

**Half Yearly Report of Compliance on Environmental Clearance condition
for Smelter Plant, NALCO, Angul for the period October 2022 to March 2023.
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 2022 to March 2023 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) is given at Annexure-IX.</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 waste 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. Recycled water is being used for green belt development, cooling tower make up and fire fighting etc.
3.	Air quality monitoring and preservation	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	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

		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/Nm ³ .	existing plant and forage monitoring around Smelter Plant are being carried out regularly. Monthly report of the same has been submitted to OSPCB. 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. During October 2022 to March 2023 , the average level of fluoride in grass samples in those villages are given in Annexure-V .
4.	Air quality monitoring and preservation	A.(iv) The Poly-aromatic Hydrocarbons from the carbon plant (anode bake oven) should not exceed 2mg/Nm ³ . The data on PAH should be monitored quarterly and report submitted to the Ministry/ RO, Bhubaneswar and SPCB.	During October 2022 to March 2023 PAH emission from Bake Oven stack-1& 2 have been monitored and report is given at Annexure-VIII .
5.	Waste management	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 fill site should be monitored and data submitted to the Ministry/SPCB	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. (agency, 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 upto a radius of 5 KM is regularly monitored for any contamination by engaging a third party empaneled in the list of OSPCB. Scan copy of the ground water analysis report is attached at the 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 2022 to March 2023 is 1010 nos. Cumulative 17, 66,785 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 2022 to March 2023 , Total 3053 workers (regular employees: 1156 & contractual workers: 1897) 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 3 numbers of holding pools of 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	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.

		the State Pollution Control Board/Central Pollution Control Board once in six months.	<p>The results of stack emission for the period October 2022 to March 2023 are within norm (Refer Annexure III & IV). Air Quality Monitoring Report (Online data) is given at Annexure-IX.</p> <p>The data from online monitoring stations are sent to OSPCB and CPCB servers continuously.</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 report during the period October 2022 to March 2023 is 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 used for horticulture, anode cooling and vehicle washing purpose. 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	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>The ambient noise level is measured at four locations around Smelter Plant i.e. CISF Barrack, Smelter Plant, Pump House, Township, CISF Barrack, CPP and Rolling Plant. The noise level is within the permissible norms. During October 2022 to March 2023 average noise levels are given in Annexure-VII.</p>
16.	Waste management	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>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. The requirements of Hazardous Chemical Rules/Manufacture Storage and Import of Hazardous Chemicals Rules' 2000 and amendments are complied.</p>
17.	Corporate environmental responsibility	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	<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,</p>

		socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc	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 victims/calamities etc. Total expenditure towards peripheral development around S&P Complex is Rs 102.15 lakh during October 2022 to March 2023 . Details 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	Complied.

		the same should be forwarded to the Regional Office	
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 (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 October 2022 to March 2023 Specific Consumption as F is 13.13 kg/T. (Technically not feasible to achieve 10 kg/T standard with the present set up.)
4	Ambient Fluoride	Forge fluoride standards	<ul style="list-style-type: none"> • Twelve consecutive months average - 40 ppm • Two consecutive months Average - 60 ppm 	The monitoring is being done for grass samples in surrounding villages and the results are within norms. (Annexure-IX)

COMPLIANCE STATUS OF CREP				
Sl. No.	Issues	Action Points	Targets	Status
		Measurement of forage fluoride	<ul style="list-style-type: none"> 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>	
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 during October 2022 to March 2023 is 3686.39 days.
		SPL (Carbon & Refractory) to be disposed in Secured Landfill.	With immediate effect	Complied
6	Red Mud	Phasing out Wet disposal Red Mud Utilisation	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	Installation of 82000 m3/hr, 62000 m3/hr bag filters and 12,000 m3/hr bag filters at anode butt crusher of Rodding Shop- 1.
07	Development of adequate green belts around industries.	Industries	Plantation during October 2022 to March 2023 is 1010 nos. Cumulative 17, 66,785 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 2022 to March 2023 is 1010 nos. Cumulative 17, 66,785 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 dedusting systems to prevent fugitive emission.

ANNEXURE-III

Particulate Matter Emission From Bake Oven Stack (All units are in mg/Nm³)								
LOCATION	Norm	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Average
Bake Oven-I	50mg/NM³	20.44	23.87	25.13	27.68	30.995	27.81	25.987
Bake Oven-II	50mg/NM³	26.46	28.765	27.69	45.98	36.7	34.99	33.430
Particulate Matter Emission From Potline FTP Stacks (All units are in mg/Nm³)								
LOCATION	Norm	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Average
FTP-1	100mg/NM³	23.035	29.055	29.31	26.825	30.71	32.685	28.603
FTP-2	100mg/NM³	34.005	27.615	31.06	31.585	30.08	25.105	29.906
FTP-3	100mg/NM³	23.525	27.175	28.2	27.42	25.4	26.155	26.312
FTP-4	100mg/NM³	25.915	29.76	21.39	32.59	19.51	27.965	26.186
FTP-5	100mg/NM³	24.665	30.765	30.4	32.3	30.15	28.625	29.482
FTP-6	100mg/NM³	31.05	35.305	38.67	44.24	29.98	26.51	34.291
FTP-7	100mg/NM³	52.595	30.695	44.44	33.23	28.17	34.545	37.278
FTP-8	100mg/NM³	35.56	35.04	33.13	35.37	25.8	34.48	33.229

ANNEXURE- IV

FLUORIDE EMISSION FROM STACKS (All units are in Kg/T of Aluminium Produce)								
LOCATION	Norm	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Average
A) POTLINE								
Fluoride Emission from FTP 1 to 8 Stacks	0.3 kg/T of Al	0.201	0.15	0.148	0.163	0.162	0.182	0.167
Fugitive Emission of Fluoride from each Potroom.	0.4Kg/T of Al	0.328	0.227	0.2	0.224	0.15	0.157	0.214
B) BAKE OVEN								
Fluoride emission from FTC Stacks 1 & II of Bake Ovens	0.1 Kg/T of Al	0.008	0.01	0.01	0.011	0.02	0.013	0.012
C) Total Fluoride Emission.	0.8 Kg/T of Al	0.537	0.387	0.358	0.398	0.332	0.352	0.394

ANNEXURE-V

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-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
1.	Bonda	39.50	38.50	39.00	38.50	37.50	38.40
2.	Tulsipal	37.20	37.30	38.50	37.90	38.40	39.00
3.	Languliabeda	35.20	39.80	38.90	36.80	37.80	39.40
4.	Banarpal	24.30	39.82	38.00	38.50	39.00	38.70
5.	Turang	24.10	38.78	39.20	38.70	39.10	38.90
6.	Balramprasad	39.00	37.50	38.60	39.10	38.90	39.20

ANNEXURE-VI

WASTE WATER ANALYSIS REPORT									
Parameters	Unit	Norm	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Average
pH		6.5 to 9.0	7.00	7.00	7.10	7.40	7.10	7.60	7.20
TSS	mg/l	<100	8.00	10.00	6.60	6.80	4.00	6.00	6.90
BOD 3days at 27 deg.C	mg/l	<30	2.00	3.00	2.00	3.00	3.00	4.00	2.83
Fecal Coliform	MPN/100ml	<100	62.00	70.00	34.00	94.00	96.00	81.00	72.83

ANNEXURE-VII

AMBIENT NOISE LEVEL								
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-22	40.40	39.60	41.20	40.30	41.40	40.60	41.30	40.70
Nov-22	40.20	39.40	41.00	40.20	41.20	40.40	41.20	40.60
Dec-22	40.40	39.60	41.10	40.40	41.00	40.10	41.40	40.30
Jan-23	40.80	40.00	41.40	40.60	41.40	40.40	41.00	40.20
Feb-23	41.20	40.40	41.60	40.50	41.20	40.50	41.40	40.50
Mar-23	42.20	41.40	42.00	40.80	41.90	40.60	42.10	40.70

PAH emission from Bake Oven stack-1All units are in -microgram/Nm³, (Norm - 2 mg/ Nm³)

Date of Sampling:		28.10.2022	24.01.2023
Date of Report:		03.11.2022	17.02.2023
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	<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 from Bake Oven stack-2All units are in -microgram/Nm³, (Norm - 2 mg/ Nm³)

Date of Sampling:		24.01.2023
Date of Report:		17.02.2023
Sl No.	Parameters	Bake oven - II
1	Acenaphthene	<0.2
2	Acenaphthylene	<0.2
3	Anthracene	<0.2
4	Benzo(a) Anthracene	<0.2
5	Benzo(a) Pyrene	<0.2
6	Benzo(b) fluoranthene	<0.2
7	Benzo(k) fluoranthene	<0.2
8	Chrysene	<0.2
9	Dibenz	<0.2
10	Fluoranthene	<0.2
11	Fluorene	<0.2
12	Indeno(1,2,3-c,d) Pyrene	<0.2
13	Napthalene	<0.2
14	Phenanthrene	<0.2
15	Pyrene	<0.2

Ambient Air Quality Monitoring Report (Online data)**Norm 24Hrs. average:**PM₁₀-100(µg/m³), PM_{2.5}-60(µg/m³), CO-4.0 (mg/m³), SO₂-80 (µg/m³), NO_x-80 (µg/m³)

Ambient Air Quality Monitoring Report for CAAQMS-1 (Nalconagar Township)					
MONTH	PM10 (µg/m³)	PM2.5 (µg/m³)	CO (µg/m³)	SO2 (µg/m³)	NOX (µg/m³)
Oct-22	37.36	24.14	0.99	16.46	19.2
Nov-22	87.25	46.78	1.36	11.73	28.41
Dec-22	84.36	54.98	0.87	18.32	12.35
Jan-23	76.41	35.46	1.64	11.89	26.21
Feb-23	57.61	25.76	1.25	12.65	24.12
Mar-23	59.84	35.46	1.76	11.95	27.6

Ambient Air Quality Monitoring Report for CAAQMS-2 (Defluoridation Plant)					
MONTH	PM10 (µg/m³)	PM2.5 (µg/m³)	CO (mg/m³)	SO2 (µg/m³)	NOX (µg/m³)
Oct-22	70.14	18.07	1.32	7.33	26.82
Nov-22	68.6	17.02	1.01	16.94	11.41
Dec-22	70.84	23.01	1.04	14.28	11.98
Jan-23	45.73	30.91	1.12	19.37	13.88
Feb-23	47.19	31.88	1.16	17.77	16.87
Mar-23	44.92	27.64	1.09	19.82	13.91

Ambient Air Quality Monitoring Report for CAAQMS-3 (Rolling Plant)					
MONTH	PM10 (µg/m³)	PM2.5 (µg/m³)	CO (mg/m³)	SO2 (µg/m³)	NOX (µg/m³)
Oct-22	54.19	35.8	1.93	52.56	22.74
Nov-22	32.99	27.57	1.46	6.74	26.27
Dec-22	75.99	41.6	1.36	6.65	28.19
Jan-23	76.12	41.72	1.34	6.83	28.1
Feb-23	76.96	42.06	1.38	6.88	26.9
Mar-23	76.33	42	1.35	6.86	28.29

Ambient Air Quality Monitoring Report for CAAQMS-4 (CISF Colony)					
MONTH	PM10 (µg/m³)	PM2.5 (µg/m³)	CO (mg/m³)	SO2 (µg/m³)	NOX (µg/m³)
Oct-22	61.71	30.72	1.24	90.62	18.82
Nov-22	41.65	21.94	1.311	12.67	16.43
Dec-22	51.39	21.21	0.72	22.76	14.1
Jan-23	57.92	29.8	1.62	11.83	17.1
Feb-23	61.85	30.11	0.87	34.95	22.68
Mar-23	62.03	29.97	0.82	24.29	21.81

Peripheral development Expenditure details (From October 2022 to March 2023)

Sl. No.	Task (s) completed	Value of the Project (Rs.in lakh)	Expenditure incurred during October 2022 to March 2023 (Rs.in lakh)
	Education and Vocational Skill:		
1	" NalcoraAlialiJhia" (Nalco kiLadli): To provide financial support to girl student students every year under BPL category from periphery villages	11.00	-
2	Renovation of Khambeswari Primary School, Kulad (to be deposited under "MO SCHOOL ABHIYAN")	5.00	-
3	Infrastructural support for Nalco Nagar Regional Higher Secondary School, Kulad (to be deposited under "MO SCHOOL ABHIYAN")	5.00	-
4	Construction of stage at Bentapur, Nodal UP School Bentapur for conducting different functions/activities (to be deposited under "MO SCHOOL ABHIYAN")	5.00	-
5	Construction of 03 nos. of Class rooms, drainage systems and playground at Indira Gandhi (IG) Girl's High School, Banarapal (to be deposited under "MO SCHOOL ABHIYAN")	7.00	-
6	Construction of 02 nos class rooms and boundary wall in Kurudol UP School, Kurudol (to be deposited under "MO SCHOOL ABHIYAN")	8.00	-
7	Construction of classrooms, installation of drinking water facility & construction of boundary wall, at SSVM, Kosala	25.00	-
8	Construction of examination hall cum auditorium for students at PanchagarhSomanath Singh Jagdev Higher Secondary School, Banarpal, Angul (to be deposited under "MO SCHOOL ABHIYAN")	25.00	-
9	Construction of new 02 class rooms and supply of steel Almira for School library in Kandasara UP school, Kandasara (to be deposited under "MO SCHOOL ABHIYAN")	5.00	-
10	Livelihood intervention in and around peripheral villages of Coal Mines Area and S&P Complex, Angul	25.00	-
11	Construction of Vending Zone for street vendors at Angul Town.	20.00	-
12	Construction of Poly House in periphery villages in convergence with District Administration, Angul	12.00	-
13	Support to rural artisans in brass made products in collaboration with District Administration	3.00	-
	Health Care, Sanitation and Drinking water		
1	Operation of Medical Health Unit (MHU) at peripheral villages of S&P Complex &Utkal E Coal Block	103.53	48.34
2	Operation of OPD centre at Angul	59.08	30.18
3	Supply of Drinking Water through tankers in the Peripheral Villages of S & P Complex, Angul during summer	20.00	-
4	Supplement of Nutrition to Children, Pregnant and Lactating women in identified villages.	8.00	-
5	Construction of sanitation unit and ancillary development work at Kosala Girls High School, Kosala (to be deposited under "MO SCHOOL ABHIYAN")	5.00	-
6	Integrated project for empowering adolescent girls in collaboration with Women & Child Development Department, Govt. of Odisha	5.00	-
7	Renovation of pipe drinking water supply to 11 villages with high floride content in water at S&P Complex, Angul.	756.18	-
	Rural Development		
1	Construction of Road form TentoiBanambara house to Padma Pokhari, Tentoi	10.00	-
2	Renovation of road beside railway line at Tentoloi	15.00	-

3	Construction of concrete road from Pradhan Bandh Tanalasahi to Chandan Nagar, Village - Kosala, Reach-I	15.00	-
4	Construction of Community Centre at Karamanga Sahi Village, Purunagarh, Angul	9.50	-
5	Repair and Renovation of Singh Sahi Bridge at village Kulad	25.00	-
6	Construction of CC Road from Amantasahi to Bouti Mandir at village Kulad	7.00	-
7	Renovation of Kukudang Sman Ghat Road	17.00	-
8	Construction of a Community Centre Building at Harijan Sahi in Ekagharia Village	10.00	-
9	Construction of metal morrum road from Biswalsahi to Gothasahi, at village -Kosala	9.00	-
10	Construction of community centre at village Girang	20.00	-
11	Improvement of cremation ground near ESI Hospital at Balaramprasad	12.00	-
12	Installation of street lights on electric polls at village Gobara	2.00	-
13	Cleaving and renovation of drain with slab cover from Gobara Gotha Chhaka to Railway line at village Gobara	15.00	-
14	Improvement of road and construction of drain from Railway line to Nandira Jora at village Karnapur	30.00	-
15	Construction of CC Road from Mastersahi to Canal at village Kandasar	14.00	-
	Women Empowerment		
1	Extension and modification of the office building with library of 'Baristha Nagarika Mancha' Balaramprasad.	15.00	-
2	Construction and other accessories of Aparajita women's Club house, Balaramprasad	10.00	-
3	Construction of building-cum-training centre for Mahila Samiti and Public library at village Susuda, Angul	15.00	-
	Environmental Sustainability		
1	Renovation of Tentoi Padma Pokhari, Tentoi	11.00	-
	Protection of National Heritage, Art and Culture		
1	Contribution towards promotion of traditional arts, music and handicraft through district level, block level & GP level events in collaboration with district administration	30.00	20.00
2	Supply of sports equipments to the youths of peripheral villages	2.00	-
	Release of security Deposit		-
1	Renovation of Kiakata Pond at village Karnapur		2.49
2	Road connecting to Karnapur Level Crossing to Bharatpur common point		1.14
	Administrative Exp.		
1	Administrative and miscellaneous expenditure		-
	TOTAL	1661.70	102.15
October 2022 to March 2023			
Sl. No.	Operated by	No of Camps	No of Beneficiaries
1	Nalco Foundation (3 MHUs in 44 Villages)	816	34414
2	OPD, NALCO Foundation, S&P Complex	-	10125
	Total		44539

Mitra S. K. Private Limited

N-5/100, Ground Floor
IRC Village, Nayapalli
Bhubaneswar - 751015
[CIN: U51909WB1956PTC023037]



T : (0674) 2362916, 2360917
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/109
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01114
Sample Description : Surface Water
Sampling Location : RPO Outside SW-1
Date of sampling : 23.11.2022

ANALYSIS RESULT

<u>Sl. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Standard as per Sch.VI of EP Rules, 1986 (Inland Surface Water)</u>	<u>Result</u>
1.	pH value at 26°C	---	5.5 – 9.0	7.31
2.	Turbidity	N.T.U	----	84.0
3.	Calcium (as Ca)	mg/l	----	37.0
4.	Chloride (as Cl)	mg/l	----	51.0
5.	Flouride (as F)	mg/l	2.0	0.66
6.	Total Hardness (as CaCO ₃)	mg/l	----	151.0
7.	Cyanide (as CN)	mg/l	0.2	BDL(DL:0.01)
8.	Conductivity	us/cm	----	370.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	28.0

S. K. Ganguly
Report Prepared by:



For Mitra S. K. Private Limited

V. K. Rath
Authorized Signatory

Mitra S. K. Private Limited

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Bhubaneswar - 751015
[CIN: U51909WB1956PTC023037]



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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/110
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01115
Sample Description : Surface Water
Sampling Location : RPO Outside SW-2
Date of sampling : 23.11.2022

ANALYSIS RESULT

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Standard as per Sch.VI of EP Rules, 1986 (Inland Surface Water)</u>	<u>Result</u>
1.	pH value at 26°C	---	5.5 – 9.0	7.20
2.	Turbidity	N.T.U	----	78.0
3.	Calcium (as Ca)	mg/l	----	35.0
4.	Chloride (as Cl)	mg/l	----	48.0
5.	Flouride (as F)	mg/l	2.0	0.42
6.	Total Hardness (as CaCO ₃)	mg/l	----	142.0
7.	Cyanide (as CN)	mg/l	0.2	BDL(DL:0.01)
8.	Conductivity	us/cm	----	350.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	28.0

S. K. Kamra
Report Prepared by:



For Mitra S. K. Private Limited

A. C. Rath
Authorized Signatory

Mitra S. K. Private Limited

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Bhubaneswar - 751015
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/108
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01113
Sample Description : Ground Water
Sampling Location : Mandaberani Tubewell
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.17
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	67.0
4.	Chloride (as Cl)	mg/l	250	1000	152.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.91
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	355.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	343.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	4.0

S. K. Singh
Report Prepared by:



For Mitra S. K. Private Limited

V. V. Patel
Authorized Signatory

Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :
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Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/107
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01112
Sample Description : Ground Water
Sampling Location : Bonda Near School Tubewell
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.09
2.	Turbidity	N.T.U	1	5	4.0
3.	Calcium (as Ca)	mg/l	75	200	76.0
4.	Chloride (as Cl)	mg/l	250	1000	175.0
5.	Flouride (as F)	mg/l	1.0	1.5	1.2
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	423.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	628.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	6.0

S. K. Singh
Report Prepared by:



For Mitra S. K. Private Limited

A. C. Rout
Authorized Signatory

Mitra S. K. Private Limited

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Name & Address of the Customer :
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Nalconagar, Angul
Odisha - 759145

Report No. : BBS/106

Date : 12.12.2022

Sample No. : MSKGL/ED/2022-23/11/01111

Sample Description : Ground Water

Sampling Location : Jhajiribahal Hanuman Murti
Tubewell

Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.28
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	68.0
4.	Chloride (as Cl)	mg/l	250	1000	155.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.84
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	366.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	568.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

S. K. Singh
Report Prepared by:



For Mitra S. K. Private Limited

V. C. Rath
Authorized Signatory

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TEST REPORT

Name & Address of the Customer :
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Odisha - 759145

Report No. : BBS/105
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01110
Sample Description : Ground Water
Sampling Location : Gadarkhai Village Tube Well
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>Sl. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	6.89
2.	Turbidity	N.T.U	1	5	5.0
3.	Calcium (as Ca)	mg/l	75	200	74.0
4.	Chloride (as Cl)	mg/l	250	1000	170.0
5.	Flouride (as F)	mg/l	1.0	1.5	1.1
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	414.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	---	---	786.0
9.	Chemical Oxygen Demand (as COD)	mg/l	---	---	8.0

S. K. Ganguly
Report Prepared by:



For Mitra S. K. Private Limited

M. K. Rath
Authorized Signatory

Mitra S. K. Private Limited

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[CIN: U51909WB1956PTC023037]



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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/104
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01109
Sample Description : Ground Water
Sampling Location : Kulad Near College Tube Well
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

SL. No.	Test Parameters	Unit	Requirement (Acceptable Limit)	Permissible limit in the absence of alternate Source	Result
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.35
2.	Turbidity	N.T.U	1	5	4.0
3.	Calcium (as Ca)	mg/l	75	200	45.0
4.	Chloride (as Cl)	mg/l	250	1000	58.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.85
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	188.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	---	---	473.0
9.	Chemical Oxygen Demand (as COD)	mg/l	---	---	4.0

S. K. Kamra
Report Prepared by:



For Mitra S. K. Private Limited

V. V. Rath
Authorized Signatory

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TEST REPORT

Name & Address of the Customer :
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Nalconagar, Angul
Odisha - 759145

Report No. : BBS/103
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01108
Sample Description : Ground Water
Sampling Location : Gopinathpur Open Well
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.32
2.	Turbidity	N.T.U	1	5	4.0
3.	Calcium (as Ca)	mg/l	75	200	55.0
4.	Chloride (as Cl)	mg/l	250	1000	67.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.58
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	233.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	601.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	4.0

P. K. Ganguly
Report Prepared by:



For Mitra S. K. Private Limited

W. U. Rout
Authorized Signatory

Mitra S. K. Private Limited

N-5/100, Ground Floor
IRC Village, Nayapalli
Bhubaneswar - 751015
[CIN: U51909WB1956PTC023037]



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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/102
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01107
Sample Description : Ground Water
Sampling Location : Inside Plant Tubewell 3-BW-5
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.04
2.	Turbidity	N.T.U	1	5	5
3.	Calcium (as Ca)	mg/l	75	200	65.0
4.	Chloride (as Cl)	mg/l	250	1000	149.0
5.	Flouride (as F)	mg/l	1.0	1.5	1.2
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	350.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	---	---	756
9.	Chemical Oxygen Demand (as COD)	mg/l	---	---	8.0

S. K. Singh
Report Prepared by:



For Mitra S. K. Private Limited

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Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :
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Report No. : BBS/101
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01106
Sample Description : Ground Water
Sampling Location : Inside Plant Tubewell 2-BW-4
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.20
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	37.0
4.	Chloride (as Cl)	mg/l	250	1000	41.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.81
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	190.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	700.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

S. K. Ganguly
Report Prepared by:



For Mitra S. K. Private Limited

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Authorized Signatory

Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/100
Date : 12.12.2022
Sample No. : MSKGL/ED/2022-23/11/01105
Sample Description : Ground Water
Sampling Location : Inside Plant Tubewell 1-BW-3
Date of sampling : 23.11.2022

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.12
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	34.0
4.	Chloride (as Cl)	mg/l	250	1000	46.0
5.	Flouride (as F)	mg/l	1.0	1.5	1.2
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	248.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	675.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

S. K. Ganguly
Report Prepared by:



For Mitra S. K. Private Limited

A. N. Rath
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Mitra S. K. Private Limited

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IRC Village, Nayapalli
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[CIN: U51909WB1956PTC023037]



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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/401
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01105
Sample Description : Ground Water
Sampling Location : Inside Plant Tubewell 1-BW-3
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.08
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	30.0
4.	Chloride (as Cl)	mg/l	250	1000	42.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.78
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	256.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	---	---	574.0
9.	Chemical Oxygen Demand (as COD)	mg/l	---	---	8.0

S. K. Kamra
Report Prepared by:

For Mitra S. K. Private Limited

A. K. Raha
Authorized Signatory

Mitra S. K. Private Limited

N-5/100, Ground Floor
IRC Village, Nayapalli
Bhubaneswar - 751015
[CIN: U51909WB1956PTC023037]



T : (0674) 2362916, 2360917
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/402
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01106
Sample Description : Ground Water
Sampling Location : Inside Plant Tubewell 2-BW-4
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.14
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	35.0
4.	Chloride (as Cl)	mg/l	250	1000	43.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.69
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	188.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	680.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

S. K. Ganguly
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/403
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01107
Sample Description : Ground Water
Sampling Location : Inside Plant Tubewell 3-BW-5
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.19
2.	Turbidity	N.T.U	1	5	2.8
3.	Calcium (as Ca)	mg/l	75	200	62.0
4.	Chloride (as Cl)	mg/l	250	1000	134.0
5.	Flouride (as F)	mg/l	1.0	1.5	1.1
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	390.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	740.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

S. K. Singh
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Authorized Signatory

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TEST REPORT

Name & Address of the Customer :
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Smelter Plant
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Odisha - 759145

Report No. : BBS/404
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01108
Sample Description : Ground Water
Sampling Location : Gopinathpur Open Well
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>Sl. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.28
2.	Turbidity	N.T.U	1	5	3.0
3.	Calcium (as Ca)	mg/l	75	200	50.0
4.	Chloride (as Cl)	mg/l	250	1000	62.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.66
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	220.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	570.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	4.0

S. K. Ganguly
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TEST REPORT

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Odisha - 759145

Report No. : BBS/405
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01109
Sample Description : Ground Water
Sampling Location : Kulad Near College Tube Well
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit In the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.42
2.	Turbidity	N.T.U	1	5	4.0
3.	Calcium (as Ca)	mg/l	75	200	49.0
4.	Chloride (as Cl)	mg/l	250	1000	56.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.70
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	180.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	410.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	4.0

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TEST REPORT

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Odisha - 759145

Report No. : BBS/406
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01110
Sample Description : Ground Water
Sampling Location : Gadarkhai Village Tube Well
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	6.77
2.	Turbidity	N.T.U	1	5	2.0
3.	Calcium (as Ca)	mg/l	75	200	72.0
4.	Chloride (as Cl)	mg/l	250	1000	189.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.94
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	380.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	770.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

S. K. Kangra
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/407
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01111
Sample Description : Ground Water
Sampling Location : Jhajiribahal Hanuman Murti
Tubewell
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.34
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	62.0
4.	Chloride (as Cl)	mg/l	250	1000	150.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.69
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	327.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	480.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	8.0

R. Kango
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
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Odisha - 759145

Report No. : BBS/408
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01112
Sample Description : Ground Water
Sampling Location : Bonda Near School Tubewell
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 – 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.02
2.	Turbidity	N.T.U	1	5	4.0
3.	Calcium (as Ca)	mg/l	75	200	67.0
4.	Chloride (as Cl)	mg/l	250	1000	169.0
5.	Flouride (as F)	mg/l	1.0	1.5	1.0
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	400.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	---	---	610.0
9.	Chemical Oxygen Demand (as COD)	mg/l	---	---	6.0

S. K. Ganguly
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
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Odisha - 759145

Report No. : BBS/409
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01113
Sample Description : Ground Water
Sampling Location : Mandaberani Tubewell
Date of sampling : 30.03.2023

CHEMICAL ANALYSIS RESULT AS PER IS: 10500 - 2012

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Requirement (Acceptable Limit)</u>	<u>Permissible limit in the absence of alternate Source</u>	<u>Result</u>
1.	pH value at 26°C	---	6.5 - 8.5	No Relaxation	7.10
2.	Turbidity	N.T.U	1	5	BDL(DL:1.0)
3.	Calcium (as Ca)	mg/l	75	200	61.0
4.	Chloride (as Cl)	mg/l	250	1000	150.0
5.	Flouride (as F)	mg/l	1.0	1.5	0.93
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	348.0
7.	Cyanide (as CN)	mg/l	0.05	No Relaxation	BDL(DL:0.01)
8.	Conductivity	us/cm	----	----	296.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	----	4.0

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[CIN: U51909WB1956PTC023037]



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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/410
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01114
Sample Description : Surface Water
Sampling Location : RPO Outside SW-1
Date of sampling : 30.03.2023

ANALYSIS RESULT

<u>Sl. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Standard as per Sch.VI of EP Rules, 1986 (Inland Surface Water)</u>	<u>Result</u>
1.	pH value at 26°C	---	5.5 – 9.0	6.89
2.	Turbidity	N.T.U	---	77.0
3.	Calcium (as Ca)	mg/l	---	35.0
4.	Chloride (as Cl)	mg/l	---	45.0
5.	Flouride (as F)	mg/l	2.0	0.74
6.	Total Hardness (as CaCO ₃)	mg/l	---	147.0
7.	Cyanide (as CN)	mg/l	0.2	BDL(DL:0.01)
8.	Conductivity	us/cm	---	360.0
9.	Chemical Oxygen Demand (as COD)	mg/l	---	18.0

S. K. Singh
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TEST REPORT

Name & Address of the Customer :
National Aluminium Company Limited
Smelter Plant
Nalconagar, Angul
Odisha - 759145

Report No. : BBS/411
Date : 12.04.2023
Sample No. : MSKGL/ED/2022-23/03/01115
Sample Description : Surface Water
Sampling Location : RPO Outside SW-2
Date of sampling : 30.03.2023

ANALYSIS RESULT

<u>SL. No.</u>	<u>Test Parameters</u>	<u>Unit</u>	<u>Standard as per Sch.VI of EP Rules, 1986 (Inland Surface Water)</u>	<u>Result</u>
1.	pH value at 26°C	---	5.5 – 9.0	7.30
2.	Turbidity	N.T.U	----	72.0
3.	Calcium (as Ca)	mg/l	----	30.0
4.	Chloride (as Cl)	mg/l	----	42.0
5.	Flouride (as F)	mg/l	2.0	0.56
6.	Total Hardness (as CaCO ₃)	mg/l	----	142.0
7.	Cyanide (as CN)	mg/l	0.2	BDL(DL:0.01)
8.	Conductivity	us/cm	----	290.0
9.	Chemical Oxygen Demand (as COD)	mg/l	----	20.0

S. Kanga
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