

QUARTERLY PERFORMANCE WITH RESPECT TO ENVIRONMENTAL ASPECTS

DURING QUARTER I (APR-JUN '22), 2022-23

Name of Enterprise : Numaligarh Refinery Limited

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

Table A-I	APR	MAY	JUN	Cummulative	Cumm. for the period
				APR-JUN'22	(APRIL-MARCH'23)
Crude Processed, MT	270720	226078	240562	737360	737360
Fresh Water Consumed, M3	530693	542229	593811	1666733	1666733
Water Consumed, M3/MT of Crude Processed	2.0	2.4	2.5	2.26	2.26
(Design capacity is 2.8 M3/MT of Crude Processed)					

II. Liquid Effluent Quantity

Table A-II	APR	MAY	JUN	APR-JUN'22	Cumm. for the period
					(APRIL-MARCH'23)
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	53500	83000	59000	195500	195500
% Reuse/Recycled on Effluent Generated	100.0	100.0	100.0	100.0	100.0

III. Average Sulphur Dioxide Emission

Table A-III	APR	MAY	JUN	Average	Average for the period
				APR-JUN'22	April-MARCH'23
SO2 Emission, Kg/Hr	93.2	89.5	70.1	84.3	84.3
(SPCB Norms: 256 Kg/Hr as SO2)					

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						Limiting value for conc. (mg/l except for pH)	Quantum limit in Kg / 1000 MT of crude processed	
SL. NO	PARAMETERS	NO. OF OBS	MAX	MIN.	AVG.		Actual	Standard
1	pH	90	7.5	5.5	6.8	6-8.5	-	-
2	OIL & GREASE	90	4.5	1.1	1.85	5	0.49	2.0
3	SULPHIDE	90	<0.1	<0.1	<0.1	0.5	0.03	0.2
4	PHENOL	90	0.16	0.05	0.11	0.35	0.03	0.14
5	S. SOLID	90	20.0	9.0	15.71	20.0	4.16	8.0
6	COD	90	110.0	23.00	58.2	125.0	15.4	50.0
7	BOD3	90	11.0	2.0	5.00	15.0	1.32	6.0
8	CN	90	<0.02	<0.02	<0.02	0.2	0.01	0.08
9	Ammonia as N	3			9.33	15.0	2.47	6.0
10	Cr (Hexavalent)	3			0.00	0.1	0.00	0.04
11	Cr (Total)	3			0.001	2.0	0.00	0.8
12	Pb	3			0.0000	0.1	0.000	0.04
13	Zn	3			0.015	5.0	0.00	2.0
14	Ni	3			0.002	1.0	0.00	0.4
15	Cu	3			0.001	1.0	0.000	0.4
16	Benzene	3			0.035	0.1	0.009	0.04
17	Benzo (a)-Pyrene	3			0.040	0.2	0.011	0.08
18	Hg	3			0.0033	0.01	0.00	0.004
19	V	3			0.07	0.2	0.0	0.8
20	TKN	3			18.2	40.0	4.83	16.0
21	P	3			1.36	3.0	0.36	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**



QUARTERLY PERFORMANCE REPORT W.R.T ENVIRONMENTAL ASPECT.

DURING QUARTER I (APR-JUN'22), 2022-23

Online Stack Analyser data

UNIT	FURNACE STACK	PARAMETER	OBSERVED VALUE in mg/Nm3			Limiting Concentration in mg/Nm3	Remarks
			MAX.	MIN.	AVG		
CDU/VDU	FF-01/02	SO2	213.05	44.80	137.56	619	Stack with dual firing (FG:FO=66:34)
		NOx	156.39	8.46	26.40	384	
		CO	8.33	5.49	6.78	167	
		PM	34.81	4.74	12.67	41	
DCU	FF-01	SO2	280.49	125.42	222.59	913	Stack with dual firing (FG:FO=48:52)
		NOx	187.87	100.97	174.71	402	
		CO	18.72	2.56	10.70	176	
		PM	14.55	4.94	8.89	57	
HCU	FF-01/02	SO2	15.72	3.74	37.02	50	Stack with Gas firing
		NOx	283.10	24.83	37.02	350	
		CO	81.96	1.66	24.08	150	
		PM	6.57	4.41	5.32	10	
HCU	FF-03	SO2	214.25	20.07	79.00	272	Stack with dual firing (FG:FO=87:13)
		NOx	302.47	3.04	32.48	363	
		CO	47.82	1.94	22.42	157	
		PM	8.68	6.11	7.33	22	
H2U	FF-01	SO2	47.00	1.13	29.68	50	Stack with Gas firing
		NOx	47.80	11.91	27.92	350	
		CO	33.27	7.02	10.30	150	
		PM	8.06	5.31	6.81	10	
CPP(HRSG)		SO2	49.05	2.71	41.53	50	Stack with Gas firing
		NOx	40.05	7.73	34.85	350	
		CO	19.39	4.24	15.52	150	
		PM	10.00	0.60	3.12	10	
CPP (UB)		SO2	35.27	29.01	32.25	50	Stack with dual firing (FG:FO=100:0)
		NOx	105.95	51.48	82.32	350	
		CO	68.44	0.33	4.34	150	
		PM	10.00	3.27	5.26	10	

MSP (CRU)	SO ₂	40.27	15.45	31.82	50	Stack with Gas firing
	NO _x	88.48	56.65	70.29	350	
	CO	2.85	0.57	1.74	150	
	PM	9.95	4.66	6.36	10	
MSP (NHTU)	SO ₂	22.44	19.41	21.01	50	Stack with Gas firing
	NO _x	70.49	50.24	63.77	350	
	CO	7.89	0.56	3.10	150	
	PM	9.95	4.66	6.36	10	
DHDT	SO ₂	48.99	15.04	38.75	50	Stack with Gas firing
	NO _x	76.84	27.90	56.66	250	
	CO	27.56	0.00	6.96	100	
	PM	0.66	0.60	0.63	5	
Limiting concentration of emission calculated as per MOEF notification on standard vide GSR-186 (E) dated 18th March, 2008.						

NUMALIGARH REFINERY LIMITED

**QUARTERLY PERFORMANCE WITH RESPECT TO ENVIRONMENTAL ASPECTS
DURING QUARTER I (APR-JUN'22), 2022-23**

Ambient Air Quality Data

STATION	PARAMETER	STD	Unit	OBSERVATIONS		
		NAAQS-2009		MAX	MIN	AVG
REFINERY (WATCH TOWER NO. 6)	SO2	80 (24 hr avg.)	µg/m3	13.6	8.20	11.1
	NO2	80 (24 hr avg.)	µg/m3	18.5	10.3	14.7
	O3	100 (8 hr avg.)	µg/m3	36.1	17.5	24.7
	CO	2.000 (8 hr.avg.)	mg/m3	1.000	0.62	0.823
	NH3	400 (24 hr.avg.)	µg/m3	32.8	14.4	23.42
	PM 10	100 (24 hr.avg.)	µg/m3	65.2	44.8	54.0
	PM 2.5	60 (24 hr.avg.)	µg/m3	32.6	18.2	24.4
	Benzene	05 (Annual)	µg/m3	3.20	1.30	2.33
	HC	-	mg/m3	1.21	0.68	0.89
	BaP	01 (Annual)	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.43	0.17	0.29
	As	06 (Annual)	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	4.00	1.50	2.54
	ECO-PARK IN NRL TOWNSHIP	SO2	80 (24 hr avg.)	µg/m3	14.60	8.20
NO2		80 (24 hr avg.)	µg/m3	19.90	10.80	14.9
O3		100 (8 hr avg.)	µg/m3	41.4	14.30	26.0
CO		2.000 (8 hr.avg.)	mg/m3	1.070	0.610	0.820
NH3		400 (24 hr.avg.)	µg/m3	33.6	15.80	22.5
PM 10		100 (24 hr.avg.)	µg/m3	69.5	41.0	54.1
PM 2.5		60 (24 hr.avg.)	µg/m3	33.4	17.8	25.3
Benzene		05 (Annual)	µg/m3	3.40	1.00	2.3
HC			mg/m3	1.28	0.67	0.9
BaP		1.0 (Annual)	ng/m3	<0.5	<0.5	<0.5
Pb		1.0 (24 hr.avg.)	µg/m3	0.44	0.18	0.293
As		6.0 (Annual)	ng/m3	1.00	1.00	1.00
Ni		20 (Annual)	ng/m3	4.10	1.30	2.40
RAW WATER INTAKE		SO2	80 (24 hr avg.)	µg/m3	13.0	7.4
	NO2	80 (24 hr avg.)	µg/m3	18.1	9.7	13.4
	O3	100 (8 hr avg.)	µg/m3	32.8	16.0	24.2

	CO	2.000 (8 hr.avg.)	mg/m3	0.93	0.58	0.73
	NH3	400 (24 hr.avg.)	µg/m3	32.20	14.70	21.59
	PM 10	100 (24 hr.avg.)	µg/m3	61.6	39.5	49.4
	PM 2.5	60 (24 hr.avg.)	µg/m3	33.4	13.5	22.1
	Benzene	05 (Annual)	µg/m3	3.10	1.00	1.9
	HC		mg/m3	1.05	0.65	0.8
	BaP	01 (Annual)	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.360	0.16	0.25
	As	06 (Annual)	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	3.20	1.10	2.02

NH-39 BYPASS	SO2	80 (24 hr avg.)	µg/m3	17.2	9.9	13.1
	NO2	80 (24 hr avg.)	µg/m3	22.0	12.6	17.2
	O3	100 (8 hr avg.)	µg/m3	40.1	16.6	27.8
	CO	2.000 (8 hr.avg.)	mg/m3	1.180	0.700	0.920
	NH3	400 (24 hr.avg.)	µg/m3	39.4	17.2	28.6
	PM 10	100 (24 hr.avg.)	µg/m3	72.5	50.1	62.3
	PM 2.5	60 (24 hr.avg.)	µg/m3	37.8	18.7	100.9
	Benzene	05 (Annual)	µg/m3	4.20	1.40	2.77
	HC	-	mg/m3	1.43	0.79	1.07
	BaP	1	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.51	0.17	0.310
	As	6	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	3.90	1.70	2.84

KAZIRANGA WILDLIFE SANCTUARY AT AGARTOLI	SO2	80 (24 hr avg.)	µg/m3	11.60	7.10	9.51
	NO2	80 (24 hr avg.)	µg/m3	16.2	9.9	12.9
	O3	100 (8 hr avg.)	µg/m3	32.3	14.60	22.2
	CO	2.000 (8 hr.avg.)	mg/m3	0.860	0.610	0.7
	NH3	400 (24 hr.avg.)	µg/m3	29.00	14.40	20.8
	PM 10	100 (24 hr.avg.)	µg/m3	52.6	36.2	45.0
	PM 2.5	60 (24 hr.avg.)	µg/m3	28.2	13.9	19.8
	Benzene	05 (Annual)	µg/m3	2.80	1.20	2.0
	HC	-	mg/m3	1.02	0.60	0.8
	BaP	1.0	ng/m3	<0.5	<0.5	<0.5

	Pb	1.0 (24 hr.avg.)	µg/m3	0.35	0.13	0.24
	As	6.0	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	3.30	1.40	2.30

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

