11.2	19.2	20.8	22.4	11.2	27.2	17.6
11	Magnesium as Mg (mg/l)	100	9.72	6.8	7.77	6.8	2.916	10.69	8.748	9.72	4.86	8.748	7.776	<0.243	3.88	3.88	<0.243
12	Turbidity (NTU)	10	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0
13	Fluoride as F (mg/l)	1.5	0.095	0.093	0.088	0.091	<0.1	<0.1	<0.1	0.095	<0.1	0.495	<0.1	<0.1	<0.1	0.206	<1.0
14	Phenlic compounds as C_6H_5OH (mg/l)	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Arsenic as As (mg/l)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg (mg/l)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Lead as Pb (mg/l)	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
18	Cadmium as Cd (mg/l)	0.01	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
19	Chromium Cr^{+6} (mg/l)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Copper as Cu (mg/l)	1.5	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0541	<0.04
21	Zinc as Zn (mg/l)	15	<0.01	<3.2312	0.025	<0.01	0.0347	0.0596	0.7824	<0.01	0.0151	0.1995	<0.01	0.0226	0.1893	0.1055	<0.01
22	Iron as Fe (mg/l)	1	<0.05	0.774	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.4034	<0.05	<0.05	0.2178	<0.05	<0.05
23	Temperature in 0°	-	30°C	30°C	30°C	30°C	30°C	30°C	32°C	30°C	31°C	32°C	30°C	31°C	30°C	32°C	30°C
24	Coliform (MPN)	ND in 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Norm as per IS 10500:2012

SANJAY KUMAR PATNAIK
General Manager(Env.)
Panchpatmali Bauxite Mine
NALCO, Damanjodi-763008

For August 2023

Sl. No	Name of Tests	Permissible Limits	GW-1 Metingi Village	GW-2 Chhatamba Village	GW-3 Panasaput	GW-4 Jhariapadar	GW-5 Tentulipadar	GW-6 Ichhapur	GW-7 Mundagadati	GW-8 Bijaghati Village	GW-9 Putraghati Village	GW-10 Chararha Village	GW-11 Kapsiput Village	GW-12 Jambagurha Village	GW-13 Shriguda Village	GW-14 Kakirigumma Village	GW-15 Sorishapadar Village
1	pH at 30°C	6.5-8.5	6.9	6.9	6.8	6.8	6.9	6.9	6.9	6.8	6.8	6.9	6.9	6.9	6.8	6.8	6.8
2	D.O. (mg/l)	-	3.8	3.9	3.2	3.9	3.8	3.6	4	3.9	3.8	3.8	4	3.5	3.6	3.9	3.9
3	T.D.S (mg/l)	2000	372	75	72	384	88	155	383	43	310	145	117	57	131	49	216
4	Total Hardness. as $CaCo_3$	600	52	96	12	84	100	180	104	16	188	84	16	28	128	132	132
5	Total Alkalinity (as $CaCo_3$) (mg/l)	600	64	64	40	64	36	68	28	32	80	28	68	48	48	44	20
6	B.O.D.	30	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
7	Nitrate as No_3 (mg/l)	45	2.4	2.8	2.6	2.5	2.2	2.3	2.8	3	1.6	1.2	4	1.8	1.1	1.4	1.2
8	Chlorides as Cl (mg/l)	1000	100	4	4	84	4	8	96	8	64	28	12	4	20	4	68
9	Sulphate as SO_4 (mg/l)	400	4	25	2	8	26	96	20	2	30	8	2	2	28	30	28
10	Calcium as Ca (mg/l)	200	9.6	22.4	3.2	16	27.2	48	24	4.8	44.8	17.6	3.2	6.4	28.8	33.6	22.7
11	Magnesium as Mg (mg/l)	100	6.8	9.7	0.972	10.69	7.76	14.58	10.69	0.972	18.46	9.72	1.94	2.91	13.6	13.6	13.6
12	Turbidity (NTU)	10	<1.0	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13	Fluoride as F (mg/l)	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14	Phenlic compounds as C_6H_5OH (mg/l)	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
15	Arsenic as As (mg/l)	0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
16	Mercury as Hg (mg/l)	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
17	Lead as Pb (mg/l)	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
18	Cadmium as Cd (mg/l)	0.01	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
19	Chromium Cr^{+6} (mg/l)	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
20	Copper as Cu (mg/l)	1.5	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
21	Zinc as Zn (mg/l)	15	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.48	<0.01	4.728	<0.01	0.23	<0.01	< 0.01	< 0.01	< 0.01
22	Iron as Fe (mg/l)	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
23	Temperature in 0C	-	28°C	28°C	28°C	28°C	26°C	26°C	26 °C	26°C	28 °C	28 °C	26 °C	28 °C	26°C	26°C	28 °C
24	Coliform (MPN)	ND in 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Norm as per IS 10500:2012

Panchpatmali Bauxite Mine
MAI CO Damanindi-763008

ANNEXURE-III

STATUS OF ACTION PLAN FOR WILD LIFE MANAGEMENT IN THE CORE ZONE OF THE PANCHPATMALI SOUTH BLOCK BAUXITE MINE

(Taken up by NALCO,the user agency)

SL.NO.	Action plan	Status
1	Plantation 80 ha with stone wall fencing	Mining activities have started at South Block in May 2017. Development of haul roads, peripheral barriers, etc have started in South Block in order to enable excavation of bauxite. Backfilling and plantation of mined out area has started from year 2021-22.
2	Provision of Van Sahayaks (two nos) to watch plantation	Already 7 no of watch and ward is provided to look after plantation done in south block along access roads, conveyor corridor, slopes, etc.
3	Noise pollution control	At present blasting has not started in South Block. All noise pollution control measures like use of NONEL in blasting,etc will be undertaken when blasting is adopted. At present other control measures like maintenance of vehicles, plantation of trees in mine periphery, provision of ear plug and ear muff to workers, etc. are being taken.
4	Dust pollution control	Use of mobile sprinklers is undertaken for suppression of dust in haul roads and stockpile areas. Dry fog system has been adopted in crushers. One fog cannon has been installed for dust suppression in stockpile area. Plantation along periphery,etc. is being taken up to prevent propagation of dust.
5	Water pollution control	All water pollution control measures like diversion of runoff to pit to prevent discharge of rain water down below the valley, treatment of vehicle wash water & canteen waste water , recycling of treated waste water, etc have been undertaken. 14 nos of check dams have already been constructed down below the valley to retain washout if any.
6	Contour trench staged to prevent soil loss and promote growth of grass	After reclamation and rehabilitation, the surface will become almost flat. Wherever required contour trenches will be provided.
7	Grass seeding to prevent soil erosion	There will be no soil loss from the mined out area as it will be surrounded by a in-situ peripheral barrier all around. However grass turfing with native grass species are being provided to prevent soil erosion wherever there will be slopes in the mined out area.
8	Water harvesting structure for wild life	Two nos of rain water harvesting structure already provided in South block. More nos will be provided as the mining progresses.
9	Barbed wire fencing to prevent falling of animal into the pit.	The mined out area will be almost flat after reclamation and rehabilitation for any animal to fall down into the pit. However wherever any such situation arises barbed wire fencing will be provided.
10	Fire line 12 km	Every year fire lines 5.5 km long on the western side and 3.6 km long on the eastern side of South Block are being provided depending upon the requirement to prevent spread of fire to the access road plantation and slope plantation during summer.
11	Fire watchers 2 nos	Fire watchers (7 nos) are provided throughout the year to report on fire incidence to fire brigade and also to fight minor fires.
12	Light pollution	High mast light is provided only along the haul road and stockpile area for safe working. It will not have any effect on other areas.
13	Signage	Signage have been put at strategic locations highlighting importance of maintaining environment.
14	Garbage management	Non-biodegradable waste is collected and dumped in mined out area. Biodegradable waste like canteen waste, etc. are collected and treated in 3 nos of biogas plants located in the Mines.

15	Awareness	Awareness among the employees and workers being created by organising mass plantation drives during celebration of World Environment Day, Vana Mahotsav Week, etc. Besides villagers in the surrounding area are being distributed fruit bearing trees every year to create awareness about importance of tree plantation and they are also explained about having compassion towards wildlife for maintaining a healthy ecosystem in the region.

01/12/23

(Rasheed Waris)
Group General Manager(Mines)

RASHEED WARIS
Group General Manager(Mines)
NALCO Mines, Damanjodi

ANNEXURE-IV

AMBIENT NOISE LEVEL MEASUREMENT IN AND AROUND PANCHPATMALI SOUTH BLOCK BAUXITE MINE FOR 2023-24

Sl. No.	Monitoring station code & its direction	Date	Noise level dB(A)		Date	Noise level dB(A)		Date	Noise level dB(A)		Date	Noise level dB(A)	
			Day	Night		Day	Night		Day	Night		Day	Night
1	View Point- S	25.04.2023	47.2	41.5	27.08.2023	44.5	33.6						
2	Putraghati Village-SW	25.04.2023	50.3	29.2	27.08.2023	48.1	37.2						
3	Bhitara Bhejaput Village- NW	25.04.2023	50.1	33.4	27.08.2023	49.6	41.8						
4	Lachumani Village- SW	25.04.2023	48.7	36.9	27.08.2023	47.8	39.2						
5	Mundagahrati Village- NE	25.04.2023	48.7	36.9	27.08.2023	41.2	30.8						
6	Near bridge 01 of cable belt conveyor	25.04.2023	47.3	38.9	27.08.2023	47.3	35.6						
7	Below bridge 02 of cable belt conveyor	25.04.2023	50.1	37.5	27.08.2023	43.6	39.4						
8	Near bridge 03 of cable belt conveyor	25.04.2023	45.8	42.9	27.08.2023	48.6	39.2						
9	Near bridge 04 of cable belt conveyor	25.04.2023	47.1	33.1	27.08.2023	46.9	34;6						
10	Below bridge 05 of cable belt conveyor	25.04.2023	49.9	35.2	27.08.2023	47.3	34.8						
11	At kardiguda village Near bridge 04 of cable belt conveyor	25.04.2023	48.3	38.7	27.08.2023	47.3	34.8						
12	Near bridge 06 of cable belt conveyor	25.04.2023	46.2	32.2	27.08.2023	52.3	33.2						
13	Discharge gantry bridge	25.04.2023	49.2	34.1	27.08.2023	45.1	38.2						

Norm			
Category of area/zone		Limits in dB(A) Leq	
		Day time	Night time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence zone	50	40

1/12/2023
SANJAYA KUMAR PATNAIK
General Manager(Env.)
Panchpatmali Bauxite Mine
NALCO, Damanjodi-763008

ANNEXURE-V

WASTE WATER ANALYSIS AT PANCHPATMALI SOUTH BLOCK BAUXITE MINE (2023-24)

Sl. No.	Parameter	NORM	WW1												WW2												Average	
			Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	WW1	WW2
1	Temperature (ºC)	-	32	28	30	31	28	24							32	28	30	30	26	24							28.833	28.333
2	pH Value	5.5-9.0	7	7	7	6.92	7.1	7							7	7	7	6.99	7.2	7							7.003	7.032
3	Dissolve Oxygen, mg/l	-	3.4	3.5	3.6	3.7	3.9	3.8							3.8	3.8	3.8	3.8	3.5	3.4							3.650	3.683
4	Total Dissolved Solids, mg/l	-	244	207	119	128	94	113							223	220	115	120	30	107							150.833	135.833
5	Total Hardness (as $CaGO_3$), mg/l	-	80	80	72	80	36	48							96	112	56	70	28	52							66.000	69.000
6	Suspended Solids mg/l	100	1	6	2	8	6	5							1	<1.0	1.5	12	4	10							4.667	5.700
7	B.O.D mg/l 3 days at	30	23	12.6	20	16	15.6	<3.0							18	9.4	10	10	16.2	<3.0							17.44	12.72
8	C.O.D mg/l	-	104	80	60	50	9	37							80	56	46	38	11	33							56.667	44.000
9	Nitrate (as NO3), mg/l	-	4.9	4.5	6.5	5.8	2.8	3.6							4.2	5.4	4.9	4.2	3.9	2							4.683	4.100
10	Chloride as Cl – mg/l	-	72	74	36	38	16	28							72	90	32	35	17	34							44.000	46.667
11	Sulphate (as SO4), mg/l	-	6.2	1.091	8	6	5	16							6	<1.0	6	5	4	18							7.049	7.800
12	Calcium (as Ca), mg/l	-	27.2	28.8	14.4	15	7	14							25.6	24	14.4	15	8	14							17.733	16.833
13	Magnesium (as Mg), mg/l	-	2.92	1.94	8.75	10.3	4.5	3							7.776	12.63	4.86	7.9	1.9	4							5.234	6.511
14	Fluoride as F , mg/l	2	0.92	0.483	0.46	0.5	<0.1	<0.1							0.936	0.328	0.23	0.23	<0.1	<0.1							0.589	0.431
15	Phenolic Compounds, (as C_6H_5OH) ,mg/l	1	<1.0	<1.0	<0.01	<0.1	<1.0	<0.002							<1.0	<1.0	<0.01	<0.1	<1.0	<0.002							<1.0	<1.0
16	Arsenic (as As), mg/l	0.2	<0.01	<0.2	<0.05	<0.05	<0.01	<0.05							<0.01	<0.2	<0.05	<0.05	<0.01	<0.05							<0.1	<0.1
17	Mercury (as Hg), mg/l	0.01	<0.001	<0.01	<0.001	<0.01	<0.01	<0.001							<0.001	<0.01	<0.001	<0.01	<0.01	<0.001							<0.001	<0.001
18	Lead (as Pb), mg/l.	0.1	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01							<0.01	<0.1	<0.01	<0.01	<0.01	<0.01							<0.01	<0.01
19	Cadmium (as Cd), mg/l	2	<0.01	<2.0	<0.01	<0.1	<0.01	<0.01							<0.01	<2.0	<0.01	<0.1	<0.01	<0.01							<0.01	<0.01
20	Chromium (as Cr^{+6}), mg/l	0.1	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05							<0.05	<0.1	<0.05	<0.05	<0.1	<0.05							<0.05	<0.05
21	Copper (as Cu), mg/l	3	<0.04	<3.0	<0.04	<0.04	<0.04	<0.04							<0.04	<3.0	<0.04	<0.04	<0.04	<0.04							<0.04	<0.04
22	Zinc (as Zn) mg/l	5	0.02	<0.1	<0.01	<0.01	<0.01	<0.01							<0.01	0.206	<0.01	<0.01	<0.01	<0.01							<0.01	<0.01
23	Iron (as Fe), mg/l	3	0.29	0.135	1.6	2.09	0.42	0.56							<0.05	0.06	0.35	0.56	0.73	0.24							0.8491	0.388
24	Oil and grease	10	4	3	2.9	3.2	3	3.6							2	2	<0.1	1.8	2	1.6							3.2833	1.880

WW1-treated water from Canteen

WW2-treated water from HEMM area

HEMM area

* Parameters are within permissible norms

NT- Not traceable

1/12/2023

SANJAYA KUMAR PATNAIK
General Manager(Env.)
Panchpatmali Bauxite Mine
NALCO, Damanjodi-763008

नालको NALCO
NATIONAL ALUMINIUM COMPANY LIMITED
(A Public Sector Undertaking)
Panchpatmali Bauxite Mine
D A M A N J O D I – 763008
Dist. KORAPUT (ORISSA)
Ph-06853-268001

Ref-NAL/MIN/GGM(Mines)/ 2023/ 77 Date: 30/09/2023

To,
The Member Secretary,
State Pollution Control Board, Orissa
PariveshBhawan,
A/118, Nilakantha Nagar,
Unit-VIII, Bhubaneswar – 751012.

Sub: Submission of Environmental Statement for the financial year ending with 31st March 2023 in respect of Panchpatmali South Block Bauxite Mine, NALCO

Sir,

Please find enclosed herewith the "Environmental Statement for the financial year ending with 31st March 2023" in respect of Panchpatmali South Block Bauxite Mine, NALCO in the prescribed format.

Thanking you.

Yours' faithfully,

30.09.2023

(S.C.Samal)
Group General Manager (O&M) I/c

S.C. SAMAL
Group General Manager (O&M) I/c
NALCO Mines, Damanjodi-763008

Encl: As above.

Copy- The Regional Officer,- - for kind information
Regional Office,
State Pollution Control Board,Odisha
Koraput,
Ground Floor, Door Sanchar Bhawan, BSNL, Koraput Odisha

FORM-V
(See Rule 14)

Environmental Statement for the Financial Year ending 31st March 2023.

PART-A

i.	Name & address of the Owner/Occupier of the industry Operation or process	:	Sri Pankaj Kumar Sharma Director (Production), National Aluminium Co.Ltd. P/1, Nayapalli, Bhubaneswar-751061
ii.	Industry Category	:	
	- Primary - (STC Code) - Secondary - (STC Code)		
iii.	Production capacity - Units	: 31.50 lakh Ton/yr	
iv.	Year of Establishment	:2017	
v.	Date of the last Environmental Statement submitted	:30.09.2022	

PART – B

Water and Raw Material Consumption:

i. **Water Consumption m3/day**

Process	:	
Cooling (Dust suppression and washing Of equipments)	:	178.211 m3/day
Domestic	:	118.81 m3/day
Others	:	Nil

Name of the Products	Process Water consumption per unit of product output	
	During the Current Financial year 2021-2022 (KL/MT)*	During the Current Financial year 2022-2023 (KL/MT)*
1. Bauxite Ore	0.090	0.103
2. ----	--	--
3. --	--	--

ii. **Raw Material Consumption**:

Name of the Raw Materials	Name of Products	Consumption of raw material per unit output	
	Bauxite Ore	During Current Financial year 2021-2022	During Current Financial year 2022-2023
a) Diesel		**0.69** Lt/MT	**0.68** Lt/MT
b) Lubricant		**3.59** ml/MT	**6.00** ml/MT

PART- C

Pollution Discharge to Environment/Unit of Output :

(Parameter as specified in the consent issued)

(I)	Pollution	Quantity of pollutant discharge (Mass/Day)	Concentration of pollutant discharges (Mass/Day)	% of variation from prescribed standards with reasons
(a)	Water*	Nil	Nil	Nil
(b)	Air**	Nil	Nil	Nil

* No water pollutant is being discharged, as it is not a process unit.
** No point source emission is there.

PART- D

Hazardous Wastes

[As specified under Hazardous & other Wastes (Management & Transboundary Movement) Rules,2016 and amendments]

Hazardous Wastes	Total Quantity (Kg)			Quantity	
(a) Form process	Sl no	Description	Unit	2021-22*	2022-23*
	1	Oily sludge	MT	Nil	Nil
	2	Oil filter and filter materials	MT	Nil	Nil
	3	Waste containing oil (cotton waste)	MT	Nil	Nil
	4	Used oil	KL	Nil	Nil
	5	Discarded containers/ barrels of used oil	Nos.	Nil	Nil
	6	Incinerator ash	MT	Nil	Nil
(b) From pollution control facilities	NA		NA		

* For South Block, generation of hazardous waste not started.

PART- E

SOLID WASTES

Solid Wastes	Total Quantity (In Lakh Tonnes)	
	During the current financial year 2021-2022	During the current financial year 2022-2023
a) From process	1.65*	1.53*
b) From pollution control facilities	Nil	Nil
c) 1. Quantity recycled or re-utilised within the unit	1.65	1.53
2. Sold	Nil	Nil
3. Disposed	Nil	Nil

* Lateritic overburden and Topsoil

PART- F

Please specify the characterisation (in terms of composition and quantum) of Hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

A. Hazardous waste*

Sl.no.	Description of waste	Characterisation	Disposal practice
1	Oily sludge	Major constituent-oil	Oily sludge generated during cleaning of oil-water separator are stored temporarily on concrete floor under shed. Oily sludge is burnt in the hazardous waste incinerator and the ash is disposed to authorised TSDF of M/s RE Sustainability Ltd
2	Oil filter and filter materials	Major constituent-oil	Oil filter and filter Materials generated during maintenance of HEMMs are stored temporarily in bins on concrete floor under shed. Used filter elements are stacked in oil collecting trays. The oil thus collected on self draining by gravity is transferred to a barrel which is finally sent to oil disposal yard at Central Store, whereas filter elements almost dried up of oil are taken to a hazardous waste incinerator for control burning. The residual metallic parts after burning are sent as scrap to Central Store for disposal action. The ash is disposed to authorised TSDF of M/s RE Sustainability Ltd.

3	Waste containing oil (cotton waste)	Major constituent-oil	The cotton waste in HEMM is stored in designated bins under shed. The waste containing oil like cotton waste are incinerated in the hazardous waste incinerator. The ash is disposed to authorised TSDF of M/s RE Sustainability Ltd.
4	Used oil	Major constituent-oil	Used/waste oil (as drained out from equipment and vehicles) is collected in the barrels and stored at a place earmarked in specified waste/used oil disposal area. The floor of the storage area is concreted and bunds have been made surrounding the area in order to prevent the oil contamination to the landmass. In order to collect spilled oil from barrels (whatever little might be there) the said flooring of the disposal area has been given suitable gradient so as to collect the spilled oil in a pit. The oil from the pit is also collected back in barrel by use of hand pumps. These are disposed to authorized recyclers.
5	Discarded containers/ barrels of used oil	Major constituent-oil	Discarded containers i.e used oil storage barrels whenever generated are kept in the used oil storage yard. Empty used oil barrels whenever they are generated are reused for storage of used oil and disposed to authorized recyclers.
6	Incinerator ash	Major constituent-Silica	Disposed to TSDF of M/s RE Sustainability Ltd authorized for disposal of hazardous waste.

*Process of disposal to be adopted when hazardous waste will be generated

B. Solid Waste

Sl.no.	Description of waste	Characterisation	Disposal practice
1	Overburden material	Top Soil and Laterite	This is being utilised for backfilling of mined out area.

PART- G

Impact of the pollution abatement measures taken on conservation of natural resources on the cost of production.

1. **Measures against Soil erosion and land slides**.

After complete exploitation of bauxite, the overburden from the advancing faces are dumped for back filling, for restoring landscape by providing proper benches, slopes and depressions (basins) matching the natural topography. The backfilled area basins act as suitable water reservoir in arresting wash out materials from going to the valley. The back filled area is levelled followed by top dressing with preserved top soil before plantation. Afforestation is carried out

with selected forest and fruit bearing species in these back filled areas as well as on the slopes to prevent soil erosion. Inclined benches are suitably covered with grass turfs to prevent soil erosion.

2. **Measures against Water pollution**:

Peripheral garland drains and catch drains have been developed ahead of the mining area as per plan and these are regularly maintained to avoid surface run off water entering into the mined out area. This pollution free surface run off water is guided to the valley following natural gradient. As a precaution, check dams have been constructed down below the valley to arrest any washouts.

Rain water inside the mines is being collected in sumps within the mining area. Water from the sumps mostly percolates down through thick clay layer which acts as a filtration chamber. Insitu barriers/bunds are constructed on the edges of Mines to prevent water flow from mined out area to the valley/natural water course at foot hill.

The waste water generated in canteen is treated in a biological reactor. The waste water generated in HEMM area from vehicle washing are passed through a series of oil water separators. The treated waste water from canteen and HEMM area are combined together and are reused for dust supression and plantation purpose. There is zero discharge of effluents from Mines.

3. **Measures against Air pollution**:

i. Dust suppression in the mining area is being carried out by water sprinkling using movable tankers. Besides this an auto sprinkling system has been installed/maintained along the central/main haul road.

ii. Drilling machineries are provided with efficient dust extractors and wet drilling system.

iii. In the crusher house, an efficient dry fog system is provided for suppression of dust at ROM hopper and transfer points. Also dust extractors and hoods are provided at transfer points in crushing and conveying system. Fog cannons have been provided at stock piles to suppress dust.

iv. Frequent checking & maintenance is done for all the heavy earth moving machineries to restrict exhaust burnt fuels/gases polluting the atmosphere.

v. Concentration of air borne dust in terms of PM_{10} and $PM_{2.5}$ are measured once in a month and the dust concentration is within permissible limit.

vi. Plantation has been carried out in the periphery of mines to prevent escape of dust into the surroundings.

4. **Measures against Noise pollution:**

Noise and vibration due to operation of heavy earth moving machineries are within the tolerable limit. With the multiple face working the equipment gets scattered over a vast area thereby reducing the concentration of noise and vibration level.

At present noise and vibration are within the permissible limit.

The total expenditure on pollution control activities (inclusive of backfilling of mined out area) during 2022-23 is Rs 3,68,57,768.85.

PART- H

Additional measures investment, proposal for environmental protection including abatement of pollution/prevention of pollution.

Nil

PART- I

Any other particulars for improving the quality of environment:

1. Industrial hygiene survey. (Noise, Vibration, Air pollution etc.) is being carried out on regular basis. Corrective measures /recommendations thereof are being implemented for improving quality of environment.
2. Biogas plants have been installed to treat canteen vegetable waste.
3. Solar power plants of (50.76 +3) kWp capacity have been installed

30.09.23

(S.C.Samal)
Group General Manager (O&M) I/c

S.C. SAMAL
Group General Manager (O&M) I/c
NALCO Mines, Damanjodi-763008