



NATIONAL ALUMINIUM COMPANY LIMITED
(A GOVT. OF INDIA ENTERPRISE)
SMELTER PLANT, NALCONAGAR- 759 145, ANGUL
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SAN / GGM(S) / 566 /2025

Dt. 16 -05.2025

To

The Chief Conservator of Forest (Central)
Ministry of Environment & Forests & Climate Change
Govt. of India Eastern Regional Office
A/3, Chandrasekharapur,
Bhubaneswar-751023

(By e-mail to roez.bsr-mef@nic.in; mef.or@nic.in; monitoring-ec@nic.in)

Sub: Half Yearly report of compliance on Environmental Clearance condition for Smelter Plant, NALCO, Angul (For the period October 2024 to March 2025).

Ref: EC No. J-11011/20/2004-IA.II(I) dated 22.06.2004

Sir,

Please find enclosed herewith the Half-yearly compliance report on Environmental Clearance Conditions of Smelter Plant, NALCO, Angul, Odisha for the period **October 2024 to March 2025**.

Thanking you,

Yours Sincerely,

Group General Manager
Smelter Plant, NALCO

Encl: As stated सचीदानन्द जेना/S.N. Jena
समुह महाप्रबंधक (प्रदायक)/GGM(Smelter)

Copy to: (Through E-mail) प्रदायक संयंत्र/Smelter Plant
नाल्को, अंगुल/Nalco Angul

- Director (Impact Assessment),
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} For kind information

**Half Yearly Report of Compliance on Environmental Clearance condition
for Smelter Plant, NALCO, Angul for the period October 2024 to March 2025.**

Ref: EC No. J-11011/20/2004-IA.II(I), dated. 22.06.2004

Sl. No.	Condition Type	Condition Details	Self Compliance
1.	Air quality monitoring and preservation	A. (i) The gaseous emissions from various process units should conform to the standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry, its size and location. At no time the emission level should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency. Ambient air quality monitoring stations should be set up in consultation with the Odisha Pollution Control Board. Data should be regularly monitored and records maintained and report submitted to the Ministry/CPCB/SPCB once in six months.	<p>(a) Norm has been prescribed for emission of particulate matter and Fluoride from Pot room and Bake Oven. All the norms for different pollutants are being achieved and appropriate steps are being taken for maintaining these emission levels. For the period October 2024 to March 2025 the report of emission of particulate matter is given at Annexure- III and emission of Fluoride is given at Annexure-IV.</p> <p>(b) 7 Nos. of ambient air quality monitoring stations (3 Nos. of stations of CPP which are within 3 Km of Smelter + 4 Nos. of stations of Smelter Plant) exist. The location of the monitoring stations have been finalized jointly with Odisha State Pollution Control Board.</p> <p>(c) Four online ambient air quality monitoring station around Smelter Plant have been commissioned & operational. The data from the monitoring stations are uploaded in the OSPCB and CPCB servers continuously. The Ambient Air Quality Monitoring Report (Online data) for the period October 2024 to March 2025 is given at Annexure-V.</p>
2.	Water quality monitoring and preservation	A.(ii) There should be no discharge of process effluent. As reflected in the EIA/ EMP report, the proposed Smelter Plant shall be designed for zero discharge. In addition, effort should be made to re-use waste water from the existing plant. Waste water from the domestic effluent after treatment in Sewage Treatment Plant should conform to the prescribed standards. The treated effluent should be used for green belt development.	Smelter plant does not have any process effluent. However, surface water is generated due to blowdown, leakage, floor washings etc. and collected in Holding pools and further treated through Ion Exchange Defluoridation Plant and Emrion Nano Defluoridation Plant. Zero discharge during non-monsoon has been achieved since 15.12.2009. Treated water from Plant STP is collected in holding pool and subsequently treated in ETPs.

			<p>Treated effluent is being used for green belt development, cooling tower make up, fire fighting, vehicle washing, civil construction etc.</p> <p>The waste water analysis reports (Outlet of Plant STP and Outlet of Defluoridation Plant) for the period October 2024 to March 2025 are given at Annexure-VI.</p>
3.	Air quality monitoring and preservation	<p>A. (iii) In plant control measures for checking fugitive emissions from spillage/raw material handling should be provided. Fluoride emissions should be monitored from the existing pot room, proposed pot room and in the forage around the Smelter complex and the data submitted regularly to the Ministry/ RO Bhubaneswar and SPCB. Further, dry scrubbing system to control the emissions from the pot lines should be provided. The fluoride emissions shall not exceed 0.8Kg/t of aluminum produced. Further, the emissions through the Fume Treatment Plant Should not exceed 0.30Kg/t of aluminium produced. Fugitive fluoride emission from the pot rooms should be monitored and report submitted regularly to Ministry /RO, Bhubaneswar and SPCB. The particulate emissions from the Bake Oven Plant Should not exceed 50mg/Nm³.</p>	<p>Steps are being taken to minimize fugitive emission from various sources. De-dusting systems have been installed at each material transfer points. Monitoring of Fugitive emission from Pot rooms of existing plant and forage monitoring around Smelter Plant are being carried out regularly. Monthly report of the same has been submitted to OSPCB. The total fluoride emission, FTP stack emission, Bake Oven stack emission and fugitive fluoride emission from Pot Rooms reports for the period October 2024 to March 2025 are given at Annexure – IV.</p> <p>Level of fluoride is being monitored in grass samples in 6 nos. of surrounding villages i.e. Bonda, Tulsipal, Lenguliabeda, Banarpal, Turang & Balramprasad, covering all directions every month and found OK. Forage Fluoride Monitoring (grass samples) reports for the period October 2024 to March 2025 are given at Annexure-VII.</p>
4.	Air quality monitoring and preservation	<p>A.(iv) The Poly-aromatic Hydrocarbons from the carbon plant (anode bake oven) should not exceed 2mg/Nm³. The data on PAH should be monitored quarterly and report submitted to the Ministry/ RO, Bhubaneswar and SPCB.</p>	<p>The Poly-aromatic Hydrocarbons (PAH) from Bake Oven-I & II are being monitored on quarterly basis and the monitoring results are well within norm. The PAH emission report from Bake Oven stack-1 & 2 for the period October 2024 to March 2025 is given at Annexure-IX.</p>
5.	Waste management	<p>A.(v) The spent pot lining generated from the Smelter should be properly treated by setting up of spent pot lining treatment plant to remove fluoride and cyanide and disposed off in a secured landfill site. The location of a land fill site should be approved by the Odisha State Pollution Control Board. The ground water quality around the land</p>	<p>The spent pot-lining material generated during de-lining of pots is stored in concrete sheds after segregation of carbon portion from refractory portion separately. The carbon portion of SPL is disposed to M/s Green Energy Resources Ltd., Sambalpur and M/s Regrow Tanso Pvt. Ltd., Jharsuguda (Agencies</p>

		fill site should be monitored and data submitted to the Ministry/SPCB	authorized by CPCB & OSPCB) for detoxification and energy recovery. Nalco has also constructed a double layer secured engineered landfill for storage of SPL as per direction of OSPCB which was full during operation from 2011 to 2017. The surrounding site of Captive Landfill upto a radius of 5 KM (total eleven locations) is monitored on quarterly basis for any contamination by engaging a third party empaneled in the list of OSPCB. The Ground Water & Surface Water Analysis Report around Captive Landfill for the period October 2024 to March 2025 is given at Annexure-XI .
6.	Greenbelt	A. (vi) A green belt of adequate width and density should be developed within and around the plant premises as per the CPCB guidelines	Plantation during October 2024 to March 2025 is 1320 nos. Cumulative 17,72,895 nos. of trees have been planted till date with survival rate of 69.1%. In Smelter and Township, as prescribed, plantation density of 1000 trees per acre is being maintained.
7.	Human health environment	A. (vii) Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act	During October 2024 to March 2025 , Total 2878 workers (regular employees: 1084 & contractual workers: 1794) were undergone Periodical Medical Examination (PME).
8.	Water quality monitoring and preservation	A.(viii) Company should undertake rain water-harvesting measures to re-charge the ground water and action plan in this regard should be submitted to the Ministry.	NALCO does recognize the importance of rain water harvesting and water conservation in national perspective. There are three numbers of holding pools of total capacity 1,89,000 Cum, which store surface runoffs and subsequently the stored water is treated in Defluoridation plants & are used as makeup water in cooling tower & horticulture. However, ground water recharging within the smelter plant area is not technically feasible due to design restriction in operation of pots.
9.	Statutory compliance	A.(ix) M/s NALCO should comply with the conditions stipulated by the Forest and Environment Department, Govt. of Odisha vide their letter No. 7695 /F&E dated 28th May 2004 regarding preparation of Regional Environmental Management Plan for Angul –Talcher area by earmarking separate funds and progress made in this regard should be intimated to this Ministry.	Complied. Progress report is enclosed at Annexure-II .

10.	Corporate environmental responsibility	A. (x) All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Aluminium Sector should be strictly implemented.	The status of compliance of CREP requirements is given at Annexure-I .
11.	Statutory compliance	B. (i) The project authorities must strictly adhere to the stipulations made by the Odisha Pollution Control Board and the state Government.	All the conditions of SPCB & State Govt. are being complied.
12.	Statutory compliance	B. (ii) No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment And Forests.	Noted
13.	Air quality monitoring and preservation	B. (iii) Adequate ambient air quality – monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO ₂ , NO _x are anticipated in consultation with the State Pollution Control Board. Data on ambient air quality, fugitive emission and stack emissions should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the State Pollution Control Board/Central Pollution Control Board once in six months.	<p>7 nos. of ambient air quality monitoring stations (3 nos. of stations of CPP which are within 3 Km of Smelter + 4 nos. of stations of Smelter Plant) exist. The location of the monitoring stations have been finalized in joint consultation with Odisha State Pollution Control Board and all the mentioned factors have been taken into consideration while locating the stations.</p> <p>Four online ambient air quality monitoring station around Smelter Plant have been commissioned & operational. The data from the monitoring stations are uploaded in the OSPCB and CPCB servers continuously. The Ambient Air Quality Monitoring Report (Online data) for the period October 2024 to March 2025 is given at Annexure-V.</p> <p>The results of fugitive emission & stack emission for the period October 2024 to March 2025 are given at Annexure III & IV.</p>
14.	Water quality monitoring and preservation	B. (iv) Industrial waste water should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) Dated 19 May 1993 and 31st December, 1993 or as amended from time to time. The treated waste water should be utilized for plantation purpose.	<p>The industrial waste (surface) water is properly collected & treated so as to meet the prescribed norms. The waste water analysis reports (Outlet of Plant STP and Outlet of Defluoridation Plant) for the period October 2024 to March 2025 are given at Annexure-VI.</p> <p>A recycling sump of 2 x 480 m³ capacity for recycling of the treated surface water has already been constructed. Recycled water is being</p>

			<p>used for horticulture, anode cooling and vehicle washing purpose.</p> <p>Smelter Plant has installed Emrion NANO technology based ETP system for treatment of surface water of holding pools which is being used currently to cater the cooling water requirement of Smelter. Installation & Commissioning was completed on 28.02.2017 and the Plant is running since 25.03.2017.</p>
15.	Noise monitoring & prevention	<p>B. (v) The overall noise level in and around the plant area should 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 level should conform to the standards prescribed under EPA Rules, 1989, viz. 75 dBA (daytime) and 70 dBA (nighttime).</p>	<p>The ambient noise level is measured at four locations around Smelter Plant i.e. (i)CISF Barrack, Smelter Plant, (ii)Pump House, S&P Township, (iii)CISF Barrack, CPP and (iv)Rolling Plant. The noise level is within the permissible norms. The Ambient Noise Monitoring report for the period October 2024 to March 2025 is given at Annexure-VIII.</p>
16.	Waste management	<p>B. (vi) M/s NALCO should comply with the Hazardous Waste (Management & Handling)Rule, 2003 and Hazardous Chemical Rules/Manufacture Storage and Import of Hazardous Chemicals Rules,2000 and amendments there under.</p>	<p>NALCO Smelter has received authorization for management and handling of hazardous & other wastes which is valid upto 31st March 2024 and is complying all the conditions therein.</p> <p>The requirements of Hazardous Chemical Rules/Manufacture Storage and Import of Hazardous Chemicals Rules' 2000 and amendments are complied.</p>
17.	Corporate environmental responsibility	<p>B. (vii) The project proponent shall also comply with all the environmental protection measures and safe guards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc</p>	<p>The recommendations of EIA/EMP report are being implemented. A substantial amount is being spent for peripheral development activities in surrounding villages in provision of roads, tube wells, school buildings, health care, distribution of seedlings, relief work, drinking & piped water supply, community buildings, animal health camps, community plantation, sanitation & cleaning of villages etc. including other CSR Activities. Besides, Financial assistance is provided to Dist. Admn. for Independence day celebration, promotion of art and culture, District Mahotsav, Best Matriculate awards, Financial Assistance for block level science exhibition, Red Cross Blood Bank, Physically Challenged camps, Relief measures for fire</p>

			victims/calamities etc. Total expenditure towards peripheral development around S&P Complex for the period October 2024 to March 2025 is Rs 1101.19 lakh . Details are given in Annexure-X .
18.	Statutory compliance	B.(viii) The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Complied.
19.	Statutory compliance	B. (ix) The Regional Office of the Ministry of Bhubaneswar/Central Pollution Control Board /State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation should be submitted to them regularly.	Monitoring data is being sent to OSPCB every month. The monitoring data along with status of compliance of conditions of environmental clearance is being sent to Regional Office, MoEF every six months.
20.	Statutory compliance	B. (x) The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board /Committee and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter, at least in two local news papers 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 should be forwarded to the Regional Office	Complied.
21.	Statutory compliance	B. (xi) The Project Authorities should 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.	Complied.

COMPLIANCE STATUS OF CREP				
Sl. No.	Issues	Action Points	Targets	Status
1	Technology	Allowing new Potlines only with Pre-baked Technology	Environmental clearance for new potlines to be given by MoEF, after June 2003, only with pre-baked technology.	Not applicable
2	Fluoride Emissions	Prescribing maximum size of the plant	Maximum size of the plant shall be decided based on the assimilative capacity of each plant location	Not applicable
		Revision of fluoride emission standards	For Soderberg Technology 2.8 kg/T by December 2005 [1.0 kg/T (VSS) & 1.30 kg/t (HSS) by December 2010]*	Not applicable
			For Pre-baked Technology 0.8 kg/T	Complied (Fluoride Emission Reports are given in Annexure-IV)
		Phasing out Wet Scrubbing System for fluoride	By December 2006	Not applicable
		Allowing new Potlines only with Dry Scrubbing System	Environmental clearance for new Potlines shall be given by MoEF, after June 2003, only with Dry Scrubbing System	--
		Monitoring of fugitive emissions from pot rooms	To start with Indal or any other better method & submit data from January 2004, regularly to SPCBs & CPCB	Data is being submitted to MoEF and OSPCB from October 2004.
3	Fluoride Consumption	Fluoride consumption per tonne of aluminium Produced (as F)	[For Soderberg Technology 15 kg/T by December 2005	Not applicable
			For Pre-baked Technology 10 kg/T by December 2005]*	For the period October 2024 to March 2025 , Specific Consumption of Fluoride (as F) is 15.024 kg/T. (Technically not feasible to achieve 10 kg/T standard with the present AP-18 Technology and available raw materials used.)

COMPLIANCE STATUS OF CREP				
Sl. No.	Issues	Action Points	Targets	Status
4	Ambient Fluoride	<p>Forage fluoride standards</p> <p>Measurement of forage fluoride</p>	<ul style="list-style-type: none"> • Twelve consecutive months average - 40 ppm • Two consecutive months Average - 60 ppm • One month - 80 ppm <p>To start monitoring and submit data from January 2004, regularly to SPCBs & CPCB. The locations of monitoring may be selected in collaboration with SPCBs & CPCB</p>	The monitoring of forage fluoride is being done for grass samples in surrounding villages and the results are within norms. The Forage fluoride monitoring reports are given at Annexure-VII.
5	Spent Pot Lining (SPL)	Setting up a centralized SPL treatment & disposal facility with aluminium fluoride recovery and utilization of SPL in steel / cement industries	[Proposal to be prepared]	Not applicable to Smelter.
		Limit for pot life (for new pots installed after December 31, 2003)	[2500 days (average)]	Average failed pot life of NALCO smelter for the period October 2024 to March 2025 is 3674.41 days.
		SPL (Carbon & Refractory) to be disposed in Secured Landfill.	With immediate effect	Complied
6	Red Mud	<p>Phasing out Wet disposal</p> <p>Red Mud Utilisation</p>	To achieve minimum 50% solids in red mud by Dec 2005 A proposal for practical utilisation to be prepared by Aluminium Association of India within six months	Not applicable
7	Anode Baking Oven	Achieving particulate matter limit of 50 mg/Nm ³	By Dec. 2005	Complied.

**ACTION PLAN FOR ENVIRONMENT MANAGEMENT OF ANGUL- TALCHER-MERAMUNDULI AREA
(AS SUGGESTED BY REMP STUDY PREPARED BY INDIAN SCHOOL OF MINES)**

Sl. No.	Suggested action plan	Implementing agency	Status
01	Increase in process efficiency and improvement in the performance of control devices for Fluoride emission (gaseous and particulate) control	NALCO smelter	Advanced fume treatment plants utilizing the latest dry scrubbing technology having more than 99.7% efficiency with online monitoring system have been installed in Potlines to control fluoride emission. There are eight such fume treatment plants in Potlines. Besides there are two such plants in Bake Oven-1 and 2 respectively.
02	Zero discharge of effluent by smelter unit of NALCO	NALCO smelter	NALCO smelter has established zero discharge system during non monsoon period since December 2009.
03	Adequate treatment of township effluent before it is used on land	NALCO Smelter	An STP of 5 MLD capacity is in operation to treat the sewage generated in the township.
04	Provision of community level Defluoridation Plant in the Fluoride affected villages.	NALCO smelter in association with District Administration	NALCO is supplying treated drinking water to 25 villages around smelter.
05	Upgradation of dust collection systems	All industrial units	Bag filters of capacity 82000 m3/hr, 62000 m3/hr and 12,000 m3/hr have been installed at anode butt crushing System of Rodding Shop- 1. New bag filters at GAP down stream are being installed.
07	Development of adequate green belts around industries.	Industries	Plantation during October 2024 to March 2025 is 1320 nos. Cumulative 17,72,895 nos. of trees have been planted till date with survival rate of 69.1%. In Smelter and Township, as prescribed, plantation density of 1000 trees per acre is being maintained.
08	Effective equipments maintenance should be done on regular basis to improve noise situation	All industrial units	Complied.
09	Develop thickly vegetated premises in industries and important road crossings	All industrial units and local administration	Plantation during October 2024 to March 2025 is 1320 nos. Cumulative 17,72,895 nos. of trees have been planted till date with survival rate of 69.1%. In Smelter and Township, as prescribed, plantation density of 1000 trees per acre is being maintained.
10	Containment of fugitive emission	All industrial units	NALCO has adopted complete hooding of pots along with maintaining negative pressure inside it as a part of controlling measures to fugitive emission. Besides, all materials transfer points are completely enclosed and are connected to de-dusting systems to prevent fugitive emission.

ANNEXURE-III

Particulate Matter Emission From Bake Oven Stack (All units are in mg/Nm³)								
LOCATION	Norm	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Average
Bake Oven-I	50mg/NM ³	33.745	12.475	11.89	20.575	27.825	17.93	20.74
Bake Oven-II	50mg/NM ³	15.71	9.53	21.36	23.19	17.195	24.36	18.55
Particulate Matter Emission From Potline FTP Stacks (All units are in mg/Nm³)								
LOCATION	Norm	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Average
FTP-1	100mg/NM ³	30.545	20.835	12.17	12.805	19.845	12.99	18.198
FTP-2	100mg/NM ³	17.425	14.57	11.225	13.505	13.75	16.87	14.558
FTP-3	100mg/NM ³	22.8	12.76	16.235	17.57	15.655	17.52	17.090
FTP-4	100mg/NM ³	21.375	13.955	15.19	13.965	14.325	22.195	16.834
FTP-5	100mg/NM ³	46.72	11.765	15.715	21.295	19.715	24.115	23.221
FTP-6	100mg/NM ³	48.29	17.435	14.39	22.385	15.25	21.555	23.218
FTP-7	100mg/NM ³	45.385	11.205	16.945	13.415	14.035	20.76	20.291
FTP-8	100mg/NM ³	40.46	26.86	16.095	16.425	21.39	21.47	23.783

ANNEXURE- IV

Fluoride Emission From Stacks (All units are in Kg/T of Aluminium Produce)								
LOCATION	Norm	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Average
A) POTLINE								
Fluoride Emission from FTP 1 to 8 Stacks	0.3 kg/T of Al	0.155	0.16	0.133	0.123	0.121	0.106	0.133
Fugitive Emission of Fluoride from each Potroom.	0.4Kg/T of Al	0.283	0.228	0.27	0.347	0.263	0.251	0.273
B) BAKE OVEN								
Fluoride emission from FTC Stacks 1 & II of Bake Ovens	0.1 Kg/T of Al	0.016	0.006	0.009	0.007	0.009	0.008	0.0091
C) Total Fluoride Emission.	0.8 Kg/T of Al	0.454	0.394	0.412	0.477	0.393	0.365	0.415

Ambient Air Quality Monitoring Report (Online data)

Norm (24Hrs. average):

PM10: 100 ($\mu\text{g}/\text{m}^3$), PM2.5: 60 ($\mu\text{g}/\text{m}^3$), CO: 04 (mg/m^3), SO₂: 80 ($\mu\text{g}/\text{m}^3$), NO_x: 80 ($\mu\text{g}/\text{m}^3$)

Ambient Air Quality Monitoring Report for CAAQMS-1(Nalconagar Township)

MONTH	PM10 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)
Oct-24	60.21	25.61	0.314	12.71	22.56
Nov-24	89.24	37.56	0.661	13.78	24.62
Dec-24	45.21	27.35	0.709	15.78	26.17
Jan-25	48.24	23.47	0.891	12.17	22.17
Feb-25	64.45	26.49	0.557	8.553	21.79
Mar-25	66.32	21.74	0.574	15.01	22.69

Ambient Air Quality Monitoring Report for CAAQMS-2 (Defluoridation Plant)

MONTH	PM10 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)
Oct-24	73.65	46.32	0.952	26.32	47.46
Nov-24	67.34	24.1	0.982	36.8	40.43
Dec-24	65.39	26.71	0.847	25.48	45.27
Jan-25	65.28	29.34	0.972	27.51	47.51
Feb-25	47.74	28.27	0.981	26.21	40.27
Mar-25	42.59	31.12	0.769	24.19	37.46

Ambient Air Quality Monitoring Report for CAAQMS-3 (Rolling Plant)

MONTH	PM10 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)
Oct-24	58.54	27.22	1.355	23.28	41.92
Nov-24	50.98	23.36	1.367	18.79	11.04
Dec-24	60.18	26.93	1.028	17.64	27.64
Jan-25	59.84	21.64	1.336	11.05	51.21
Feb-25	51.74	26.23	1.015	16.84	42.64
Mar-25	59.47	23.64	1.331	14.81	32.41

Ambient Air Quality Monitoring Report for CAAQMS-4 (CISF Colony)

MONTH	PM10 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)
Oct-24	61.78	32.5	1.462	33.1	34.84
Nov-24	64.84	35.91	2.401	16.48	32.79
Dec-24	60.28	37.12	1.284	17.64	34.94
Jan-25	61.64	32.84	1.247	18.14	40.24
Feb-25	59.32	34.68	1.479	16.34	38.17
Mar-25	60.15	34.67	1.864	17.63	40.47

ANNEXURE-VI

Waste Water Analysis Report (Plant STP Outlet)

Parameters	Unit	Norm	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Average
pH		6.5 to 9.0	7.10	6.50	6.50	6.70	7.00	7.20	6.83
TSS	mg/l	<100	9.00	2.00	2.00	5.00	2.00	2.00	3.67
BOD 3days at 27 deg.C	mg/l	<30	9.00	4.00	8.00	4.00	3.00	3.00	5.17
Fecal Coliform	MPN/100ml	<1000	92.00	81.00	90.00	84.00	88.00	86.00	86.83

Defluoridation Plant Outlet Report

Parameters	Unit	Norm	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Average
pH		6.5 to 9.0	7	6.9	6.5	6.7	6.6	7	6.78
Total Suspended Solid	mg/l	100	8	2	4	2	2	1	3.17
Total Dissolved Solids	mg/l	2100	108	149	148	63	112	110	115
Fluoride	mg/l	2	0.28	0.41	0.44	0.27	0.58	0.45	0.41
Oil & grease	mg/l	10	ND	ND	ND	ND	ND	ND	ND
BOD 3days at 27°C	mg/l	30	3	3	6	4	5	2	3.83
COD	mg/l	250	12	14	10	6	8	9	9.83
Chromium Hexavalent	mg/l	0.1	ND	ND	ND	ND	ND	ND	ND
Cyanide	mg/l	0.2	ND	ND	ND	ND	ND	ND	ND
Free Ammonia	mg/l	5	ND	ND	ND	ND	ND	ND	ND
Total Nitrogen	mg/l	100	0.85	0.76	0.89	ND	ND	ND	0.83
Total Chromium	mg/l	2	ND	ND	ND	ND	ND	ND	ND

N.B.: ND- Not Detected

ANNEXURE-VII

Forage Fluoride Monitoring (Grass Samples) Reports (All values are in ppm)							
Norm: Single month-80 ppm, Average of 2 consecutive months: 60 ppm, Average Annual: 40 ppm							
Sl. No.	Location / villages	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25
1.	Bonda	39.50	39.20	39.50	39.70	38.00	39.50
2.	Tulsipal	39.00	38.00	38.70	39.50	39.20	39.00
3.	Languliabeda	38.50	37.50	39.90	38.90	39.80	38.50
4.	Banarpal	39.10	39.40	39.20	39.40	39.00	39.10
5.	Turang	38.40	39.70	38.60	38.00	37.50	38.40
6.	Balramprasad	38.00	39.10	38.80	38.70	38.60	38.00

ANNEXURE-VIII

Ambient Noise Monitoring Report								
Month	Smelter CISF Barrack		Township Pump House		CPP CISF Barrack		Rolling Plant	
	Day Time (Norm-75 dBA)	Night Time (Norm-70 dBA)	Day Time (Norm-75 dBA)	Night Time (Norm-70 dBA)	Day Time (Norm-75 dBA)	Night Time (Norm-70 dBA)	Day Time (Norm-75 dBA)	Night Time (Norm-70 dBA)
Oct-24	42.00	40.80	41.80	40.50	41.60	40.40	41.80	40.60
Nov-24	42.20	41.00	41.90	40.70	41.80	40.50	42.00	40.80
Dec-24	42.00	41.80	41.70	40.60	41.50	40.30	41.80	40.60
Jan-25	41.80	41.60	41.40	40.30	41.90	40.50	41.60	40.60
Feb-25	41.60	41.40	40.80	40.50	41.30	40.70	41.70	40.60
Mar-25	42.00	41.20	41.20	40.70	41.60	40.90	41.80	40.70

PAH Emission Report from Bake Oven Stack-I (Quarterly)All units are in -microgram/Nm³, (Norm - 2 mg/ Nm³)

Date of Sampling:		30.10.2024	25.01.2025
Date of Report:		26.11.2024	24.02.2025
Sl No.	Parameters	Bake oven - I	Bake oven - I
1	Acenaphthene	<0.2	<0.2
2	Acenaphthylene	<0.2	<0.2
3	Anthracene	<0.2	<0.2
4	Benzo(a) Anthracene	<0.2	<0.2
5	Benzo(a) Pyrene	<0.2	<0.2
6	Benzo(b) fluoranthene	<0.2	<0.2
7	Benzo(k) fluoranthene	<0.2	<0.2
8	Chrysene	<0.2	<0.2
9	Dibenz (A, H) Anthracene	<0.2	<0.2
10	Fluoranthene	<0.2	<0.2
11	Fluorene	<0.2	<0.2
12	Indeno(1,2,3-C,D) Pyrene	<0.2	<0.2
13	Napthalene	<0.2	<0.2
14	Phenanthrene	<0.2	<0.2
15	Pyrene	<0.2	<0.2

PAH Emission Report from Bake Oven Stack-II (Quarterly)All units are in -microgram/Nm³, (Norm - 2 mg/ Nm³)

Date of Sampling:		30.10.2024	25.01.2025
Date of Report:		26.11.2024	24.02.2025
Sl No.	Parameters	Bake oven - II	Bake oven - II
1	Acenaphthene	<0.2	<0.2
2	Acenaphthylene	<0.2	<0.2
3	Anthracene	<0.2	<0.2
4	Benzo(a) Anthracene	<0.2	<0.2
5	Benzo(a) Pyrene	<0.2	<0.2
6	Benzo(b) fluoranthene	<0.2	<0.2
7	Benzo(k) fluoranthene	<0.2	<0.2
8	Chrysene	<0.2	<0.2
9	Dibenz (A, H) Anthracene	<0.2	<0.2
10	Fluoranthene	<0.2	<0.2
11	Fluorene	<0.2	<0.2
12	Indeno(1,2,3-C,D) Pyrene	<0.2	<0.2
13	Napthalene	<0.2	<0.2
14	Phenanthrene	<0.2	<0.2
15	Pyrene	<0.2	<0.2

Peripheral Development Expenditure details (From October 2024 to March 2025)

CSR EXPENDITURE AT S&P COMPLEX, ANGUL (From October 2024 to March 2025)		
Sl. No.	Task (s) completed	Expenditure incurred during October 2024 to March 2025 (Rs.in lakh)
Promoting Preventive Health Care and Sanitation and Making Available Safe Drinking Water (Item (i) of Schedule VII)		
1	Operation of 3 Nos Mobile Health Unit (MHU) at peripheral villages of S&P Complex & Coal Mines Division	25.61
2	Operation of Specialist OPD centre at S&P Complex, Angul	22.61
Promotion of Education and Enhancing Vocational Skill (item-(ii) of Schedule VII)		
1	Providing education facility at vernacular medium schools SVM at Angul for students other than NALCO employees children	1000.00
Protection of National Heritage, Art and Culture (Item No.(v) of Schedule VII)		
1	Contribution towards promotion of traditional arts, music and handicraft through district level, block level & GP level events in collaboration with district administration, local cultural events etc.	20.00
Rural Development Projects (Item (x) of Schedule VII)		
1	Renovation of Kukudang Smasan Ghat road	16.71
2	Renovation of road beside railway line at Tentoloi(Kukudanga G.P)	14.87
PD Projects		
1	Installation of 30 nos street light in village Anmantapur of Balaramprasad G.P.	1.39
TOTAL		1101.19
Beneficiaries of MHU and Specialist OPD Centre from October 2024 to March 2025		
1	(3 MHUs in 44 Villages)	
	No of Beneficiaries	25232
	No of Camps	747
2	SPECIALIST OPD CENTRE, S&P Complex	
	No of Beneficiaries	9769
Total Beneficiaries		35001

Ground Water & Surface Water Analysis Report around Secured Landfill within 5Km (Quarterly), Date of Sampling: 29.11.2024

Parameter	Unit	Acceptable Limit	Permissible Limit	Location										
				Inside Smelter Tubewel I-BW-3	Inside Smelter Tubewel I-BW-4	Inside Smelter Tubewel I-BW-5	Gopinathpur Open Well	Kulad near College Tube Well	Gadarkhai Village Tube Well	Jhajiribahal Hanuman Murti Tube Well	Bonda near School Tube Well	Manda bereni Tube Well	RP Outside SW-1	RP Outside SW-2
pH		6.5 to 8.5	No Relaxation	7.41	7.58	7.34	7.22	7.43	6.78	7.15	6.83	7.75	7.62	7.73
Turbidity	NTU	1	5	18.6	1.47	76.4	0.79	0.65	68.8	1.78	207	0.75	1.16	1.42
Calcium (as Ca)	mg/l	75	200	48.3	69.9	113	93.2	123	91.5	98.2	141	196	160	41.6
Chloride (as Cl)	mg/l	250	1000	39.7	61.5	139	109	137	87.3	109	153	212	204	29.8
Fluoride (as F)	mg/l	1	1.5	0.26	0.33	0.37	0.22	0.48	0.42	0.19	0.54	0.85	0.14	0.28
Total Hardness (as CaCO3)	mg/l	200	600	146	204	387	324	408	266	324	507	720	562	125
Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity	µs/cm	NA	NA	433	607	1146	973	1215	807	977	1298	1888	1750	370
COD	mg/l	NA	NA	12.1	10.1	16.2	<5	6.1	18.2	8.08	20.2	12.1	14.1	16.2

Ground Water & Surface Water Analysis Report around Secured Landfill within 5Km (Quarterly), Date of Sampling: 14.02.2025														
Parameter	Unit	Acceptable Limit	Permissible Limit	Location										
				Inside Smelter Tubewell I-BW-3	Inside Smelter Tubewell I-BW-4	Inside Smelter Tubewell I-BW-5	Gopinathpur Open Well	Kulad near College Tube Well	Gadarkhai Village Tube Well	Jhajiribahal Hanuman Murti Tube Well	Bonda near School Tube Well	Manda bereni Tube Well	RP Outside SW-1	RP Outside SW-2
pH		6.5 to 8.5	No Relaxation	7.77	8.45	8.14	8.31	7.83	8.36	8.18	8.22	7.98	8.42	8.57
Turbidity	NTU	1	5	67	8.24	51.2	2.32	89.3	<0.5	3.38	0.88	3.84	3.55	1.83
Calcium (as Ca)	mg/l	75	200	77	49.6	110	118	132	30.8	53.1	82.2	101	51.4	51.4
Chloride (as Cl)	mg/l	250	1000	87.4	43.7	118	329	127	15.2	79.8	60.8	68.4	20.9	20.9
Fluoride (as F)	mg/l	1	1.5	0.19	0.35	1.74	1.56	0.39	1.25	1.47	0.54	0.66	1.89	1.81
Total Hardness (as CaCO3)	mg/l	200	600	240	214	552	496	569	103	351	325	428	167	176
Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Electrical Conductivity	µs/cm	NA	NA	799	609	1460	1922	1385	265.2	1182	906	982	431	430
COD	mg/l	NA	NA	12.4	14.4	18.5	8.2	16.5	10.3	6.2	<5	<5	<5	<5