

QUARTERLY PERFORMANCE WITH RESPECT TO ENVIRONMENTAL ASPECTS

DURING QUARTER III (OCT -DEC '21),2021-22

Name of Enterprise : Numaligarh Refinery Limited

I. Fresh Water in Cubic Meter Per Tonne of Crude Processed

Table A-I				Cummulative	Cumm. for the period
	OCT	NOV	DEC	OCT-DEC'21	(APRIL-DEC'21)
Crude Processed, MT	254425	223089	136551	614065	1930219
Fresh Water Consumed, M3	649380	603096	509483	1761959	5346282
Water Consumed, M3/MT of Crude Processed (Design capacity is 2.8 M3/MT of Crude Processed)	2.6	2.7	3.7	2.87	2.77

II. Liquid Effluent Quantity

Table A-II	OCT	NOV	DEC	OCT-DEC'21	Cumm. for the period
					(APRIL-DEC'21)
Quantity of Effluent Discharged, M3	0	0	0	0	0
Effluent Discharged, M3/1000 MT of Crude Processed	0	0	0	0	0
Reuse, M3	87550	81000	68000	236550	883017
% Reuse/Recycled on Effluent Generated	100.0	100.0	100.0	100.0	100.0

III. Average Sulphur Dioxide Emission

Table A-III	OCT	NOV	DEC	Average	Average for the period
				OCT-DECT'21	April-Dec'21
SO2 Emission, Kg/Hr (SPCB Norms: 256 Kg/Hr as SO2)	98.8	90.9	92.4	94.0	88.6

Remarks Sulphur Dioxide Emission & Effluent Reuse are being maintained within allowable limit.

QUARTERLY PERFORMANCE REPORT W.R.T ENVIRONMENTAL ASPECT

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TABLE-1 LIQUID EFFLUENT POLLUTANT LEVEL -								
MONITORED VALUES in mg/lit.except pH								
SL. NO	PARAMETERS	NO. OF OBS	MAX.	MIN.	AVG.	Limiting value for conc. (mg/l except for pH)	Quantum limit in Kg / 1000 MT of crude processed	
							Actual	Standard
1	pH	92	8.2	6.0	7.2	6-8.5	-	-
2	OIL & GRE	92	5.0	1.5	2.99	5	1.15	2.0
3	SULPHIDE	92	<0.1	<0.1	<0.1	0.5	0.04	0.2
4	PHENOL	92	0.30	0.08	0.12	0.35	0.04	0.14
5	S. SOLID	92	20.0	8.0	15.44	20.0	5.95	8.0
6	COD	92	104.0	17.40	49.0	125.0	18.9	50.0
7	BOD3	92	15.0	4.0	8.65	15.0	3.33	6.0
8	CN	92	<0.02	<0.02	<0.02	0.2	0.01	0.08
9	Ammonia as N	3	10.2		7.50	15.0	2.89	6.0
10	Cr (Hexavalent)	3	0		0.00	0.1	0.00	0.04
11	Cr (Total)	3	0.009		0.004	2.0	0.00	0.8
12	Pb	3	0.004		0.0013	0.1	0.001	0.04
13	Zn	3	0.041		0.019	5.0	0.01	2.0
14	Ni	3	0.021		0.009	1.0	0.00	0.4
15	Cu	3	0.021		0.008	1.0	0.003	0.4
16	Benzene	3	0.058		0.050	0.1	0.019	0.04
17	Benzo (a)- Pyre	3	0.062		0.055	0.2	0.021	0.08
18	Hg	3	0.005		0.0043	0.01	0.00	0.004
19	V	3	0.089		0.08	0.2	0.0	0.8
20	TKN	3	23.6		21.2	40.0	8.15	16.0
21	P	3	1.4		1.29	3.0	0.50	1.2

Limiting concentration of effluent is as per MoEF notification on standard vide GSR-186 (E) dated 18th March, 2008.

* BDL- Detectable Limit : 0.1 microgram/Litre

* Parameters from 9 to 21 are monitored once in a month as per CPCB norms

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Online Stack Analyser data

UNIT	FURNACE STACK	PARAMETER	OBSERVED VALUE		Limiting Concentration in mg/Nm ³	Remarks Limit conc. calculated using fuel type& quan. used during the period
			CONC. (In mg/Nm ³)			
			MAX.	MIN.		
CDU/VDU	FF-01/02	SO ₂	335.87	21.75	607	Stack with dual firing (FG:FO=66:34)
		NOX	85.48	3.7	384	
		CO (FFI&II)	7.1	4.94	167	
DCU	FF-01	SO ₂	222.03	1.27	878	Stack with dual firing (FG:FO=50:50)
		NOX	176.35	6.45	400	
HCU	FF-01/02	SO ₂	26.85	1.1	50	Stack with Gas firing
		NOX	34.07	5.99	350	
HCU	FF-03	SO ₂	194.07	3.74	214	Stack with dual firing (FG:FO=90:10)
		NOX	89.10	4.7	360	
H2U	FF-01	SO ₂	48.3	5.80	50	Stack with Gas firing
		NOX	58.12	1.12	350	
MSP	FF-01	SO ₂	44.92	20.52	50	Stack with Gas firing
		NOX	64.67	21.35	350	
CPP HRSG		SO ₂	11.55	10.00	50	Stack with dual firing (FG:NAP=100:00)
		NOX	21.83	7.83	350	
CPP UTILITY BOILER		SO ₂	47.21	14.15	50	Stack with Dual firing (FG:FO=100:0)
		NOX	235.2	15.01	350	
DHDT		SO ₂	218.91	0.47	50	Stack with Gas firing
		NOX	55.4	12.20	350	

* Limiting concentration of emission calculated as per MOEF new notification on standard vide GSR- 186 (E) dated 18th March, 2008. Emission level for all the stacks are found to be within limit



NUMALIGARH REFINERY LIMITED

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Ambient Air Quality Data

STATION	PARAMETER	STD NAAQS-2009	Unit	OBSERVATIONS		
				MAX	MIN	AVG
REFINERY (WATCH TOWER NO. 6)	SO2	80 (24 hr avg.)	µg/m3	14.9	9.30	12.2
	NO2	80 (24 hr avg.)	µg/m3	20.0	12.4	16.1
	O3	100 (8 hr avg.)	µg/m3	43.1	16.8	24.1
	CO	2.000 (8 hr.avg.)	mg/m3	1.100	0.69	0.893
	NH3	400 (24 hr.avg.)	µg/m3	37.3	16.2	21.06
	PM 10	100 (24 hr.avg.)	µg/m3	72.7	48.5	46.3
	PM 2.5	60 (24 hr.avg.)	µg/m3	39.9	18.2	21.0
	Benzene	05 (Annual)	µg/m3	3.50	1.30	1.98
	HC		mg/m3	1.37	0.70	0.79
	BaP	01 (Annual)	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.49	0.17	0.25
	As	06 (Annual)	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	4.30	1.40	2.13
ECO-PARK IN NRL TOWNSHIP	SO2	80 (24 hr avg.)	µg/m3	12.60	9.10	10.8
	NO2	80 (24 hr avg.)	µg/m3	17.00	11.50	14.3
	O3	100 (8 hr avg.)	µg/m3	33.3	15.20	23.8
	CO	2.000 (8 hr.avg.)	mg/m3	0.900	0.710	0.793
	NH3	400 (24 hr.avg.)	µg/m3	30.1	15.60	20.4
	PM 10	100 (24 hr.avg.)	µg/m3	57.7	44.9	52.3
	PM 2.5	60 (24 hr.avg.)	µg/m3	31.7	18.2	22.1
	Benzene	05 (Annual)	µg/m3	3.10	1.10	2.1
	HC		mg/m3	1.08	0.67	0.9
	BaP	1.0 (Annual)	ng/m3	<0.5	<0.5	<0.5

	Pb	1.0 (24 hr.avg.)	µg/m ³	0.39	0.17	0.263
	As	6.0 (Annual)	ng/m ³	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m ³	3.60	1.40	2.62
RAW WATER INTAKE	SO ₂	80 (24 hr avg.)	µg/m ³	11.8	8.2	10.1
	NO ₂	80 (24 hr avg.)	µg/m ³	16.5	10.5	13.3
	O ₃	100 (8 hr avg.)	µg/m ³	30.4	14.8	23.2
	CO	2.000 (8 hr.avg.)	mg/m ³	0.85	0.61	0.72
	NH ₃	400 (24 hr.avg.)	µg/m ³	27.90	14.40	21.03
	PM 10	100 (24 hr.avg.)	µg/m ³	53.8	43.6	48.4
	PM 2.5	60 (24 hr.avg.)	µg/m ³	27.3	16.5	21.7
	Benzene	05 (Annual)	µg/m ³	2.90	1.10	2.1
	HC		mg/m ³	1.00	0.61	0.8
	BaP	01 (Annual)	ng/m ³	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m ³	0.360	0.15	0.25
	As	06 (Annual)	ng/m ³	1.00	1.00	1.00
Ni	20 (Annual)	ng/m ³	3.30	1.30	2.17	
NH-39 BYPASS	SO ₂	80 (24 hr avg.)	µg/m ³	16.3	10.6	13.0
	NO ₂	80 (24 hr avg.)	µg/m ³	22.0	13.8	17.1
	O ₃	100 (8 hr avg.)	µg/m ³	41.7	18.6	29.7
	CO	2.000 (8 hr.avg.)	mg/m ³	1.140	0.790	0.973
	NH ₃	400 (24 hr.avg.)	µg/m ³	40.0	19.9	29.1
	PM 10	100 (24 hr.avg.)	µg/m ³	75.5	54.6	64.7
	PM 2.5	60 (24 hr.avg.)	µg/m ³	39.9	19.5	29.5
	Benzene	05 (Annual)	µg/m ³	4.10	1.40	2.66
	HC	-	mg/m ³	1.33	0.85	1.13
	BaP	1	ng/m ³	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m ³	0.51	0.22	0.363

	As	6	ng/m ³	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m ³	4.50	1.70	2.94
KAZIRANGA WILDLIFE SANCTUARY AT AGARTOLI	SO ₂	80 (24 hr avg.)	µg/m ³	12.70	8.40	10.14
	NO ₂	80 (24 hr avg.)	µg/m ³	16.5	10.7	13.4
	O ₃	100 (8 hr avg.)	µg/m ³	34.3	15.70	23.3
	CO	2.000 (8 hr.avg.)	mg/m ³	0.870	0.610	0.7
	NH ₃	400 (24 hr.avg.)	µg/m ³	30.50	14.10	20.1
	PM 10	100 (24 hr.avg.)	µg/m ³	56.1	41.3	48.0
	PM 2.5	60 (24 hr.avg.)	µg/m ³	29.9	16.1	20.9
	Benzene	05 (Annual)	µg/m ³	2.90	1.00	2.2
	HC	-	mg/m ³	1.07	0.61	0.8
	BaP	1.0	ng/m ³	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m ³	0.35	0.14	0.23
	As	6.0	ng/m ³	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m ³	3.50	1.20	2.2

BDL:Below Detection Level, All the parameters are found to be within limit