

QUARTERLY PERFORMANCE WITH RESPECT TO ENVIRONMENTAL ASPECTS

DURING QUARTER II (JUL-SEP'23),2023-24

Name of Enterprise : Numaligarh Refinery Limited

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

Table A-I	JUL	AUG	SEP	Cummulative	Cumm. for the period
				JUL-SEP'23	APRIL'23-MARCH'24
Crude Processed, MT	245105	256755	275949	777809	847410
Fresh Water Consumed, M3	720113	726960	715843	2162916	4132700
Water Consumed, M3/MT of Crude Processed (Design capacity is 2.8 M3/MT of Crude Processed)	2.9	2.8	2.6	2.78	2.78

II. Liquid Effluent Quantity

Table A-II	JUL	AUG	SEP	Cummulative	Cumm. for the period
				JUL-SEP'23	APRIL'23-MARCH'24
Quantity of Effluent Discharged/loss, M3***	33160	39146	29171	101477	101477
Effluent Discharged/loss, M3/1000 MT of Crude Processed	135	152	106	130	130
Reuse, M3	23740	17788	16200	57728	57728
% Reuse/Recycled on Effluent Generated	41.0	40.0	42.9	41.2	41.2

III. Average Sulphur Dioxide Emission

Table A-III	JUL	AUG	SEP	Average	Average for the period
				JUL-SEP'23	APRIL'23-MARCH'24
SO2 Emission, Kg/Hr (SPCB Norms: 256 Kg/Hr as SO2)	98.97	106.29	109.10	104.8	59.9

Remarks

***Treated water discharge to outside environment directly from ETP via dedicated pipeline discontinued since 2006.
Presently there is no dedicated facility for discharging Treated effluent from ETP. The quantities provided are representation of the system/operational losses in ETP due to various constraints

QUARTERLY PERFORMANCE REPORT W.R.T ENVIRONMENTAL ASPECT

DURING QR. II(JUL-SEP'23) 2023 -24

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	8.5	6.5	7.4	6-8.5	-	-
2	OIL & GREASE	92	3.6	0.5	1.44	5	0.65	2.0
3	SULPHIDE	92	<0.1	<0.1	<0.1	0.5	<0.1	0.2
4	PHENOL	92	0.35	0.01	0.11	0.35	0.05	0.14
5	S. SOLID	92	20.0	4.4	9.37	20.0	4.24	8.0
6	COD	92	121.0	12.50	36.1	125.0	16.35	50.0
7	BOD3	92	15.0	1.0	6.59	15.0	2.99	6.0
8	CN	92	<0.02	<0.02	<0.02	0.2	<0.02	0.08
9	Ammonia as N	3	12.2	9.2	10.33	15.0	4.68	6.0
10	Cr (Hexavalent)	3	0	0	0.00	0.1	0.0000	0.04
11	Cr (Total)	3	0.004	0.002	0.003	2.0	0.0012	0.8
12	Pb	3	0	0	0.0000	0.1	0.0000	0.04
13	Zn	3	0.005	0.004	0.004	5.0	0.0020	2.0
14	Ni	3	0	0	0.000	1.0	0.0000	0.4
15	Cu	3	0.004	0.003	0.003	1.0	0.0015	0.4
16	Benzene	3	<0.1	<0.1	<0.1	0.1	<0.1	0.04
17	Benzo (a)- Pyrene	3	<0.2	<0.2	<0.2	0.2	<0.2	0.08
18	Hg	3	<0.01	<0.01	<0.01	0.01	<0.01	0.004
19	V	3	<0.2	<0.2	<0.2	0.2	<0.2	0.8
20	TKN	3	25.8	19.5	22.8	40.0	10.34	16.0
21	P	3	2.1	1.14	1.58	3.0	0.72	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.
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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	385.37	10.48	181.02	670	Stack with dual firing (FG:FO=62:38)
		NOx	184.98	1.10	100.42	388	
		CO	4.20	1.24	2.53	169	
		PM	9.80	4.70	6.36	44	
DCU	FF-01	SO2	239.33	84.55	196.84	914	Stack with dual firing (FG:FO=48:52)
		NOx	186.08	27.21	164.49	402	
		CO	2.29	0.10	0.78	176	
		PM	38.62	1.75	9.29	57	
HCU	FF-01/02	SO2	6.22	1.73	4.17	50	Stack with Gas firing
		NOx	38.92	3.87	28.05	350	
		CO	9.03	2.19	7.28	150	
		PM	6.48	1.94	4.07	10	
HCU	FF-03	SO2	126.52	4.40	54.72	204	Stack with dual firing (FG:FO=91:9)
		NOx	62.66	1.70	30.00	359	
		CO	79.39	0.97	29.73	155	
		PM	9.28	4.23	5.98	18	
H2U	FF-01	SO2	29.21	20.87	25.76	50	Stack with Gas firing
		NOx	48.00	13.96	27.83	350	
		CO	19.68	1.76	8.97	150	
		PM	9.86	5.77	8.03	10	
CPP(HRSG)		SO2	34.17	4.53	15.59	50	Stack with Gas firing (FG:Naphtha=100:0)
		NOx	28.27	0.43	13.14	350	
		CO	14.44	0.92	2.93	150	
		PM	7.34	0.01	1.93	10	
		SO2	43.24	29.40	33.99	50	

CPP (UB)	NOx	95.67	74.05	81.91	350	Stack with dual firing (FG:Naphtha=100:0)
	CO	23.90	0.13	6.53	150	
	PM	9.91	4.01	6.18	10	
MSP (CRU)	SO2	14.76	1.22	2.14	50	Stack with Gas firing
	NOx	42.50	1.52	27.96	350	
	CO	2.84	0.46	1.60	150	
	PM	6.54	1.82	4.60	10	
MSP (NHTU)	SO2	30.83	1.58	3.49	50	Stack with Gas firing
	NOx	84.12	7.84	20.30	350	
	CO	8.87	1.10	2.99	150	
	PM	6.54	1.82	4.60	10	
DHDT	SO2	49.02	0.32	21.94	50	Stack with Gas firing
	NOx	117.40	2.08	46.24	250	
	CO	12.39	0.01	0.87	100	
	PM	0.74	0.50	0.68	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 II (JUL-SEP'23), 2023-24						
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	8.69	5.74	7.25
	NO2	80 (24 hr avg.)	µg/m3	18.77	8.55	13.98
	O3	180 (1 hr avg.)	µg/m3	2.41	0.0	1.44
	CO	4.000 (1 hr.avg.)	mg/m3	1.07	0.0	0.53
	NH3	400 (24 hr.avg.)	µg/m3	32.17	21.02	25.21
	PM 10	100 (24 hr.avg.)	µg/m3	70.34	21.04	45.20
	PM 2.5	60 (24 hr.avg.)	µg/m3	38.22	8.94	23.10
	Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
	HC	-	mg/m3	1.05	0.00	0.49
	BaP	01 (Annual)	ng/m3	0.00	0.00	0.00
	Pb	1.0 (24 hr.avg.)	µg/m3	0.00	0.00	0.00
	As	06 (Annual)	ng/m3	0.00	0.00	0.00
	Ni	20 (Annual)	ng/m3	0.00	0.00	0.00
ECO-PARK IN NRL TOWNSHIP	SO2	80 (24 hr avg.)	µg/m3	8.89	5.17	7.00
	NO2	80 (24 hr avg.)	µg/m3	19.15	8.09	13.68
	O3	180 (1 hr avg.)	µg/m3	2.71	0.00	1.49
	CO	4.000 (1 hr.avg.)	mg/m3	1.20	0.00	0.53
	NH3	400 (24 hr.avg.)	µg/m3	34.74	20.00	25.45
	PM 10	100 (24 hr.avg.)	µg/m3	65.22	15.71	41.26
	PM 2.5	60 (24 hr.avg.)	µg/m3	31.38	9.65	20.77
	Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
	HC		mg/m3	1.00	0.00	0.48
	BaP	1.0 (Annual)	ng/m3	0.00	0.00	0.00

		Pb	1.0 (24 hr.avg.)	µg/m3	0.00	0.00	0.00
		As	6.0 (Annual)	ng/m3	0.00	0.00	0.00
		Ni	20 (Annual)	ng/m3	0.00	0.00	0.00
RAW WATER INTAKE		SO2	80 (24 hr avg.)	µg/m3	8.61	6.01	7.36
		NO2	80 (24 hr avg.)	µg/m3	19.37	9.25	14.19
		O3	180 (1 hr avg.)	µg/m3	2.71	0.00	1.52
		CO	4.000 (1 hr.avg.)	mg/m3	1.11	0.00	0.53
		NH3	400 (24 hr.avg.)	µg/m3	36.96	21.06	26.25
		PM 10	100 (24 hr.avg.)	µg/m3	68.94	21.75	44.98
		PM 2.5	60 (24 hr.avg.)	µg/m3	33.22	9.07	22.14
		Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
		HC		mg/m3	1.03	0.00	0.50
		BaP	01 (Annual)	ng/m3	0.00	0.00	0.00
		Pb	1.0 (24 hr.avg.)	µg/m3	0.00	0.00	0.00
		As	06 (Annual)	ng/m3	0.00	0.00	0.00
		Ni	20 (Annual)	ng/m3	0.00	0.00	0.00
NH-39 BYPASS		SO2	80 (24 hr avg.)	µg/m3	11.01	6.04	8.33
		NO2	80 (24 hr avg.)	µg/m3	19.82	9.87	15.57
		O3	180 (1 hr avg.)	µg/m3	2.69	0.00	1.53
		CO	4.000 (1 hr.avg.)	mg/m3	1.11	0.00	0.56
		NH3	400 (24 hr.avg.)	µg/m3	36.05	20.05	27.31
		PM 10	100 (24 hr.avg.)	µg/m3	77.84	28.55	55.79
		PM 2.5	60 (24 hr.avg.)	µg/m3	41.11	19.71	31.18
		Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
		HC	-	mg/m3	1.11	0.00	0.54
		BaP	1	ng/m3	0.00	0.00	0.00
		Pb	1.0 (24 hr.avg.)	µg/m3	0.00	0.00	0.00

KAZIRANGA WILDLIFE SANCTUARY AT AGARTOLI	As	6	ng/m3	0.00	0.00	0.00
	Ni	20 (Annual)	ng/m3	0.00	0.00	0.00
	SO2	80 (24 hr avg.)	µg/m3	8.71	6.08	7.21
	NO2	80 (24 hr avg.)	µg/m3	18.88	9.45	13.33
	O3	180 (1 hr avg.)	µg/m3	2.56	0.00	1.47
	CO	4.000 (1 hr.avg.)	mg/m3	1.07	0.00	0.52
	NH3	400 (24 hr.avg.)	µg/m3	32.41	17.71	24.09
	PM 10	100 (24 hr.avg.)	µg/m3	64.99	15.25	37.21
	PM 2.5	60 (24 hr.avg.)	µg/m3	27.66	12.14	19.17
	Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
	HC	-	mg/m3	1.02	0.00	0.48
	BaP	1.0	ng/m3	0.00	0.00	0.00
	Pb	1.0 (24 hr.avg.)	µg/m3	0.00	0.00	0.00
	As	6.0	ng/m3	0.00	0.00	0.00
	Ni	20 (Annual)	ng/m3	0.00	0.00	0.00

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