

QUARTERLY PERFORMANCE WITH RESPECT TO ENVIRONMENTAL ASPECTS

DURING QUARTER IV (JAN-MAR '22),2021-22

Name of Enterprise : Numaligarh Refinery Limited

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

Table A-I	JAN	FEB	MAR	Cummulative	Cumm. for the period
				JAN-MAR'22	(APRIL-MARCH'22)
Crude Processed, MT	271965	234045	188181	694191	2624410
Fresh Water Consumed, M3	543056	488327	499796	1531179	6866924
Water Consumed, M3/MT of Crude Processed (Design capacity is 2.8 M3/MT of Crude Processed)	2.0	2.1	2.7	2.21	2.62

II. Liquid Effluent Quantity

Table A-II	JAN	FEB	MAR	JAN-MAR'22	Cumm. for the period
					(APRIL-MARCH'22)
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	68000	58000	58000	184000	1067017
% Reuse/Recycled on Effluent Generated	100.0	100.0	100.0	100.0	100.0

III. Average Sulphur Dioxide Emission

Table A-III	JAN	FEB	MAR	Average	Average for the period
				JAN-MAR'22	April-MARCH'22
SO2 Emission, Kg/Hr (SPCB Norms: 256 Kg/Hr as SO2)	107.1	99.2	85.2	97.2	90.8

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



QUARTERLY PERFORMANCE REPORT W.R.T ENVIRONMENTAL ASPECT.

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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	248.36	6.60	132.24	632	Stack with dual firing (FG:FO=65:35)
		NOx	225.39	1.28	34.63	385	
		CO	8.53	4.86	7.28	168	
		PM	12.00	6.85	9.78	42	
DCU	FF-01	SO2	251.60	1.06	157.07	1058	Stack with dual firing (FG:FO=39:61)
		NOx	194.79	7.09	141.20	411	
		CO	102.78	1.14	53.60	181	
		PM	28.00	7.00	9.21	65	
HCU	FF-01/02	SO2	28.95	1.70	14.07	50	Stack with Gas firing
		NOx	41.48	6.58	37.11	350	
		CO	105.00	0.30	20.71	150	
		PM	3.36	2.85	3.14	10	
HCU	FF-03	SO2	162.40	0.83	66.66	177	Stack with dual firing (FG:FO=92:08)
		NOx	86.50	1.01	40.34	358	
		CO	74.33	0.04	10.20	154	
		PM	7.40	5.30	6.03	17	
H2U	FF-01	SO2	51.21	2.65	22.89	50	Stack with Gas firing
		NOx	30.41	5.83	21.38	350	
		CO	10.63	5.76	7.67	150	
		PM	9.03	8.00	8.43	10	
CPP(HRSG)		SO2	49.90	10.00	23.55	50	Stack with Gas firing
		NOx	39.96	14.00	24.46	350	
		CO	18.47	0.31	4.40	150	
		PM	13.24	1.85	3.16	10	

CPP (UB)	SO ₂	77.77	45.00	60.99	75	Stack with dual firing (FG:FO=99:1)
	NO _x	118.47	94.64	105.36	351	
	CO	9.00	0.20	4.47	151	
	PM	2.81	2.67	2.72	11	
MSP (CRU)	SO ₂	47.80	22.87	37.01	50	Stack with Gas firing
	NO _x	85.21	55.00	70.58	350	
	CO	2.75	0.55	1.47	150	
	PM	5.70	4.78	5.19	10	
MSP (NHTU)	SO ₂	50.00	18.16	25.94	50	Stack with Gas firing
	NO _x	77.19	45.00	62.41	350	
	CO	4.00	0.60	2.02	150	
	PM	5.70	4.78	5.19	10	
DHDT	SO ₂	70.52	2.40	28.79	50	Stack with Gas firing
	NO _x	58.37	37.69	48.36	250	
	CO	17.13	0.40	4.73	100	
	PM	0.64	0.58	0.61	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 IV (JAN-MAR'22), 2021-22**

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	13.7	9.80	11.9
	NO2	80 (24 hr avg.)	µg/m3	19.2	12.5	15.7
	O3	100 (8 hr avg.)	µg/m3	36.8	17.8	27.0
	CO	2.000 (8 hr.avg.)	mg/m3	1.080	0.72	0.877
	NH3	400 (24 hr.avg.)	µg/m3	33.9	15.4	24.36
	PM 10	100 (24 hr.avg.)	µg/m3	64.7	49.3	57.1
	PM 2.5	60 (24 hr.avg.)	µg/m3	32.6	19.5	25.3
	Benzene	05 (Annual)	µg/m3	3.20	1.00	2.35
	HC	-	mg/m3	1.21	0.56	0.94
	BaP	01 (Annual)	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.46	0.19	0.33
	As	06 (Annual)	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	4.00	1.30	2.55
ECO-PARK IN NRL TOWNSHIP	SO2	80 (24 hr avg.)	µg/m3	14.60	10.60	12.5
	NO2	80 (24 hr avg.)	µg/m3	19.90	13.40	16.6
	O3	100 (8 hr avg.)	µg/m3	41.4	17.80	28.1
	CO	2.000 (8 hr.avg.)	mg/m3	1.070	0.720	0.893
	NH3	400 (24 hr.avg.)	µg/m3	33.6	17.70	24.9
	PM 10	100 (24 hr.avg.)	µg/m3	69.5	51.0	61.1
	PM 2.5	60 (24 hr.avg.)	µg/m3	36.9	22.1	27.6
	Benzene	05 (Annual)	µg/m3	3.60	1.30	2.5
	HC		mg/m3	1.28	0.78	1.0
	BaP	1.0 (Annual)	ng/m3	<0.5	<0.5	<0.5

	Pb	1.0 (24 hr.avg.)	µg/m3	0.44	0.18	0.317
	As	6.0 (Annual)	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	4.20	1.50	2.83
RAW WATER INTAKE	SO2	80 (24 hr avg.)	µg/m3	13.3	8.6	11.3
	NO2	80 (24 hr avg.)	µg/m3	18.1	11.4	14.9
	O3	100 (8 hr avg.)	µg/m3	35.1	18.9	26.7
	CO	2.000 (8 hr.avg.)	mg/m3	0.96	0.62	0.83
	NH3	400 (24 hr.avg.)	µg/m3	32.20	15.20	24.11
	PM 10	100 (24 hr.avg.)	µg/m3	60.7	45.2	54.7
	PM 2.5	60 (24 hr.avg.)	µg/m3	33.4	17.4	25.2
	Benzene	05 (Annual)	µg/m3	3.30	1.20	2.3
	HC		mg/m3	1.14	0.61	0.8
	BaP	01 (Annual)	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.410	0.18	0.31
	As	06 (Annual)	ng/m3	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m3	3.40	1.50	2.36
NH-39 BYPASS	SO2	80 (24 hr avg.)	µg/m3	16.9	11.0	13.7
	NO2	80 (24 hr avg.)	µg/m3	21.8	13.9	18.1
	O3	100 (8 hr avg.)	µg/m3	43.7	21.8	31.8
	CO	2.000 (8 hr.avg.)	mg/m3	1.180	0.820	0.980
	NH3	400 (24 hr.avg.)	µg/m3	39.8	21.5	30.3
	PM 10	100 (24 hr.avg.)	µg/m3	78.6	49.1	66.7
	PM 2.5	60 (24 hr.avg.)	µg/m3	37.3	23.4	29.5
	Benzene	05 (Annual)	µg/m3	4.30	1.50	2.88
	HC	-	mg/m3	1.37	0.74	1.12
	BaP	1	ng/m3	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m3	0.48	0.18	0.323

KAZIRANGA WILDLIFE SANCTUARY AT AGARTOLI	As	6	ng/m ³	1.00	1.00	1.00
	Ni	20 (Annual)	ng/m ³	4.40	1.70	3.05
	SO ₂	80 (24 hr avg.)	µg/m ³	12.50	7.50	10.64
	NO ₂	80 (24 hr avg.)	µg/m ³	16.4	10.0	14.1
	O ₃	100 (8 hr avg.)	µg/m ³	32.3	14.60	23.6
	CO	2.000 (8 hr.avg.)	mg/m ³	0.880	0.620	0.7
	NH ₃	400 (24 hr.avg.)	µg/m ³	30.70	14.50	22.1
	PM 10	100 (24 hr.avg.)	µg/m ³	56.8	43.7	50.2
	PM 2.5	60 (24 hr.avg.)	µg/m ³	28.2	15.3	22.2
	Benzene	05 (Annual)	µg/m ³	3.00	1.30	2.1
	HC	-	mg/m ³	1.04	0.55	0.8
	BaP	1.0	ng/m ³	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m ³	0.37	0.15	0.28
	As	6.0	ng/m ³	1.00	1.00	1.00
Ni	20 (Annual)	ng/m ³	3.50	1.40	2.38	

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

QUARTERLY PERFORMANCE REPORT W.R.T ENVIRONMENTAL ASPECT

DURING QR. IV (JAN-MAR'22) 2021 -22

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	90	8.0	6.5	7.3	6-8.5	-	-
2	OIL & GRE	90	4.8	1.1	2.96	5	0.79	2.0
3	SULPHIDE	90	<0.1	<0.1	<0.1	0.5	0.03	0.2
4	PHENOL	90	0.34	0.09	0.13	0.35	0.03	0.14
5	S. SOLID	90	20.0	7.0	15.11	20.0	4.00	8.0
6	COD	90	124.0	23.00	66.3	125.0	17.6	50.0
7	BOD3	90	15.0	6.0	7.74	15.0	2.05	6.0
8	CN	87	<0.02	<0.02	<0.02	0.2	0.01	0.08
9	Ammonia as N	3	10.2		9.93	15.0	2.63	6.0
10	Cr (Hexavalent)	3			0.00	0.1	0.00	0.04
11	Cr (Total)	3	0.002		0.001	2.0	0.00	0.8
12	Pb	3	0		0.0000	0.1	0.000	0.04
13	Zn	3	0.02		0.011	5.0	0.00	2.0
14	Ni	3	0.002		0.002	1.0	0.00	0.4
15	Cu	3	0.004		0.003	1.0	0.001	0.4
16	Benzene	3	0.053		0.044	0.1	0.012	0.04
17	Benzo (a)- Pyrene	3	0.059		0.050	0.2	0.013	0.08
18	Hg	3	0.004		0.0033	0.01	0.00	0.004
19	V	3	0.058		0.05	0.2	0.0	0.8
20	TKN	3	22.4		19.5	40.0	5.16	16.0
21	P	3	1.26		1.11	3.0	0.29	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**

