

QUARTERLY PERFORMANCE WITH RESPECT TO ENVIRONMENTAL ASPECTS

DURING QUARTER III (OCT-DEC'23),2023-24

Name of Enterprise : Numaligarh Refinery Limited

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

Table A-I	OCT	NOV	DEC	Cummulative	Cumm. for the period
				OCT-DEC'23	APRIL'23-MARCH'24
Crude Processed, MT	285832	280217	287167	853216	1700626
Fresh Water Consumed, M3	702559	713272	726881	2142712	6275412
Water Consumed, M3/MT of Crude Processed (Design capacity is 2.8 M3/MT of Crude Processed)	2.5	2.5	2.5	2.51	2.64

II. Liquid Effluent Quantity

Table A-II	OCT	NOV	DEC	Cummulative	Cumm. for the period
				OCT-DEC'23	APRIL'23-MARCH'24
Quantity of Effluent Discharged/loss, M3***	41653	44059	46822	132534	234011
Effluent Discharged/loss, M3/1000 MT of Crude Processed	146	157	163	155	143
Reuse, M3	56740	60200	62740	179680	324860
% Reuse/Recycled on Effluent Generated	40.37	40.42	40.08	40.29	40.69

III. Average Sulphur Dioxide Emission

Table A-III	OCT	NOV	DEC	Average	Average for the period
				OCT-DEC'23	APRIL'23-MARCH'24
SO2 Emission, Kg/Hr (SPCB Norms: 256 Kg/Hr as SO2)	106.46	103.55	94.81	101.6	73.8

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

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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	8.0	6.0	7.3	6-8.5	-	-
2	OIL & GREASE	92	4.1	0.1	1.86	5	0.97	2.0
3	SULPHIDE	92	<0.1	<0.1	<0.1	0.5	<0.1	0.2
4	PHENOL	92	0.24	0.01	0.07	0.35	0.03	0.14
5	S. SOLID	92	20.0	3.0	12.59	20.0	6.58	8.0
6	COD	92	125.0	10.80	62.8	125.0	32.81	50.0
7	BOD3	92	15.0	3.0	7.96	15.0	4.16	6.0
8	CN	92	<0.02	<0.02	<0.02	0.2	<0.02	0.08
9	Ammonia as N	3	10.6	9.2	9.87	15.0	5.16	6.0
10	Cr (Hexavalent)	3	0	0	0.00	0.1	0.0000	0.04
11	Cr (Total)	3	0.002	0.001	0.001	2.0	0.0007	0.8
12	Pb	3	0	0	0.0000	0.1	0.0000	0.04
13	Zn	3	0.012	0.006	0.009	5.0	0.0045	2.0
14	Ni	3	0.003	0.001	0.002	1.0	0.0010	0.4
15	Cu	3	0.004	0.001	0.002	1.0	0.0012	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	17.92	11.4	15.4	40.0	8.04	16.0
21	P	3	1.36	1.2	1.26	3.0	0.66	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	392.95	42.93	252.88	796	Stack with dual firing (FG:FO=55:45)
		NOx	184.05	154.76	172.26	395	
		CO	7.76	0.70	4.69	173	
		PM	43.07	4.52	8.83	51	
DCU	FF-01	SO2	240.76	174.90	208.56	1035	Stack with dual firing (FG:FO=40:60)
		NOx	188.79	157.34	173.80	410	
		CO	1.28	0.49	1.03	180	
		PM	21.79	5.15	10.41	64	
HCU	FF-01/02	SO2	7.77	3.98	4.82	50	Stack with Gas firing
		NOx	23.19	8.41	17.45	350	
		CO	9.61	8.12	8.72	150	
		PM	9.07	3.00	5.87	10	
HCU	FF-03	SO2	66.00	3.34	24.88	183	Stack with dual firing (FG:FO=92:8)
		NOx	92.58	0.40	20.28	358	
		CO	81.69	8.49	40.67	154	
		PM	6.13	4.11	4.65	17	
H2U	FF-01	SO2	29.26	22.60	26.77	50	Stack with Gas firing
		NOx	31.34	0.16	15.59	350	
		CO	10.43	9.61	10.19	150	
		PM	9.66	5.81	7.18	10	
CPP(HRSG)		SO2	42.43	37.02	39.53	50	Stack with Gas firing (FG:Naphtha=100:0)
		NOx	78.85	6.19	28.57	350	
		CO	5.10	1.36	3.09	150	
		PM	7.84	0.004	2.76	10	
		SO2	45.72	12.80	30.62	50	

CPP (UB)	NOx	101.54	6.14	55.99	350	Stack with dual firing (FG:Naphtha=100:0)
	CO	13.51	0.15	6.41	150	
	PM	9.22	4.97	6.92	10	
MSP (CRU)	SO2	30.21	2.79	13.02	50	Stack with Gas firing
	NOx	122.98	16.22	53.06	350	
	CO	2.28	0.67	1.56	150	
	PM	7.09	4.75	6.30	10	
MSP (NHTU)	SO2	34.63	1.44	8.94	50	Stack with Gas firing
	NOx	144.47	0.73	50.08	350	
	CO	6.48	0.51	2.91	150	
	PM	7.09	4.75	6.30	10	
DHD T	SO2	46.57	4.26	23.48	50	Stack with Gas firing
	NOx	98.74	4.19	23.24	250	
	CO	20.80	0.09	2.53	100	
	PM	1.58	0.73	1.02	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 III (OCT-DEC'23), 2023-24						
Ambient Air Quality Data						
STATION	PARAMETER	STD NAAQS-2009	Unit	OBSERVATIONS		
				MAX	MIN	AVG.
REFINERY (WATCH TOWER NO. 6)	SO ₂	80 (24 hr avg.)	µg/m ³	18.00	4.26	9.56
	NO ₂	80 (24 hr avg.)	µg/m ³	27.65	10.42	16.30
	O ₃	180 (1 hr avg.)	µg/m ³	5.23	0.0	2.06
	CO	4.000 (1 hr.avg.)	mg/m ³	1.07	0.0	0.52
	NH ₃	400 (24 hr.avg.)	µg/m ³	38.53	9.97	22.23
	PM 10	100 (24 hr.avg.)	µg/m ³	73.48	34.21	56.79
	PM 2.5	60 (24 hr.avg.)	µg/m ³	58.36	21.22	41.24
	Benzene	05 (Annual)	µg/m ³	0.00	0.00	0.00
	HC	-	mg/m ³	0.92	0.52	0.72
	BaP	01 (Annual)	ng/m ³	<0.5	<0.5	<0.5
	Pb	1.0 (24 hr.avg.)	µg/m ³	0.00	0.00	0.00
	As	06 (Annual)	ng/m ³	0.00	0.00	0.00
	Ni	20 (Annual)	ng/m ³	0.00	0.00	0.00
ECO-PARK IN NRL TOWNSHIP	SO ₂	80 (24 hr avg.)	µg/m ³	14.78	5.63	8.48
	NO ₂	80 (24 hr avg.)	µg/m ³	19.07	9.65	15.20
	O ₃	180 (1 hr avg.)	µg/m ³	5.14	0.00	2.22
	CO	4.000 (1 hr.avg.)	mg/m ³	1.14	0.56	0.77
	NH ₃	400 (24 hr.avg.)	µg/m ³	39.04	10.36	26.40
	PM 10	100 (24 hr.avg.)	µg/m ³	73.05	31.47	55.63
	PM 2.5	60 (24 hr.avg.)	µg/m ³	56.23	15.21	39.28
	Benzene	05 (Annual)	µg/m ³	0.00	0.00	0.00
	HC		mg/m ³	0.97	0.52	0.69
	BaP	1.0 (Annual)	ng/m ³	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
RAW WATER INTAKE		Ni	20 (Annual)	ng/m3	0.00	0.00	0.00
		SO2	80 (24 hr avg.)	µg/m3	16.70	6.47	9.71
		NO2	80 (24 hr avg.)	µg/m3	24.30	12.56	17.54
		O3	180 (1 hr avg.)	µg/m3	5.01	0.00	2.14
		CO	4.000 (1 hr.avg.)	mg/m3	1.11	0.54	0.77
		NH3	400 (24 hr.avg.)	µg/m3	39.85	9.36	27.32
		PM 10	100 (24 hr.avg.)	µg/m3	72.63	35.47	58.68
		PM 2.5	60 (24 hr.avg.)	µg/m3	57.96	18.24	40.83
		Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
		HC		mg/m3	0.96	0.51	0.72
		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	20.73	0.88	10.97
		NO2	80 (24 hr avg.)	µg/m3	24.63	11.03	15.44
		O3	180 (1 hr avg.)	µg/m3	25.02	2.11	7.35
		CO	4.000 (1 hr.avg.)	mg/m3	1.11	0.53	0.73
		NH3	400 (24 hr.avg.)	µg/m3	39.82	11.23	26.94
		PM 10	100 (24 hr.avg.)	µg/m3	72.56	49.82	62.93
		PM 2.5	60 (24 hr.avg.)	µg/m3	61.02	27.32	46.10
		Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
		HC	-	mg/m3	0.88	0.55	0.72
		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	18.00	5.31	9.50
	NO2	80 (24 hr avg.)	µg/m3	27.65	9.26	14.67
	O3	180 (1 hr avg.)	µg/m3	5.14	0.00	2.18
	CO	4.000 (1 hr.avg.)	mg/m3	1.07	0.00	0.53
	NH3	400 (24 hr.avg.)	µg/m3	38.53	9.45	24.22
	PM 10	100 (24 hr.avg.)	µg/m3	66.36	32.47	51.93
	PM 2.5	60 (24 hr.avg.)	µg/m3	58.36	16.32	37.89
	Benzene	05 (Annual)	µg/m3	0.00	0.00	0.00
	HC	-	mg/m3	0.83	0.51	0.67
	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