

Ref.No. E&S/07/21/137

Date 30.05.2025

To:

The Director (Impact Assessment)  
Ministry of Environment, Forest & Climate Change  
Indra Paryavaran Bhawan  
Jor Bagh Road, Aligarh  
**NEW DELHI -110003**

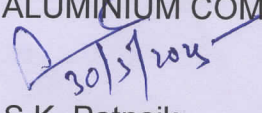
Sub: Half yearly Compliance Status of Environment Clearance condition pertaining to Alumina Refinery, M/s NALCO, Damanjodi for the period from Oct.'2024 to March.'2025

Ref.: i) Your Office Memorandum No.J-11011/65/2008-IA.II (I) dt.11.05.2010.  
ii) Your Office Memorandum F. No.J-11011/65/2008-IA.II(I) dt.12.04.2017

Dear Sir,

Please find enclosed herewith half yearly compliance status of Environment Clearance pertaining to Alumina Refinery, NALCO, Damanjodi for the period from Oct.'24 to March.'25.

Yours faithfully,  
for NATIONAL ALUMINIUM COMPANY LTD.,

  
S.K. Patnaik  
GGM(ENV,T/S Maint,Hort)

Encl.: as above.

CC :: (i) Director

Ministry of Environment & Forests, Govt. of India,  
Eastern Regional Office, A/3-Chandrasekharapur, **BHUBANESWAR – 751 023**  
(ii) The Member Secretary, State Pollution Control Board, Odisha  
A/118, Neelakanthanagar Unit-VIII, **BHUBANESWAR-751 001**

**SANJAYA KUMAR PATNAIK**  
GGM (Environment, TQM, Township Maint.)  
National Aluminium Company Ltd.  
M&R Complex, Damanjodi-763008

**N A T I O N A L   A L U M I N I U M   C O M P A N Y   L I M I T E D**

( A Government of India Enterprise & NAVARATNA Company )

**MINES & REFINERY COMPLEX, DAMANJODI- 763 008, KORAPUT, ORISSA**

Phone: 06853 254277 (office)

Regd;. Office, Nalco Bhawan, P/1, Nayapalli, Bhubaneswar-751013

**MOEF ENVIRONMENT CLEARANCE Dated 11.05.2010 FOR ALUMINA REFINERY(2.1 MMTPA TO 2.275 MMTPA)**

F. No.J-11011/65/2008-IA.II(I) dt.11.05.2010

Sl.No	Point Description	Status
<b>A. SPECIFIC CONDITIONS:</b>		
i.	Compliance to all the specific and general conditions stipulated for the existing plant by the Central/State Govt. shall be ensured and regular reports submitted to the Ministry and its Regional Office at Bhubaneswar.	All the specific and general conditions stipulated by Central /State Govt. are ensured, regularly monitored and compliance report submitted to the SPCB & MoEF.
ii.	Adequate air pollution control measures viz. Electrostatic precipitator(s) at calciner and boiler stacks and bag filters at other places provided shall control gaseous emissions within 50 mg/Nm <sup>3</sup> . No new stack shall be installed in the proposed expansion of Alumina Refinery. On-line continuous monitoring device for SPM and SO <sub>2</sub> shall be provided to check SPM and SO <sub>2</sub> emissions levels. Low NO <sub>x</sub> burners shall be installed to control the NO <sub>x</sub> emissions. The height of the stacks shall be as per the CPCB guidelines for the dispersion of SO <sub>2</sub> . Provision for flue gas desulphurization devices (FGD) shall also be kept to control SO <sub>2</sub> emissions. The emissions shall conform to the standards prescribed by the Ministry/CPCB/OPCB whichever is more stringent. Gaseous emissions shall be regularly monitored and records maintained and reports submitted to this Ministry including its Regional Office at and reports submitted to the Ministry's Regional Office at Bhubaneswar, CPCB and OPCB six monthly. All the other parameters including SPM, SO <sub>2</sub> , NO <sub>x</sub> and Poly-Aromatic Hydrocarbons (s) prescribed for the Alumina Refinery plants shall be followed.	<p>i) Emission through Calciners stack maintained as per SPCB consent condition. The height of the stack is well within the CPCB Guidelines for both Boilers &amp; Calciners.</p> <p>ii) On line monitoring device for particulate matter, SO<sub>2</sub>, NO<sub>x</sub>, installed in Boilers and in Calciners for continuous emission monitoring.</p> <p>iii) Gaseous emissions are also monitored. Reports along with analysis results are being submitted to SPCB every month and six-monthly reports to CPCB &amp; MoEF</p> <p>(Stack analysis Report is attached in <b>Annexure-1</b> )</p>
iii.	Fugitive emission from red mud disposal area shall be controlled by water sprinkling. Bag filters with dust collectors shall be provided to Alumina loading area, bauxite crushing area, coal & ash handling areas and lime handling area to control the dust emissions. Dust suppression and dry fog system shall be provided in Bauxite and coal handling areas. Garland drain shall be created at red mud and fly ash disposal areas	<p>i) Water sprinklers have been installed in the dry portion of Red Mud Pond to control fugitive emission.</p> <p>ii) Bag filters have been provided at Calcination Plant, &amp; Alumina Handling plant for fugitive dust control.</p> <p>iii) Water sprinklers and dust extraction System have been provided at Coal &amp; Ash Handling areas for dust suppression.</p> <p>iv) High capacity scrubber system and piping conveyor installed in Lime handling area for fugitive dust control.</p> <p>v) Dry fog system provided in bauxite handling area for dust control.</p> <p>vi) Garland drains have been provided in Ponds.</p>

iv.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 <sup>th</sup> November, 2009 shall be followed.	Agreed and the standards are being followed. (Ambient Air Quality Report as per Standard is enclosed as <b>Annexure -II</b> )
v.	All the Poly-Aromatic Hydrocarbons (PAH) including Phenanthrene and Fluorathrene shall be controlled within the permissible limit, monitored quarterly and report submitted regularly to the Ministry and its Regional Office at Bhubaneswar CPCB / OPCB.	Monitored. (Report attached at <b>Annexure-I</b> )
vi.	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines/Code of Practice issued by the CPCB shall be followed.	All the gaseous emissions & fugitive emissions are regularly monitored, controlled and maintained within the permissible limits.
vii.	Efforts shall be made to make use of rain water harvest. If needed, capacity of the reservoir shall be enhanced to meet the maximum water requirement. Only balance water requirement shall be met from other sources.	Three (03) numbers of Rain Water harvesting structures have been installed at Alumina Refinery near HRD Training Centre & Administration building premises. One RWH project completed at Township. While 3 RWH projects at township are under progress.
viii.	Total water requirement from Kerandi River shall not exceed 1283.11 m <sup>3</sup> /day. The wastewater shall be treated in existing effluent treatment plant (ETP) and reused in the process. Oily wastewater from oil storage tank and oil unloading area shall be treated in treatment plant. The process effluent shall be recycled to the plant and 'Zero' discharge shall be adopted. The sanitary waste will be treated in sewage treatment plant (STP) and used in ash slurry disposal.	<ul style="list-style-type: none"> <li>Water drawn &amp; used from Kerandi River is within the permissible limit of 6 MGD.</li> <li>Oily water from oil storage tank and Oil unloading area are being separated in OWS pit. O&amp;G concentration of plant outlet storm water drain is within the permissible value</li> <li>NALCO, Refinery has adopted the "Zero Discharge" concept since its inception. The process effluent is being recycled for process use.</li> <li>The sanitary waste water after treatment in Sewage Treatment Plant (STP) is being utilized for gardening purpose.</li> </ul>
ix.	As reflected in the EIA/EMP report, all the wastewater from the Alumina Refinery shall be properly treated in the effluent treatment plant (ETP). 'Zero' effluent discharge shall be strictly followed and no wastewater shall be discharged outside the premises. Extensive measures shall be undertaken for the recycle/reuse of the treated wastewater in the process. Oil wastewater shall be treated in API separator and routed to reclamation pond for recycling. The domestic wastewater shall be treated in the sewage treatment plant (STP) and treated wastewater conforming to the standards for land application shall be used for green belt.	<ul style="list-style-type: none"> <li>The concept of zero discharge is being strictly followed.</li> <li>Process effluent is recycled for process use.</li> <li>Domestic waste water after treatment in STP is being utilized for green belt development inside Alumina Refinery &amp; Township. (Analysis Report of STP treated water is enclosed as <b>Annexure-IV</b>)</li> </ul>
x.	Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured including Total Organic Compounds (TOC) including Arsenic, Cyanide, Phenol and COD shall be monitored and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the E(P) Act whichever are more stringent.	Regular monitoring of Plant outlet surface drain & Ground water is monitored & reported to SPCB. (Analysis Report of ground water is enclosed as <b>Annexure-III</b> )

xi.	<p>The company shall adopt high concentration slurry disposal system for red mud and ash disposal and water from red mud and ash pond disposal area shall be recycled back and reused for slurry disposal. HDPE lining shall be provided to avoid any leakage to the ground. Leachate collection facilities shall be provided to the secured landfill facility (SLF). Proper care shall be taken to ensure no run off or seepage from the red mud disposal site to natural drainage. Efforts shall also be made to find out productive uses of red mud in brick and ceramic products etc. STP sludge shall be utilized as manure for green belt development. All the used oil and batteries shall be sold to the authorized recyclers/re-processors.</p>	<p>Red Mud Slurry is disposed to Red Mud Pond by Thickened Tailing Disposal (TTD) having average 55 % concentration.</p> <ul style="list-style-type: none"> <li>-Water from Red Mud Pond &amp; Ash pond is reclaimed &amp; being utilized for process, Slurry making &amp; Fly Ash pulping</li> <li>- Care has been taken to ensure no run off and seepage from Red Mud Pond, which is periodically monitored. HDPE liners have been provided in the new red mud pond. Analysis Report of Ground Water near Red mud Pond is attached as <b>Annexure-III</b> )</li> </ul> <p>Efforts have been made for productive use of Red mud for brick making and cement production. R&amp;D projects in collaboration with IIT, IMMT and other research institutes are going on for commercial utilisation of red mud.</p> <ul style="list-style-type: none"> <li>▪</li> <li>- STP sludge is used as manure for green belt development.</li> <li>- All the used oil and batteries are auctioned to the authorized recyclers/re-processors ..</li> </ul>
xii.	<p>Monitoring of ground water quality around the red mud and ash ponds shall be undertaken by providing piezometric holes in consultation with the OPCB/SGWB/ CGWB and data submitted to the Ministry' Regional Office and OPCB. A leachate study shall be undertaken and report submitted to the Ministry's Regional Office at Bhubaneswar, OPCB and CPCB within six months of commissioning of the expansion project. Proper care shall be taken to ensure no run off or seepage from the red mud disposal site to natural drainage.</p>	<ul style="list-style-type: none"> <li>▪ Piezometers have been installed on the dams of both Ash Pond and Red Mud Pond.</li> <li>▪ Monitoring of ground water quality is being carried out and results are found within the norms (Attached in <b>Annexure-III</b>)</li> <li>▪ No run off from Red Mud Pond to natural drains. Garland drains are provided. Water quality of nearby drains is being monitored. (Analysis Report of Ground water near Dam site is attached as Annex: <b>III</b>)</li> </ul>



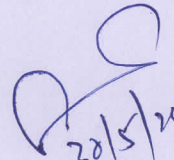
xiii.	<p>Efforts shall be made to find out productive uses of red mud in manufacturing brick and ceramic products etc. The industry shall also take steps to utilize red mud and fly ash to maximum extent by itself and shall provide all facilities to other potential users. Red mud and fly ash shall be disposed off in the existing disposal facilities only. No land for red mud and fly ash disposal shall be acquired.</p>	<ul style="list-style-type: none"> <li>• Red Mud and Fly Ash is disposed to existing disposal facility i.e to Red Mud Pond &amp; Ash Pond respectively in slurry form.</li> <li>• M/s.NALCO is in touch with Cement Plants to utilize red mud in cement manufacturing</li> <li>• .A project for Technology development for Holistic utilization of red mud for extraction of metallic values and residue utilization was taken up in collaboration with JNARDDC, CSIR-NML, CSIR-IMMT, Vedanta and Hindalco.</li> <li>• M/s NALCO, in collaboration with JNARDDC and M/s Manishri Refractories &amp; Ceramics Pvt. Ltd., Cuttack, has successfully developed a pilot-scale Red Mud Brick Plant and Nalco is considering for setting up a Red mud brick plant at a suitable location.</li> <li>• Fly ash is being utilized for Agriculture, cement &amp; brick manufacturing. Pond ash is being utilized for reclamation of low-lying areas. Annual Fly ash implementation report is submitted to SPCB &amp; MoEF.</li> </ul> <p>Following R&amp;D projects have been taken up for utilization of Red Mud &amp; fly Ash :</p> <ol style="list-style-type: none"> <li>1. A pilot-scale plant for the recovery of alumina from NALCO fly ash using a pyro/hydrometallurgical route is being developed in collaboration with IMMT and KIIT, Bhubaneswar.</li> <li>2. A collaborative project with BARC, Mumbai has been undertaken to explore the utilization of red mud in nuclear reactor applications.</li> <li>3. M/s Entity 1, Chennai, has claimed that have a patented process for the extraction of metallic values from red mud, which was presented to Nalco. A red mud (300 Kg approx.) was send to them further research.</li> </ol>
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xiv.	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 1999 and subsequent amendment in 2003 & 2010. All the fly ash shall be provided to cement and brick manufacturers for further utilization and 'Memorandum of Understanding' shall be submitted to the Ministry's Regional Office at Bhubaneswar.	Efforts have been made to increase fly ash utilization. Ash Implementation Report & annual utilization status report is being submitted to SPCB & MoEF&CC.
xv.	A Risk and Disaster Management Plan along with the mitigation measures shall be prepared and a copy submitted to the Ministry's Regional Office at Bhubaneswar, OPCB and CPCB within 3 months of issue of environment clearance letter.	Risk and Disaster Management Plan along with the mitigation measures prepared and submitted to the Ministry earlier.
xvi.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Occupational Health Surveillance of Workers is being done regularly as per Factories Act and record is being maintained.
xvii	As proposed, green belt of adequate width and density shall be provided in 33% area to mitigate the effects of fugitive emissions all around the plant with local species in consultation with the DFO as per the CPCB guidelines	Green belt is being developed with local and exotic species during monsoon season of every year as per CPCB Guidelines. Till now an area of 1818.7 hectares has been covered for green belt development against total area of 2956 hectares, which is more than 33%, Gap filling also is practised. Total number of saplings planted during the year 2024-25 is 15092..
xviii	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Alumina Refinery Plants shall be implemented.	As per CREP guideline, two issues (i) Phasing out disposal of Red Mud & (ii) Utilisation of Red mud Red Mud is disposed in Slurry form (55% concentration) through Thickened Tailing disposal (TTD) method. A number of projects are going on for commercial utilization of Red Mud and recovery of valuables from red mud.
xix.	At least 5 % of the total cost of the project shall be earmarked towards the corporate social responsibility and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program shall be ensured accordingly in a time bound manner.	NALCO extends its CSR activities through an independent body named "NALCO Foundation" (A trust under Indian Trust Act). Amount spent on CSR projects FY 2023-24 is 50,15,65,611Rs.
xx.	The company shall provide housing for 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.	Temporary structures with all amenities were provided.

<b>B. GENERAL CONDITIONS :</b>		
i.	The project authorities must strictly adhere to the stipulations made by the Orissa Pollution Control Board (OPCB) and the State Government.	Agreed & being adhered.
ii.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Noted and agreed.
iii.	The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19 <sup>th</sup> May, 1993 & standards prescribed from time to time. The Orissa Pollution Control Board (OPCB) may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size & location.	Noted and Agreed.
iv.	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of SPM, SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the OPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and OPCB, CPCB once in six months.	Four nos. of AAQM Stations are in operation i.e. at CISF Colony, Water Treatment Plant, Community Centre & NALCO Club. Realtime Data is connected to SPCB & CPCB server. Real-time data of emissions (CEMS) from major stacks is also connected to SPCB & CPCB server.
v.	In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Further, specific measures like water sprinkling around the coal stockpiles and asphaltting or concreting of the roads shall be done to control fugitive emissions.	Control measure for checking fugitive emission at vulnerable locations have been provided. Specific measures like water sprinkling, Scrubbing & dry Fog System have been adopted for control of dust emission.
vi.	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Industrial waste water (alkaline) is collected at alkali pond and reused in process, without outside discharge. The treated water of STPs is utilized for gardening purpose.
vii.	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Noise control measures have been adopted to maintain the noise levels within the norms. Monthly Ambient Noise report is being submitted to SPCB.
viii.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Occupational Health Surveillance of Workers is being done regularly as per Factories Act and records are being maintained.
ix.	The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	Three (03) numbers of Rain Water Harvesting structures have been installed at Alumina Refinery near HRD Training Centre &, Administration building and one Rain Water Harvesting units in township. While 3 units are under progress.
x.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company must undertake socio-economic development activities in the	i. Alumina Refinery is undertaking peripheral development & CSR activities through an independent body "NALCO Foundation" (A trust under Indian trust Act) in the surrounding villages.

	surrounding villages like community development programs, educational programs, drinking water supply and health care etc. Suggestions made during the public hearing shall be implemented.	ii. Mobile Health Units (MHU) are operated in peripheral villages. Students from peripheral villages are also sponsored for education in residential schools.
xi.	As proposed, Rs. 130.00 Crores and Rs. 14.00 Crores shall be earmarked towards total capital cost and recurring cost/annum for environmental pollution control measures. All the funds allocated shall be judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.	The earmarked amount kept for environmental pollution control measures is not diverted and the same used for the particular purpose only.
xii.	The Regional Office of this Ministry at Bhubaneswar/ CPCB/OPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Officials of SPCB Regional Office visits the Plant on regular basis for inspection, sampling and monitoring of stipulated conditions. Six monthly compliance report with monitored data is being submitted to the Ministry and monthly report to OSPCB.
xiii.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the PCB and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bhubaneswar.	Informed to public through newspaper advertisement in the specified language and copy submitted to the regional office earlier.
xiv.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / 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 web site of the company by the proponent.	Copy of clearance letter sent to all concerned earlier.
xv.	The project proponent shall upload the status of compliance of the stipulated environment 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 MOEF, the respective Zonal Office of CPCB and the OPCB. The criteria pollutant levels namely; SPM, RSPM, SO <sub>2</sub> , NO <sub>x</sub> (ambient levels as well as stack emissions) or critical sectoral parameters like Total Organic Compounds (TOC) including cyanide, phenol and COD etc. indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	<ul style="list-style-type: none"> <li>Monitoring &amp; Compliance reports are being submitted to SPCB on monthly basis and Half Yearly compliance status of EC conditions are being submitted to MoEF.</li> <li>Ambient air quality parameters and stack emission data are being displayed at the main gate and uploaded in the company's website.</li> </ul>

xvi.	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB.	Compliance reports are being submitted regularly within stipulated time.
xvii	The environmental statement for each financial year ending 31 <sup>st</sup> 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 conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	Environment Statement for each financial year is being submitted annually to SPCB. The latest Environmental Statement for FY 2023-24 was submitted to SPCB & MoEF&CC on dt.21.05.2024 and was uploaded in the Company's Website.
xviii	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Agreed & followed.

  
 20/5/2025  
 SANJAYA KUMAR PATNAIK  
 GGM (Environment, TQM, Township Maint.)  
 National Aluminium Company Ltd.  
 M&R Complex, Damanjodi-763008



Sl.No	Point Description	Status
<b>A. SPECIFIC CONDITIONS:</b>		
i.	The Project proponent should install 24x7 air monitoring devices to monitor air emission, as provided by CPCB and submit report to Ministry and it's Regional Office.	Four nos. of AAQM Stations are in operation i.e. at CISO Colony, Water Treatment Plant, Community Centre & NALCO Club. Realtime Data is connected to SPCB & CPCB server. Real-time data of emissions (CEMS) from major stacks is also connected to SPCB & CPCB server.
ii.	For the treatment of Effluents generated in the proposed expansion project, the ETP shall be augmented with additional required/designed capacity within 6 months.	Two separate alkaline Ponds are envisaged inside the plant- Civil & Structural Works awarded and work is in progress.
iii.	API separator shall be installed by the PP to separate oil from the waste water before the treatment in ETP.	Noted
iv.	Used oil , oil containing sludge and grease, filter and filter material containing oil should not be incinerated in the plant premise and should be sold to authorized vendors.	All the used oil and batteries are auctioned to the authorized recyclers/re-processors
v.	The power plant should meet prescribed emission standards as per MoEFCC Notification vide S.O.3305(E) dated 7 <sup>th</sup> December 2015.	FGD & SCR provisions are kept in the scope of M/s BHEL for CGPP#6 and work is under progress. The emission standard will be complied.
vi.	Electrostatic precipitators shall be provided to kiln and boiler stacks to control gaseous emissions within 50 mg/Nm <sup>3</sup> . The height of the stacks shall be as per the CPCB guidelines. Gaseous emission shall be regularly monitored and records maintained and reports submitted to this ministry including it's Regional Office as part of the Compliance Report.	FGD shall be provided for SO <sub>x</sub> control < 100mg/Nm <sup>3</sup> SCR shall be provided for NO <sub>x</sub> control < 100 mg/Nm <sup>3</sup> in line with MoEFCC Notification vide S.O.3305(E) Dated 7 <sup>th</sup> December 2015. These are kept the scope of M/s BHEL and its installation is under progress. The particulate emission from boilers and kilns shall be less than 50 mg/Nm <sup>3</sup> .
vii.	The Red Mud generated from the project shall be stored in the Red Mud Pond only designed as per the CPCB guidelines with proper leachate collection system and ground water all around the Red Mud disposal area shall be monitored regularly and report submitted to the Regional Office of the Ministry. Proper care shall be taken to ensure no run off or seepage from the Red Mud disposal site to natural drainage. Sewage sludge shall be used as manure within the premises.	<ul style="list-style-type: none"> <li>▪ Piezometers have been installed on the dams Red Mud Pond.</li> <li>▪ Monitoring of ground water quality is being carried out and results are found within the norms (Attached in <b>Annexure-III</b>)</li> </ul> <p>No run off from Red Mud Pond to natural drains. Garland drains are provided. Water quality of nearby drains is being</p>

		monitored. (Analysis Report of Ground water near Dam site is attached as Annex: III)
viii.	The leachate collection for the existing and the proposed facility should be properly designed and no leachate should escape either into the ground water or outside the plant premise without treatment.	Care has been taken to ensure no run off and seepage from Red Mud Pond, which is periodically monitored. HDPE liners have been provided in the new red mud pond.
ix.	The present status of the existing Red Mud Pond should be assessed and it's capacity should be evaluated. A new site for Red Mud Pond should be earmarked on the map and should be submitted along with the 6 monthly compliance report once the capacity of the existing Red Mud Pond is exhausted.	The new red mud pond has been constructed near the existing red mud pond. The construction is already completed by May 2024.
x.	A plan for utilization of Red Mud generated shall be implemented. Under the plan, MOU with shall be signed with potential buyers including Cement Companies for supply of Red Mud.	Efforts have been made for productive use of Red mud for brick making and cement production. R&D projects in collaboration with IIT, IMMT and other research institutes are going on for commercial utilisation of red mud.
xi.	All the Fly Ash generated from the Alumina Refinery shall be properly stored in Ash Storage Pond and supplied to cement and Brick manufacturers for further utilization. Ash Pond created for the existing project shall be used for storage of Ash for the expansion project. Ash shall be evacuated through HCSD.	Noted. Third phase Expansion package consisting of boilers & auxiliaries is envisaged to have 100% Dry Ash disposal.
xii.	Green belt shall be developed in 33 % area to mitigate the effects of fugitive emission as per the CPCB guidelines. Plant species from local area shall be selected in consultation with DFO for green belt development.	Green belt is being developed with local and exotic species during monsoon season of every year as per CPCB Guidelines. Till now an area of 1818.7 hectares has been covered for green belt development against total area of 2956 hectares, which is more than 33%, Gap filling also is practised. Total number of saplings planted during the year 2024-25 is 15092
xiii.	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Alumina Refinery Plants shall be strictly implemented.	As per CREP guideline, two issues (i) Phasing out disposal of Red Mud & (ii) Utilisation of Red mud Red Mud is disposed in Slurry form (55% concentration) through Thickened Tailing disposal (TTD) method. A number of projects are going on for commercial utilization of Red Mud and recovery of valuables from red mud.
xiv.	The Gaseous emissions (PM10,P2.5,SO <sub>2</sub> ,NO <sub>x</sub> ) from various process units shall conform to the standards prescribed by the concerned authorities from time to time. The particulate emissions from the plant shall not exceed 50mg/Nm <sup>3</sup> . At no time the emissions level should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit	Noted. FGD & SCR provisions are kept in the scope of M/s BHEL for CGPP#6FGD shall be provided for SO <sub>x</sub> control < 100mg/Nm <sup>3</sup> SCR shall be provided for NO <sub>x</sub> control < 100 mg/Nm <sup>3</sup> in line with MoEFCC Notification vide S.O.3305(E) Dated 7 <sup>th</sup> December 2015.

	should not be restarted until the control measures are rectified to achieve the desired efficiency.	
xv.	In plant control measures for checking fugitive emission from spillage/raw materials handling etc. should be provided and particulate matter from bauxite transport and crushing shall be provided with highly efficient bag filters and covered conveyors and adequate water sprinkling shall be done.	Control measure for checking fugitive emission at vulnerable locations have been provided. Specific measures like water sprinkling, Scrubbing & dry Fog System have been adopted for control of dust emission.
xvi.	The company shall construct separate RCC drains for carrying storm water inside the plant. Decanted water from Red Mud Pond is collected in the process water lake during the monsoon and the same water recycled back to the process through pumping arrangement.	Separate drains exist for storm water inside the plant. 100% Red Mud Pond water is reclaimed backed to plant.
xvii.	The plant will operate on a zero discharge concept and all treated water shall be recycled and reused. No effluents shall be discharged outside the premises during the non monsoon period and during the monsoon period water should be discharged only after proper treatment and meeting the norms of SPCB/CPCB. There shall be separate drain for storm water/rain water. The concrete drains shall be desilted and regular supervision of the areas shall be carried out so that blocking of drains may be avoided for quick discharge of rain water.	■ NALCO, Refinery has adopted the “Zero Discharge” concept since its inception. The process effluent is being recycled for process use.
xviii .	An amount equal to Rs. 108.00 crore, shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues, locals need and item-wise details along with time bound action plan as indicated by the project proponent shall be implemented. Action taken report in this regard shall be submitted to the Ministry’s Regional Office.	As on March’2023, 107.49 Cr. has been remitted to District Administration for execution of committed ESC activities. And Rs.74,33,01,000.00 Cr. has been utilized and Utilization Certificate has been received from District Administration utilization certificate for the balance amount to our letter Dt. 21.04.2025 is yet to be received from the District Administration.
xix.	The new overland bauxite conveying system to transport bauxite from Central Block Sector –II and South Block mining lease be constructed simultaneously and completed in 48 months (Project duration for expansion proposal )	The work of new overland conveyor for transportation is under progress.
xx.	All the hazardous waste shall be properly disposed off as per the Hazardous waste and other Waste (Management & Trans boundary Movement) Rule 2016	Noted and adhered.
xxi.	The water drawl should not exceed the 8.42 MGD for the existing and expansion project put together.	Noted and adhered.
xxii.	Oil water separator system provided for the existing facility and to be provided for the proposed facility should meet the standard stipulated by SPCB/CPCB/MoEFCC	Noted
xxiii	All new Ash Ponds and the Red Mud Ponds should be lined at the bottom with proper drainage and leachate collection facility	Noted. No Ash Pond is envisaged in this 3 <sup>rd</sup> Phase Expansion Project. HCSD Pipe lines are extended to the existing Ash Pond from CGPP#6.

xxiv	The project proponent shall provide for solar light system for all common areas, street lights, villages, parking around project area and maintain the same regularly.	Noted
xxv.	The project proponent shall fully provide for LED lights in their offices and residential areas.	Noted.
xxvi	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.	Contractor has provided temporary housing structure with amenities to the construction labour.

**MOEF ENVIRONMENT CLEARANCE Dated 12.04.2017 FOR ALUMINA REFINERY(2.275 MMTPA TO 3.275 MMTPA)**

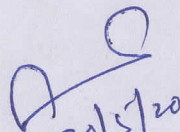
F. No.J-11011/65/2008-IA.II(I) dt.12.04.2017

<b>B. GENERAL CONDITIONS :</b>		
i.	The project authorities must strictly adhere to the stipulations made by the Orissa Pollution Control Board (OPCB) and the State Government.	Agreed & being adhered.
ii.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change(MoEFCC)	Noted and agreed.
iii.	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM <sub>10</sub> ,PM <sub>2.5</sub> ,SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the OPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Nagpur and the SPCB/CPCB once in six months.	Four nos. of AAQM Stations are in operation i.e. at CISO Colony, Water Treatment Plant, Community Centre & NALCO Club. Realtime Data is connected to SPCB & CPCB server. Real-time data of emissions (CEMS) from major stacks is also connected to SPCB & CPCB server.
iv.	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Industrial waste water (alkaline) is collected at alkali pond and reused in process, without outside discharge. The treated water of STPs is utilized for gardening purpose.
v.	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under E(P)A Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Noise control measures have been adopted to maintain the noise levels within the norms. Monthly Ambient Noise report is being submitted to SPCB.
vi.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Occupational Health Surveillance of Workers is being done regularly as per Factories Act and records are being maintained.
vii.	The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	Three (03) numbers of Rain Water Harvesting structures have been installed at Alumina Refinery near HRD Training Centre &, Administration building and one Rain Water Harvesting units in township. While 3 units are under progress.
viii.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programs, educational programs, drinking water supply and health care etc.	i. Alumina Refinery is undertaking peripheral development & CSR activities through an independent body "NALCO Foundation" (A trust under Indian trust Act) in the surrounding villages. ii. Mobile Health Units (MHU) are operated in peripheral villages. Students from peripheral villages are also sponsored for education in residential schools.



ix.	Requisite funds shall be earmarked towards capital cost and recurring cost /annum for environment pollution control measures to implement the conditions stipulated by the MoEFCC as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Nagpur. The funds so provided shall not be diverted for any other purpose.	Noted.
x.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / 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 web site of the company by the proponent.	Already submitted.
xi.	The project proponent shall upload the status of compliance of the stipulated environment 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 MOEF at Nagpur, the respective Zonal Office of CPCB and the OPCB. The criteria pollutant levels namely; PM10, SO <sub>2</sub> , NO <sub>x</sub> (ambient levels as well as stack emissions) or critical sectoral parameters indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Noted and practiced with respect to the existing operating facility
xii.	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEFCC, the respective Zonal Office of CPCB and the SPCB. The regional Office of this Ministry at Nagpur/CPCB/SPCB shall monitor the stipulated conditions.	<ul style="list-style-type: none"> <li>Monitoring &amp; Compliance reports are being submitted to SPCB on monthly basis and Half Yearly compliance status of EC conditions are being submitted to MoEF.</li> <li>Ambient air quality parameters and stack emission data are being displayed at the main gate and uploaded in the company's website.</li> </ul>
xiii.	The environmental statement for each financial year ending 31 <sup>st</sup> 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 conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	Environment Statement for each financial year is being submitted annually to SPCB. The latest Environmental Statement for FY 2023-24 was submitted to SPCB & MoEF&CC on dt.21.05.2024 and was uploaded in the Company's Website.
xiv.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance	Done as suggested.

xiv.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Nagpur.	Done as suggested.
xv.	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Officials of SPCB Regional Office visits the Plant on regular basis for inspection, sampling and monitoring of stipulated conditions. Six monthly compliance report with monitored data is being submitted to the Ministry and monthly report to OSPCB.

  
 30/5/2025  
 SANJAYA KUMAR PATNAIK  
 GGM (Environment, TQM, Township Maint.)  
 National Aluminium Company Ltd.  
 M&R Complex, Damanjodi-763008

# **Annexure-I : Stack Monitoring Report (Boilers & Calciners)**





TC-8066

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2393	ULR-TC806625000001114F	Date: 28.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi	
Sample receiving date:	24.03.2025	
Job Description	Boiler Stack inlet Air / Gas analysis (Pass A & B)	

### CHEMICAL TEST REPORT

Date of starting of Test 07.04.2025

Date of completion of Test: 24.04.2025

### STACK IN LET

SL N O	PARAMETERS	Test Method	UNIT 2			UNIT 3			UNIT 4		UNIT 5	
			PASS A	PASS B	PASS C	PASS A	PASS B	PASS C	PASS A	PASS B	PASS A	PASS B
1	SPM (mg/Nm <sup>3</sup> )	IS 11255 P -1	ADL	ADL	ADL	ADL	ADL	ADL	ADL	ADL	ADL	ADL
2	O <sub>2</sub> (%)	Flue Gas Analyser	5.1	5.6	5.2	5.8	5.5	6.2	5.4	5.7	5	5.3
3	CO <sub>2</sub> (%)	Flue Gas Analyser	14.1	14	13.8	13.5	14.2	13.6	14.3	14.5	14	14.7
4	CO (ppm)	Flue Gas Analyser	221	234	229	246	240	232	238	245	240	238
5	VELOCITY (m/s)	IS 11255 P-1	22.72	22.32	19.59	19.17	19.77	20.44	20.72	19.99	20.96	21.55
6	TEMPERATURE °C	IS 11255 P-1	269	239	242	241	246	245	248	224	232	251

ADL— ABOVE DETECTION LIMIT i.e.10000 mg/Nm<sup>3</sup>

Tested by:

  
A. CHATTERJEE

Authorised Signatory

  
P.DUTTA  
(Technical manager)

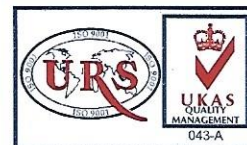
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E-mail : supind2019@gmail.com / supind50@yahoo.co.in  
Website : www.superintendencecoindia.com



[An ISO 9001 : 2015 Certified]



TC-8066

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2393	ULR-TC806625000001114F	Date: 28.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi	
Sample receiving date:	24.03.2025	
Job Description	Boiler Stack Outlet Air / Gas analysis (Pass A & B)	

### CHEMICAL TEST REPORT

Date of starting of Test 07.04.2025

Date of completion of Test: 24.04.2025

## STACK OUT LET

SL NO	PARAMETERS	Test Method	UNIT 2			UNIT 3			UNIT 4		UNIT 5	
			PASS A	PASS B	PASS C	PASS A	PASS B	PASS C	PASS A	PASS B	PASS A	PASS B
1	SPM (mg/Nm <sup>3</sup> )	IS 11255 P -1	40.5	47.6	65.8	84.2	88.5	86.3	93.2	94.8	95.7	96.8
2	O <sub>2</sub> (%)	Flue Gas Analyser	11.3	12.2	12.1	12.3	12	12.1	11.6	11.8	11.4	11.2
3	SO <sub>2</sub> (mg/Nm <sup>3</sup> )	IS 11255 P-II	424	508	586	557	549	546	569	589	532	549
4	NOX (mg/Nm <sup>3</sup> )	IS 11255 P VII	312	360	404	313	349	327	389	322	303	279
5	TEMPERATURE °C	IS 11255 P-1	104	126	136	124	139	132	138	130	146	134
6	CO <sub>2</sub> (%)	Flue Gas Analyser	7.8	7.6	7.9	7.8	8.6	8.3	8.7	8.5	8.7	8.8
7	CO (ppm)	Flue Gas Analyser	8	8	10	18	19	18	10	14	35	32
8	VELOCITY (m/s)	IS 11255 P-1	16.12	17.01	16.46	16.78	15.51	16.93	15.97	15.24	16.71	16.12

Tested by:

Authorised Signatory

A. CHATTERJEE

P.DUTTA  
(Technical manager)

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GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2393		Date: 24.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi	
Sample receiving date:	24.03.2025	
Job Description	Boiler Stack Outlet Air / Gas analysis (Pass A & B)	

### CHEMICAL TEST REPORT

Date of starting of Test 07.04.2025

Date of completion of Test: 24.04.2025

STACK OUT LET												
SL NO	PARAMETERS	Test Method	UNIT 2			UNIT 3			UNIT 4		UNIT 5	
			PASS A	PASS B	PASS C	PASS A	PASS B	PASS C	PASS A	PASS B	PASS A	PASS B
9	CH4 (ppm)	Method of Air Sampling & Analysis 3 <sup>rd</sup> edition 100/101	3.4	3.8	4	4.1	4.2	4.1	4.4	4.5	4.6	4.5
10	Hg (mg/Nm <sup>3</sup> )	Mercury Analyser	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11	EFFICIENCY (%)	By Calculation	99.6	99.7	99.3	98.6	98.3	98.4	98	97.8	97.5	97.6
12	PAH											
i	Phenanthrene (µg/Nm <sup>3</sup> )	Method of Air Sampling & analysis 3 <sup>rd</sup> edition 102 D	0.27	0.28	0.24	0.27	0.25	0.24	0.29	0.26	0.24	0.25
ii	Fluoranthene (µg/Nm <sup>3</sup> )	Method of Air Sampling & analysis 3 <sup>rd</sup> edition 102 D	0.36	0.38	0.35	0.34	0.32	0.33	0.34	0.36	0.35	0.32

ND-Not Detectable , Detection Limit 0.01 mg/Nm<sup>3</sup>

Tested by:

Authorised Signatory

A. CHATTERJEE

P.DUTTA  
(Technical manager)

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E-mail : supind2019@gmail.com / supind50@yahoo.co.in  
Website : www.superintendencecoindia.com

GSTIN : 19AAECS3740C2ZJ



TC-8066

## TEST REPORT

Report No.: N – 2393	ULR-TC806625000001114F	Date: 28.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi	
Sample receiving date:	24.03.2025	
Job Description	Calcinar Stack air / Gas analysis	

### CHEMICAL TEST REPORT

Date of starting of Test 07.04.2025

Date of completion of Test: 24.04.2025

CALCINER						
SL NO	PARAMETERS	Test Method	CALCINER A	CALCINER B	CALCINER C	CALCINER D
1	SPM (mg/Nm <sup>3</sup> )	IS 11255 P -1	42.8	45.4	41.9	43.2
2	O <sub>2</sub> (%)	Flue Gas Analyser	16.3	16.6	16.4	16.8
3	SO <sub>2</sub> (mg/Nm <sup>3</sup> )	IS 11255 P-II	359	336	393	373
4	NOX (mg/Nm <sup>3</sup> )	IS 11255 P VII	490	480	492	485
5	CO <sub>2</sub> (%)	Flue Gas Analyser	3.8	3.7	3.6	3.9
6	CO (ppm)	Flue Gas Analyser	11	10	11	10
7	VELOCITY (m/s)	IS 11255 P-1	13.55	13.93	14	13.29
8	TEMPERATURE °C	IS 11255 P-1	149.5	154.3	158.2	152.9

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA  
(Technical manager)

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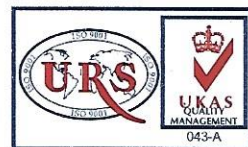


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GSTIN : 19AAECS3740C2ZJ



(An ISO 9001 : 2015 Certified)

## TEST REPORT

Report No.: N – 2393		Date: 24.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi	
Sample receiving date:	24.03.2025	
Job Description	Calcinar Stack air / Gas analysis	

### CHEMICAL TEST REPORT

Date of starting of Test 07.04.2025

Date of completion of Test: 24.04.2025

CALCINER						
SL NO	PARAMETERS	Test Method	CALCINER A	CALCINER B	CALCINER C	CALCINER D
9	VANADIUM (mg/Nm <sup>3</sup> )	ICP OES	ND	ND	ND	ND
10	PAH					
i	Phenanthrene (µg/Nm <sup>3</sup> )	Method of Air Sampling & analysis, 3 <sup>rd</sup> edition 102 D	0.51	0.53	0.49	0.5
ii	Fluoranthene (µg/Nm <sup>3</sup> )	Method of Air Sampling & analysis, 3 <sup>rd</sup> edition 102 D	2.54	2.45	2.49	2.51

ND-Not Detectable , Detection Limit 0.5 mg/Nm<sup>3</sup>

Tested by:

  
A. CHATTERJEE

Authorised Signatory

  
P.DUTTA  
(Technical manager)

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# **Annexure-II : Ambient Air Quality Report**



# SUPERINTENDENCE COMPANY OF INDIA PRIVATE LIMITED

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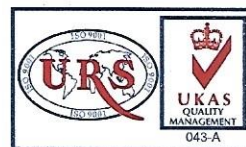
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E-mail : supind2019@gmail.com / supind50@yahoo.co.in

Website : www.superintendencecoindia.com

GSTIN : 19AAECS3740C2ZJ



(An ISO 9001 : 2015 Certified)



## TEST REPORT

Report No.: **TC-8066-2394**

**ULR-TC80662500001115F**

**Date: 28.05.2025**

Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha		
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024	
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damonjodi.		
Sample receiving date:	24.03.2025		
Job Description	Ambient Air Particulate Matters and Ambient Air Toxic Chemicals		

### CHEMICAL TEST REPORT

Date of starting of Test **02.04.2025**

Date of completion of Test: **19.04.2025**

S.N.	Name of tests	Reference	Permissible limit as per: NAAQS-2009	Test Results				
				A1	A2	A3	A4	A5
				Laboratory	CISF	Near Bauxite Handle Area	Alumina Handling Area	Coal Handling Area
				13.03.25	13.03.25	14.03.25	14.03.25	17.03.25
1.	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-24,	60 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	51.2	52.5	55.0	56.2	58.7
2.	PM 10 ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-23,	100 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	89.7	88.8	92.6	94.4	96.4
3.	Suspended Particulate Matters	IS 5182 P-4	---	183.1	182.5	188.3	193.2	194.8
4.	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-2,	80 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	22.2	20.6	16.5	17.3	18.1
5.	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-6,	80 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	32.2	28.5	26.4	25.4	29.1
6.	CO ( $\text{mg}/\text{m}^3$ )	IS: 5182 PART-10,	4 ( $\text{mg}/\text{m}^3$ ) (1 Hour)	1.02	1.13	1.06	0.96	1.14
7.	NH <sub>3</sub> ( $\mu\text{g}/\text{m}^3$ )	SUP/SOP/401	400 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	32.8	33.8	25.7	27.0	23.3
8.	Ozone ( $\mu\text{g}/\text{m}^3$ )	IS 5182 Part 9	100 ( $\mu\text{g}/\text{m}^3$ ) (8 Hours)	42.3	40.0	37.5	39.3	43.2
9.	Fb ( $\mu\text{g}/\text{m}^3$ )	EPA CHAP I.O.3 METHOD I.O.-3,4	1 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	0.034	0.042	0.029	0.036	0.049
10.	Ni ( $\text{ng}/\text{m}^3$ )	EPA CHAP I.O.3 METHOD I.O.-3,4	20 ( $\mu\text{g}/\text{m}^3$ ) (Annual)	<0.5	<0.5	<0.5	<0.5	<0.5
11.	Arsenic ( $\text{ng}/\text{m}^3$ )	EPA CHAP I.O.3 METHOD I.O.-3,4	6 ( $\text{ng}/\text{m}^3$ ) (Annual)	<0.5	<0.5	<0.5	<0.5	<0.5

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA  
(Technical manager)

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Website : www.superintendencecoindia.com



(An ISO 9001 : 2015 Certified)

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2394	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.
Sample receiving date:	24.03.2025
Job Description	Ambient Air Particulate Matters and Ambient Air Toxic Chemicals

### CHEMICAL TEST REPORT

Date of starting of Test 02.04.2025

Date of completion of Test: 19.04.2025

S.N.	Name of tests	Reference	Permissible limit as per: NAAQS-2009	Test Results				
				A1	A2	A3	A4	A5
				Laboratory	CISF	Near Bauxite Handle Area	Alumina Handling Area	Coal Handling Area
				13.03.25	13.03.25	14.03.25	14.03.25	17.03.25
12.	Benzene ( $\mu\text{g}/\text{m}^3$ )	IS 5182 PART-11	5 ( $\mu\text{g}/\text{m}^3$ ) (Annual)	<1.0	<1.0	<1.0	<1.0	<1.0
13.	Benzo Alpha Pyrene ( $\text{ng}/\text{m}^3$ )	IS 5182 PART-12	1 ( $\mu\text{g}/\text{m}^3$ ) (Annual)	<0.5	<0.5	<0.5	<0.5	<0.5
14.	Fume, Mist & Vapour ( $\mu\text{g}/\text{m}^3$ )	Methods of Air Sampling & Analysis, 3 <sup>RD</sup> ED	---	<1.0	<1.0	<1.0	<1.0	<1.0

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA  
(Technical manager)

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TC-8066

## TEST REPORT

Report No.: N – 2394	ULR-TC806625000001115F	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi	
Sample receiving date:	24.03.2025	
Job Description	Ambient Air Particulate Matters and Ambient Air Toxic Chemicals	

### CHEMICAL TEST REPORT

Date of starting of Test 02.04.2025

Date of completion of Test: 19.04.2025

S.N	Name of tests	Reference	Permissible limit as per: NAAQS-2009	Test Results			
				A6	A7	A8	A9
				Nalco Plant Red Mud Pond	Nalco Plant Line Handling Area	Nalco Plant Community Center	Nalco Plant Ash Pond
				19.03.25	17.03.25	15.03.25	18.03.25
1.	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-24,	60 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	50.0	53.7	48.7	40.0
2.	PM 10 ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-23,	100 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	82.6	93.5	78.7	72.3
3.	Suspended Particulate Matters	IS 5182 P-4	---	169.3	189.3	162.6	148.7
4.	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-2,	80 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	11.5	21.4	12.3	10.7
5.	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	IS: 5182 PART-6,	80 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	17.9	30.7	19.5	16.5
6.	CO ( $\text{mg}/\text{m}^3$ )	IS: 5182 PART-10,	4 ( $\text{mg}/\text{m}^3$ ) (1 Hour)	0.74	1.08	0.84	0.71
7.	NH <sub>3</sub> ( $\mu\text{g}/\text{m}^3$ )	SUP/SOP/401	400 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	10.7	30.0	12.3	9.2
8.	Ozone ( $\mu\text{g}/\text{m}^3$ )	IS 5182 Part 9	100 ( $\mu\text{g}/\text{m}^3$ ) (8 Hours)	30.8	41.3	33.8	34.4
9.	Pb ( $\mu\text{g}/\text{m}^3$ )	EPA CHAP I.O.3 METHOD I.O.-3,4	1 ( $\mu\text{g}/\text{m}^3$ ) (24 Hours)	<0.01	0.030	<0.01	<0.01
10.	Ni ( $\text{ng}/\text{m}^3$ )	EPA CHAP I.O.3 METHOD I.O.-3,4	20 ( $\mu\text{g}/\text{m}^3$ ) (Annual)	<0.5	<0.5	<0.5	<0.5
11.	Arsenic ( $\text{ng}/\text{m}^3$ )	EPA CHAP I.O.3 METHOD I.O.-3,4	6 ( $\text{ng}/\text{m}^3$ ) (Annual)	<0.5	<0.5	<0.5	<0.5

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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E-mail : supind2019@gmail.com / supind50@yahoo.co.in

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(An ISO 9001 : 2015 Certified)

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2394	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi
Sample receiving date:	24.03.2025
Job Description	Ambient Air Particulate Matters and Ambient Air Toxic Chemicals

Date of starting of Test 02.04.2025

Date of completion of Test: 19.04.2025

### CHEMICAL TEST REPORT

S.N.	Name of tests	Reference	Permissible limit as per: NAAQS-2009	Test Results			
				A6	A7	A8	A9
				Nalco Plant Red Mud Pond	Nalco Plant Line Handling Area	Nalco Plant Community Center	Nalco Plant Ash Pond
				19.03.25	17.03.25	15.03.25	18.03.25
12.	Benzene ( $\mu\text{g}/\text{m}^3$ )	IS 5182 PART-11	5 ( $\mu\text{g}/\text{m}^3$ ) (Annual)	<1.0	<1.0	<1.0	<1.0
13.	Benzo Alpha Pyrene ( $\text{ng}/\text{m}^3$ )	IS 5182 PART-12	1 ( $\mu\text{g}/\text{m}^3$ ) (Annual)	<0.5	<0.5	<0.5	<0.5
14.	Fume, Mist & Vapour ( $\mu\text{g}/\text{m}^3$ )	Methods of Air Sampling & Analysis, 3 <sup>RD</sup> ED	---	<1.0	<1.0	<1.0	<1.0

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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# **Annexure-III : Ground Water Analysis Report**



LABORATORY :  
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Website : www.superintendencecoindia.com

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

TC-8066  
Report No.: N – 2398 ULR—TC80662500001117F Date: 28.05.2025

Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha		
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024	
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.		
Sample receiving date:	24.03.2025		
Job Description	Effluent & Surface Water		

### CHEMICAL TEST REPORT

Date of starting of Test 24.03.2025

Date of completion of Test: 23.04.2025

SL NO	PARAMETER	TEST METHOD	Discharge limit to Inland Surface water	RESULT			
				SW1 Shakti Lake outlet	SW2 Plant Inlet Water	SW3 Ash Pond	SW4 Red Mud Pond
				Date of Collection	Date of Collection	Date of Collection	Date of Collection
1	pH	IS 3025(P-11)	5.5-9.0	15.03.25 6.9	15.03.25 6.9	19.03.25 6.4	19.03.25 6.9
2	Residual Free chlorine (mg/l)	IS 3025 (P-26)	1.0	<1.0	<1.0	<1.0	<1.0
3	Fluoride (mg/L)	APHA, 24 <sup>th</sup> EDN, 4500 F – D	2.0	<0.1	<0.1	<0.1	<0.1
4	TDS (mg/L)	IS 3025(P-16)		173	21	308	519
5	TSS (mg/L)	IS 3025(P-17)	100	<1.0	<1.0	<1.0	3
6	BOD 3 Days At 27 <sup>o</sup> c (mg/L)	IS 3025(P-44)	30	<3.0	<3.0	<3.0	<3.0
7	COD (mg/L)	APHA 24 <sup>th</sup> EDN 5220 B	250	24.0	8.0	48	16.0
8	Oil And Grease (mg/L)	IS 3025(P-39)	10	0.93	1.35	1.72	0.62
9	Iron As Fe (mg/L)	APHA 24 <sup>th</sup> EDN 3120 B	3.0	0.15	0.20	0.22	0.20
10	Copper As Cu (mg/L)	APHA 24 <sup>th</sup> EDN 3111 B & C	3.0	<0.05	<0.05	<0.05	<0.05
11	Aluminium as Al (mg/L)	APHA 24 <sup>th</sup> EDN 3120 -B	---	<0.05	<0.05	<0.05	<0.05
12	Manganese As Mn (mg/L)	APHA 24 <sup>th</sup> EDN 3111 B	2.0	<0.05	<0.05	<0.05	<0.05
13	Lead as Pb mg/l	APHA 24 <sup>th</sup> EDN 3120 B	0.1	<0.01	<0.01	<0.01	<0.01
14	Cadmium as Cd mg/l	APHA 24 <sup>th</sup> EDN 3111 B & C	2.0	<0.01	<0.01	<0.01	<0.01
15	Arsenic as As mg/l	APHA 24 <sup>th</sup> EDN 3120 B	0.2	<0.05	<0.05	<0.05	<0.05

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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TC-8066

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2398	ULR—TC806625000001117F	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.	
Sample receiving date:	24.03.2025	
Job Description	Effluent & Surface Water	

### CHEMICAL TEST REPORT

Date of starting of Test 24.03.2025

Date of completion of Test: 23.04.2025

SL NO	PARAMETER	TEST METHOD	Permissible Limit as per CPCB	RESULT			
				SW1 Shakti Lake outlet	SW2 Plant Inlet Water	SW3 Ash Pond	SW4 Red Mud Pond
				Date of Collection	Date of Collection	Date of Collection	Date of Collection
				15.03.25	15.03.25	19.03.25	19.03.25
16	Mercury as Hg mg/l	IS 3025 (P-48)MURCURY ANALYSER	0.01	<0.01	<0.01	<0.01	<0.01
17	Nickel as Ni mg/l	APHA 24 <sup>th</sup> EDN 3111 B & C	3.0	<0.05	<0.05	<0.05	<0.05
18	Total Chromium as Cr +6mg/l	APHA 24 <sup>th</sup> EDN 3120 B	0.05	<0.05	<0.05	<0.05	<0.05
19	Cyanide as CN mg/l	APHA 24 <sup>th</sup> EDN 4500 E	0.2	<0.05	<0.05	<0.05	<0.05
20	Phenolic compound as C6H5OH mg/l	APHA 24 <sup>th</sup> EDN 5530 D	1.0	<0.005	<0.005	<0.005	<0.005
21	Sodium as Na (mg/l)	APHA 24 <sup>th</sup> Ed 3500 Na-D	—	340	3.0	594	848
22	Free Ammonia as NH3 mg/l	IS 3025 P-34	5.0	NT	NT	NT	NT
23	Kjeldahl Nitrogen as N mg/l	IS 3025 P-34	100	2.24	1.79	3.36	2.24
24	Ammonia as N mg/l	IS 3025 P-34	5.0	1.40	0.09	0.40	0.37
25	Total Nitrogen (N-total) (mg/l)	IS 3025 (P - 34)	---	4.0	3.0	8.0	7.0
26	Ammonical Nitrogen (mg/l)	IS 3025 (P - 34)	50	<0.02	<0.02	<0.02	<0.02
27	Nitrate Nitrogen as NO <sub>3</sub> mg/l	IS 3025 (P - 34)	10	2.4	2.8	2.9	3.0
28	Dissolved Phosphate ,mg/l	APHA, 24 <sup>th</sup> Edn, 4500 P-D	5.0	<0.02	<0.02	<0.02	<0.02

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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## TEST REPORT

Report No.: N – 2398	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.
Sample receiving date:	24.03.2025
Job Description	Effluent & Surface Water

Date of starting of Test 24.03.2025

### CHEMICAL TEST REPORT

Date of completion of Test: 23.04.2025

SL NO	PARAMETER	TEST METHOD	Permissible Limit as per CPCB	RESULT			
				SW1 Shakti Lake outlet	SW2 Plant Inlet Water	SW3 Ash Pond	SW4 Red Mud Pond
				Date of Collection	Date of Collection	Date of Collection	Date of Collection
29	Total organic Carbon %	IS 2685	---	15.03.25	15.03.25	19.03.25	19.03.25
30	Particle size of Suspended solid	IS 1607	Shall pass 850 micron IS test Sieve	<0.05	<0.05	<0.05	<0.05
31	Sulphide as S mg/l	IS 3025 P-29	2.0	Passed 850 micron	Passed 850 micron	Passed 850 micron	Passed 850 micron
32	Selenium as Se (mg/l)	APHA 24 <sup>th</sup> EDN 3120-B	0.05	NT	NT	NT	NT
33	Vanadium as V (mg/l)	APHA 24 <sup>th</sup> EDN 3120-B	0.2	<0.05	<0.05	<0.05	<0.05
34	Alpha Emitter, micro curie/ml	IS 14194, P-2	10 <sup>-7</sup>	Not Detectable	Not Detectable	Not Detectable	Not Detectable
35	Beta Emitter, micro curie/ml	IS 14194, P-1	10 <sup>-6</sup>	Not Detectable	Not Detectable	Not Detectable	Not Detectable
36	Pio Assay Test	IS 6582	90% survival of Fish After 96 hour in 100 % effluent	98%	98%	98%	98%

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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# SUPERINTENDENCE COMPANY OF INDIA PRIVATE LIMITED

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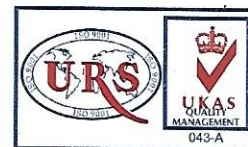
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E-mail : supind2019@gmail.com / supind50@yahoo.co.in

Website : www.superintendencecoindia.com

GSTIN : 19AAECS3740C2ZJ



(An ISO 9001 : 2015 Certified)

## TEST REPORT

Report No.: N – 2398		Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.	
Sample receiving date:	24.03.2025	
Job Description	Effluent & Surface Water	

Date of starting of Test: 24.03.2025

Date of completion of Test: 11.04.2025

### TEST RESULT OF BACTERIOLOGICAL

SL NO	PARAMETER	TEST METHOD	Permissible Limit as per CPCB	RESULT			
				SW1 Shakti Lake outlet	SW2 Plant Inlet Water	SW3 Ash Pond	SW4 Red Mud Pond
				Date of Collection	Date of Collection	Date of Collection	Date of Collection
				15.03.25	15.03.25	19.03.25	19.03.25
1	Fecal Coliform (MPN/100ml)	As per APHA 24 <sup>TH</sup> Edn and Method APHA-9221E	<1000 MPN /100 ML	580	630	840	700

Tested by:

H. Ray

Authorised Signatory

A. Das

Antara Das  
(Technical Manager)

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# **Annexure-IV: STP Water Quality**





# SUPERINTENDENCE COMPANY OF INDIA PRIVATE LIMITED

LABORATORY :

PLOT NO. Y-23, BLOCK-EP, SECTOR-V, SALT LAKE CITY, KOLKATA-700 091  
☎ : (033) 2357-4671 / 4681 / 5039 / 5042 • Fax : (033) 2357- 4806  
E-mail : supind2019@gmail.com / supind50@yahoo.co.in  
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TC-8066

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2396	ULR-TC806625000001116F	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.	
Sample receiving date:	24.03.2025	
Job Description	STP Inlet Water	

### CHEMICAL TEST REPORT

Date of starting of Test 24.03.2025

Date of completion of Test: 23.04.2025

Sl. No.	Name of Parameter	Test Methods	Results	
			STP 3 In-let	STP 4 Inlet
			Date of Collection	
			14.03.2025	
1	pH	IS 3025(P-11)	6.98	6.99
2	Total suspended solids mg/l	IS 3025(P-17)	8.0	6.0
3	Total Dissolve Solids mg/l	IS 3025(P-16)	77	94
4	Oil and Grease mg/l	IS 3025(P-39)	1.84	0.98
5	Bio-Chemical Oxygen Demand 3 days at 27 <sup>o</sup> C mg/l	IS 3025(P-44)	6.8	8.0
6	Chemical Oxygen Demand mg/l	APHA 24th EDN 5220 B	18	28

Tested by:

  
A. CHATTERJEE

Authorised Signatory

  
P.DUTTA  
(Technical manager)

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Website : www.superintendencecoindia.com



TC-8066

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2396	ULR-TC806625000001116F	Date: 28.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.	
Sample receiving date:	24.03.2025	
Job Description	STP Outlet Water	

### CHEMICAL TEST REPORT

Date of starting of Test **24.03.2025**

Date of completion of Test: **23.04.2025**

Sl. No.	Name of Parameter	Test Methods	Discharge limit to Inland Surface water	Results	
				STP 3 Outlet	STP 4 Outlet
				Date of Collection	
				14.03.25	
1	pH	IS 3025(P-11)	5.5-9.0	6.97	6.98
2	Total suspended solids mg/l	IS 3025(P-17)	100	2.0	4.0
3	Total Dissolve Solids mg/l	IS 3025(P-16)	---	75	81
4	Oil and Grease mg/l	IS 3025(P-39)	10	2.42	1.86
5	Bio-Chemical Oxygen Demand 3 days at 27° C mg/l	IS 3025(P-44)	30	<3.0	<3.0
6	Chemical Oxygen Demand mg/l	APHA 24th EDN 5220 B	250	16	24
7	Lead As Pb (mg/l)	APHA 24th EDN 3120 B	0.1	<0.01	<0.01
8	Arsenic As (mg/L)	APHA 24th EDN 3120 B	0.2	<0.05	<0.05
9	Cadmium As Cd, mg/l	APHA 24th EDN 3120 B	2.0	<0.01	<0.01
10	Copper As Cu, mg/l	APHA 24th EDN 3120 B	3.0	<0.05	<0.05
11	Zinc as Zn, mg/l	APHA, 24 <sup>th</sup> Edn, 3120 B	5.0	<0.05	<0.05
12	Ammoniacal Nitrogen, mg/l	IS 3025 (P-34)	50	0.0233	0.167

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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Report No. - 2396

GSTIN : 19AAECS3740C2ZJ  
ULR-TC80662500001116F

Date: 28.05.2025

## TEST REPORT

Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Meaurement of Environmental Parameters, Alumina Refinery, NALCO, Damonjodi.	
Sample receiving date:	24.03.2025	
Job Description	STP Outlet Water	

## CHEMICAL TEST REPORT

Date of starting of Test 24.03.2025

Date of completion of Test: 23.04.2025

Sl. No.	Name of Parameter	Test Methods	Discharge limit to Inland Surface water	Results	
				STP 3 Outlet	STP 4 Outlet
				Date of Collection 14.03.25	
13	Mercury as Hg, mg/l	IS 3025, P-48, Mercury Analyser	0.01	<0.01	<0.01
14	Total Nitrogen ( N-total ) mg/l	IS 3025 (P-34)		4.14	17.23
15	Kjeldahl Nitrogen as N mg/l	IS 3025 (P-34)	100	8.96	10.08
16	Nickel as Ni, mg/l	APHA, 24 <sup>th</sup> Edn, 3120 B	3.0	<0.05	<0.05
17	Cyanide as CN, mg/l	APHA, 24 <sup>th</sup> Edn, 4500 E	0.2	0.001	0.001
18	Manganese as Mn,mg/l	APHA, 24 <sup>th</sup> Edn, 3120 B	2.0	<0.05	<0.05
19	Iron as Fe, mg/l	APHA, 24 <sup>th</sup> Edn, 3120 B	3.0	0.115	0.162
20	Nitrate mg/l	IS 3025 (P-34)	10	3.957	13.143
21	Dissolved Phosphate ,mg/l	APHA, 24 <sup>th</sup> Edn, 4500 P-D	5.0	<0.05	<0.05
22	Sodium as Na, mg/l	APHA, 24 <sup>th</sup> Edn, 3500 Na-B	---	14	22
23	Aluminium as Al+3, mg/l	IS 3025 (P-55)	---	<0.05	<0.05
24	Total Chromium as Cr <sup>+6</sup> , mg/l	APHA, 24 <sup>th</sup> Edn, 3500 B	0.1	<0.05	<0.05
25	Fluoride mg/l	APHA, 24 <sup>th</sup> Edn, 4500 F-D	2.0	0.033	0.815
26	Phenolic Compounds C <sub>6</sub> H <sub>5</sub> OH, mg/l	APHA, 24 <sup>th</sup> Edn, 5530 C	1.0	<0.05	<0.05
27	Total Residual Chlorine mg/l	IS 3025 (P-26)	1.0	<1.0	<1.0

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA(Technical manager)

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GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2396	Date: 23.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Meaurement of Environmental Parameters, Alumina Refinery, NALCO, Damonjodi.
Sample receiving date:	24.03.2025
Job Description	STP Outlet Water

Date of starting of Test **24.03.2025**

Date of completion of Test: **23.04.2025**

### CHEMICAL TEST REPORT

Sl. No.	Name of Paramefer	Test Methods	Discharge limit to Inland Surface water	Results	
				STP 3 Outlet	STP 4 Outlet
				Date of Collection	
				<b>14.03.25</b>	
28	TOC%	IS 2685	---	0.05	0.05
29	Vanadium as V, mg/l	APHA, 24 <sup>th</sup> Edn, 3120 B	0.2	<0.05	<0.05
30	Selenium as Se, mg/l	APHA, 24 <sup>th</sup> Edn, 3120 B	0.05	<0.01	<0.01
31	Sulphide mg/l	IS 3025 P-24	2.0	<2.0	<2.0
32	Free Ammonia, mg/l	IS 3025 (P-34)	5.0	Not Traceable	Not Traceable
33	Radioactive Materials				
I	Alpha Emitter, micro curie/ml	IS 14194	10 <sup>-7</sup>	Not Detectable	Not Detectable
II	Beta Emitter, micro curie/ml	IS 14194	10 <sup>-6</sup>	Not Detectable	Not Detectable
34	Particle size of Suspended solid	IS 1607	Shall pass 850 micron IS test Sieve	Passed 850 micron	passed 850 micron
35	Bioassay test	IS 6582	90% survival of Fish After 96 hour in 100 % effluent	98%	98%

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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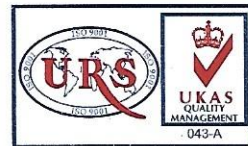


# SUPERINTENDENCE COMPANY OF INDIA PRIVATE LIMITED

## LABORATORY :

PLOT NO. Y-23, BLOCK-EP, SECTOR-V, SALT LAKE CITY, KOLKATA-700 091  
☎ : (033) 2357-4671/ 4681 / 5039 / 5042 • Fax : (033) 2357- 4806  
E-mail : supind2019@gmail.com / supind50@yahoo.co.in  
Website : www.superintendencecoindia.com

GSTIN : 19AAECS3740C2ZJ



(An ISO 9001 : 2015 Certified)

## TEST REPORT

Report No.: N – 2396	Date: 28.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.
Sample receiving date:	24.03.2025
Job Description	STP Outlet Water

Date of starting of Test: 24.03.2025

Date of completion of Test: 11.04.2025

### TEST RESULT OF BACTERIOLOGICAL

Sl. No.	Specific Test Performed	Test Method	Permissible Limits as per CPCB	Test Result	
				STP 3 Outlet	STP 4 Outlet
				Date of Collection 14.03.25	Date of Collection 14.03.25
1	Fecal Coliform (MPN/100ml)	As per APHA 24 <sup>TH</sup> Edn and Method APHA-9221E	<1000 MPN/100 ML	790	630

Tested by:

  
H. Ray

Authorised Signatory

  
Antara Das  
(Technical Manager)

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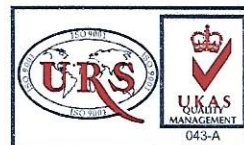




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PLOT NO. Y-23, BLOCK-EP, SECTOR-V, SALT LAKE CITY, KOLKATA-700 091  
☎ : (033) 2357-4671 / 4681 / 5039 / 5042 • Fax : (033) 2357- 4806  
E-mail : supind2019@gmail.com / supind50@yahoo.co.in  
Website : www.superintendencecoindia.com



TC-8066

GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2397	ULR—TC806625000001127F	Date: 29.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Alumina Refinery, M& R Complex, Damanjodi – 763 008, Dist. Koraput, Odisha	
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697	Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.	
Sample receiving date:	24.03.2025	
Job Description	STP Outlet Sludge	

### CHEMICAL TEST REPORT

Date of starting of Test 10.04.2025

Date of completion of Test: 19.04.2025

Sl. No.	Name of Parameter	Unit	Test Methods	Results	
				STP Outlet 3	STP Outlet 4
				SLUDGE	SLUDGE
				Date of Collection 14.03.25	
1	pH	-----	IS 2720 P-26	7.62	7.90
2	ORGANIC CARBON	%	IS 2720 P-22	6.78	4.44
3	AVAILABLE PHOSPHOROUS AS P <sub>2</sub> O <sub>5</sub>	mg/Kg	SUP/SOP/104	242	125
4	ZINC As Zn	mg/Kg	SUP/SOP/125	308	250

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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# SUPERINTENDENCE COMPANY OF INDIA PRIVATE LIMITED

LABORATORY :

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☎ : (033) 2357-4671/ 4681 / 5039 / 5042 • Fax : (033) 2357- 4806  
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GSTIN : 19AAECS3740C2ZJ

## TEST REPORT

Report No.: N – 2397	Date: 29.05.2025
Name and Address of Customer:	<b>NATIONAL ALUMINIUM COMPANY LIMITED</b> Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.
Sample receiving date:	24.03.2025
Job Description	STP Outlet Sludge

Date of starting of Test **10.04.2025**

Date of completion of Test: **19.04.2025**

### CHEMICAL TEST REPORT

Sl. No.	Name of Parameter	Unit	Test Methods	Results	
				STP Outlet 3 SLUDGE	STP Outlet 4 SLUDGE
				Date of Collection	
				<b>14.03.25</b>	
1	ARSENIC as As	mg/Kg	ICP OES	14	10
2	CHROMIUM As Cr	mg/Kg	ICP OES	92	62
3	MERCURY As Hg	mg/Kg	ICP OES	4.9	3.4
4	SODIUM ABSORPTION RATIO (SAR)	-----	By Calculation	0.49	0.11

Tested by:

A. CHATTERJEE

Authorised Signatory

P.DUTTA (Technical manager)

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## TEST REPORT

Report No.: N – 2395	Date: 28.05.2025
Name and Address of Customer:	NATIONAL ALUMINIUM COMPANY LIMITED Alumina Refinery, M & R Complex, Damanjodi – 763 008, Dist. Koraput, Odisha
Ref. no. and Date:	T&C/AR/03/eGR-2725/W-2697 Dated : 09.10.2024
Name of the Work:	Measurement of Environmental Parameters, Alumina Refinery, NALCO, Damanjodi.
Sample receiving date:	24.03.2025
Job Description	Medical Waste Water

### CHEMICAL TEST REPORT

Date of starting of Test 24.03.2025

Date of completion of Test: 23.04.2025

SL NO	PARAMETER	Unit	TEST METHOD	Result
				Date of Collection: 14.03.25
1	P <sup>H</sup> at 28°C	---	IS 3025 (P-11)	7.0
2	TSS	mg/l	IS 3025 (P-17)	15.0
3	Oil And Grease	mg/l	IS 3025 (P-39)	4.0
4	BOD 3 days at 27°C	mg/l	IS 3025 (P-44)	8.0
5	Chemical Oxygen Demand	mg/l	APNA 24 Ed.5220B	16
6	TOC	%	IS 2685	0.01
7	T. Chromium	mg/l	APHA 24 <sup>TH</sup> Ed. 3500 B	< 0.05
8	Hexavalent Chromium	mg/l	APHA 24 <sup>TH</sup> Ed. 3500 B	< 0.05
9	Phenol as C <sub>6</sub> H <sub>5</sub> OH	mg/l	APHA 24 <sup>TH</sup> Ed. 5530 C	0.001
10	Arsenic as As	mg/l	APHA 23 <sup>RD</sup> Ed. 3120 B	< 0.01
11	Cyanide as CN	mg/l	APHA 24 <sup>TH</sup> Ed. 4500 CN E	0.002
12	Lead as Pb		APHA 23 <sup>RD</sup> Ed. 3120 B	< 0.01
13	Cadmium as Cd	mg/l	APHA 24 <sup>TH</sup> Ed. 3111 B & C	< 0.01
14	Aluminium as Al+3	mg/l	APHA 24 <sup>TH</sup> Ed. 3500 Al B	< 0.05
15	Bio Assay	---	IS 6582	98%

Tested by:

A. CHATTERJEE

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P.DUTTA  
(Technical manager)

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