



KR.HSE.ENV.05. HSSE.HECCR/02/2023/ EC No. J-11011/78/96-IA-II
25.01.2024

To

The Additional Principal Chief conservator of Forests (C)

Ministry of Environment, Forest & Climate Change

4th Floor, E&F Wings, Kendriya sadan, Koramangala

Bangalore-560 034

Dear Sir,

Sub: Submission of Half yearly compliance report on Environmental Clearance issued by the Ministry of Environment, Forests and Climate Change (MoEF & CC)

Ref: EC No. J-11011/78/96-IA-II dated. 05.03.1997 issued for the Project "Installation of Diesel Hydro De-Sulphurisation (DHDS) project M/s Bharat Petroleum Corporation Ltd - Kochi Refinery (Formerly Cochin Refineries Ltd)".

Please find enclosed the compliance reports on the various conditions laid down by MoEF & CC, pertaining to the half year period from **1st April 2023 to 30th September 2023** for the said project.

Thanking you,

Very truly yours

For BPCL Kochi Refinery


32/01/2024

Mathew P Thomas

General Manager (HSE) - in - Charge

- Encl: 1. Six Monthly Compliance Report
2. Ground water analysis report _ Annexure - 1

Cc:

1. The Member Secretary
Central Pollution Control Board
Parivesh Bhawan
East Arjun Nagar
Delhi - 110 032

2. The Member Secretary
Kerala State Pollution Control Board
Plamoodu Junction
Pattom Palace
Thiruvananthapuram - 695 004

पोस्ट बैग नं.: 2, अम्बलमुगल - 682 302, एरणाकुलम जिला, केरल, दूरभाष: 0484 - 2722061 - 69 फक्स: 0484 - 2720961 / 2721094
पंजीकृत कार्यालय: भारत भवन, 4 & 6, करीमभाँय रोड, बेलार्ड इस्टेट, पी. बी. नं. 688 मुंबई - 400 001

Compliance Status of Environmental Clearance conditions for installation of Diesel Hydro Desulphurisation (DHDS) project accorded by J-11011/78/96-IA-II dated 05.03.1997

Status of the project: Project commissioned in 2000

ITEM NO.	ITEM DESCRIPTION	Status as on 30.09.2023
1	All conditions stipulated by MoEF & CC while according to approval for Capacity Expansion Project	Complied
2	No expansion or modernization of the Plant should be carried out without approval of the MoEF & CC	Complied.
3	The project authority must strictly adhere to the stipulations laid down by the Kerala State Pollution Control Board and the State Govt.	Complied
4	The total SO ₂ emission from BPCL Kochi Refinery including DHDS Project should not exceed the norm of 1607 Kg./hr. (Refer MoEF& CC vide letter No.J-110/1/78/96.IA.II dated 9 th February,1999)	Complied. It has been revised to 1579 kg/hr. as per latest EC for MS block project.
5	The existing ETP should be adequately augmented, or additional treatment facilities should be provided to accommodate the additional effluent load from DHDS project before commissioning the project to ensure that the treated effluent meets the MINAS standard.	New ETP has been commissioned along with the DHDS Project and New ETP with higher capacity also erected as part of IREP (Integrated Refinery Expansion Project).
6	Time bound action plan for disposal of oil sludge / recovery of oil and design details of the solid waste disposal pit should be furnished to the Ministry within a period of 3 months.	Complied. A scheme for the recovery of oil from accumulated sludge has been implemented. All the accumulated sludge at that point of time was processed and currently there is no accumulated stock of oily sludge. Sludge is being processed in Delayed Coker Unit, which has been commissioned as part of IREP project.

		A secured landfill facility for storing hazardous wastes was commissioned in March, 2005 and also we have rate contract with KEIL (Kerala Enviro Infrastructure limited), a PCB approved installation for the Hazardous waste disposal in Kerala.
7	SRU having an efficiency of more than 99% should be installed.	Complied. Additional Sulphur Recovery units with newer technology and higher efficiency of 99.9% have been commissioned as part of later projects viz. CEMP - II and IREP.
8	The ground water quality should be monitored, and the report should be submitted to the Ministry every six months.	Complied. Ground water quality report attached as Annexure I.

Stack Emission Data as per On-line Analyzer data _ April 2023											
Sl. No.	Stack Name	Avg. Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	Units Run (max)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Results			Hrs						
1	KH01B (KHDS)	22953	5.45	66.822	720	0.13	1.53	18.194	0.42	28.059	0.64
2	FH01 (FCCU)	24235	4.211	36.912	720	0.10	0.89	7.697	0.19	15.672	0.38
3	FH03/COB (FCCU)	84321	23.15	4.12	720	1.95	0.35	117.741	9.93	3.208	0.27
4	CH21 (CDU - II)	90531	0	0	720	0.00		8.119	0.74	155.067	14.04
5	CH22 (CDU - II)	33510	0	80.1	720	0.00	2.68	6.348	0.21	216.916	7.27
6	CH223 (CDU - II)	50563	3.6	24.864	720	0.18	1.26	6.866	0.35	136.798	6.92
7	DD-HO1 (DHDS)	25998	0.642	125.667	720	0.02	3.27	2.05	0.05	516.674	13.43
8	DS-X-002 (SRU - 01)	29135	69.83	401.388	720	2.03	11.69	129.4	3.77	5130.718	149.48
9	DSX 301 (SRU - 02)	14151	25.21	82.553	720	0.36	1.17	57.156	0.81	13034.151	184.45
10	BS-101 (Biturox)	14174	15.18	41.717	720	0.22	0.59	7.77	0.11	33.443	0.47
11	VH H01/02 (VGO HDS)	52233	2.19	62.805	720	0.11	3.28	7.5	0.39	25.242	1.32
12	NHT CCR - 01	104483	6.27	43.664	720	0.66	4.56	0.868	0.09	15.443	1.61
13	UB07 (Boiler)	111963	8.463	0	720	0.95	0.00	0	0.00	0	0.00
14	UB08 (Boiler)	29524	0.521	10.3	720	0.02	0.30	1.7	0.05	396.96	11.72
15	UB09 (Boiler) (UX200)	30622	0.264	51.082	720	0.01	1.56	0	0.00	0.507	0.02
16	UB 10 (Boiler)	40255	12.91	110.769	720	0.52	4.46	5.96	0.24	501.482	20.19
17	UB 11 (Boiler)	71246	55.2	92.055	720	3.93	6.56	6.46	0.46	547.763	39.03
18	HRS G 1 (CPP - 01)	161184	5.95	24.884	720	0.96	4.01	3.6	0.58	2.871	0.46
19	GT2/HRS G -02 (CPP - 02)	151867	0	0	720	0.00	0.00	24.344	3.70	0	0.00
20	SRU III Train A (IS LZ 102)	91703	23.25	96.241	720	2.13	8.83	14.153	1.30	667.809	61.24
21	SRU III Train B (IS LZ 202)	90130	8.64	198.903	720	0.78	17.93	2.95	0.27	1942.042	175.04
22	CDU-III (ICH 101/102)	252659	0.4	68.325	720	0.00	17.26	4.87	1.23	30.707	7.76
23	DHDT (IGH 101/102)	58678	1.69	33.996	720	0.00	1.99	1.7	0.10	17.833	1.05
24	VGO-HDT (IVH 101/201)	54092	0.664	35.82	720	0.04	1.94	2.9	0.16	24.532	1.33
25	PFCCU-Heater (IFH 002)	21661	0	18.745	720	0.00	0.41	3.2	0.07	2.52	0.05
26	PFCCU-Regen. (IFLS 001)	170940	17.2	18.689	720	2.94	3.19	247.5	42.31	9.218	1.58
27	DCU-1 (IDH 101)	77894	1.5	73.747	720	0.12	5.74	10.7	0.83	37.451	2.92
28	DCU-2 (IDH 102)	77012	0.65	55.884	720	0.05	4.30	6.03	0.46	25.376	1.95
29	HRS G 3 (IUS HRS G 05LZ554)	161009	2.75	82.828	720	0.44	13.34	13.1	2.11	0.534	0.09
30	HRS G 4 (IUS HRS G 05LZ554)	142276	3.1	74.113	720	0.44	10.54	12.7	1.81	2.031	0.29
31	HRS G-5 (IUS HRS G 05LZ554)	143306	164.1	6.064	720	23.52	0.87	14.4	2.06	3.809	0.55
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	2.1	124.234	720	0.26	15.27	6.12	0.75	113.777	13.99
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	3.42	98.537	720	0.42	12.17	6.1	0.75	79.257	9.79
34	NHT -isom. (NH-2/ H H 101)	53005	0.36	29.918	720	0.02	1.59	7.40	0.39	4.117	0.22
35	PWI LS 110 (PDPP INC - 01)	70957	3.40	2.361	720	0.24	0.17	2.50	0.18	0.337	0.02
36	LS021A (PDPP INC - 02)	71924	0.20	0.031	720	0.01	0.00	45.80	3.29	6.755	0.49
37	MSBP - HOH	158034	2.70	12.523	720	0.43	1.98	34.10	5.39	30.042	4.75
38	MRH 01/02/03/04 (MSBP - CCR)	96964	1.90	79.184	720	0.18	7.68	0.65	0.06	10.845	1.05
						44.16	173.38		85.61		735.83
						PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ May 2023											
Sl. No.	Stack Name	Avg. Flow rate	PM	NOx	Units Run (max)	PM	NOx	CO	CO	SO2	SO2 (kg/hr)
		Results	(mg/Nm ³)	(mg/Nm ³)	Hrs	(kg/hr)	(kg/hr)	(mg/Nm ³)	(kg/hr)	(mg/Nm ³)	
1	KH01B (KHDS)	22953	5.2	55.913	744	0.12	1.28	19.9	0.46	24.259	0.56
2	FH01 (FCCU)	24235	4.1	48.265	744	0.10	1.17	6.5	0.16	15.916	0.39
3	FH03/COB (FCCU)	84321	22.44	1.641	744	1.89	0.14	1.1	0.09	3.129	0.26
4	CH21 (CDU - II)	90531	0	0	744	0.00		5.26	0.48	189.223	17.13
5	CH22 (CDU - II)	33510	0	73.306	744	0.00	2.46	3.03	0.10	119.061	3.99
6	CH223 (CDU - II)	50563	3.1	3.357	744	0.16	0.17	3.5	0.18	78.718	3.98
7	DD-HO1 (DHDS)	25998	5.01	109.055	744	0.13	2.84	10.75	0.28	511.625	13.30
8	D5-X-002 (SRU - 01)	29135	76.26	312.005	744	2.22	9.09	137.5	4.01	5627.604	163.96
9	DSX 301 (SRU - 02)	14151	26.15	104.121	744	0.37	1.47	63.1	0.89	13547.376	191.71
10	BS-101 (Biturox)	14174	13.07	48.326	744	0.19	0.68	2.98	0.04	8.041	0.11
11	VH H01/02 (VGO HDS)	52233	4.7	57.660	744	0.25	3.01	8.2	0.43	18.653	0.97
12	NHT CCR - 01	104483	6.86	25.515	744	0.72	2.67	2.8	0.29	52.143	5.45
13	UB07 (Boiler)	111963	7.212	0	744	0.81	0.00	0	0.00	0	0.00
14	UB08 (Boiler)	29524	4.132	10	744	0.12	0.30	1.67	0.05	396.960	11.72
15	UB09 (Boiler) (UX200)	30622	2.12	62.018	744	0.06	1.90	0	0.00	3.233	0.10
16	UB 10 (Boiler)	40255	2.5	2.556	744	0.10	0.10	0	0.00	0	0.00
17	UB 11 (Boiler)	71246	57.33	85.738	744	4.08	6.11	7	0.50	405.479	28.89
18	HRS1 (CPP - 01)	161184	4.67	116.146	744	0.75	18.72	6.75	1.09	59.834	9.64
19	GT2/HRS1 -02 (CPP - 02)	151867	0	0	744	0.00	0.00	4.147	0.63	0	0.00
20	SRU III Train A (IS LZ 102)	91703	23.76	244.843	744	2.18	22.45	12.8	1.17	2653.948	243.37
21	SRU III Train B (IS LZ 202)	90130	7.67	286.133	744	0.69	25.79	21.2	1.91	3198.818	288.31
22	CDU-III (ICH 101/102)	252659	0.73	59.953	744	0.00	15.15	2.75	0.69	39.507	9.98
23	DHDT (IGH 101/102)	58678	1.7	27.746	744	0.00	1.63	0.78	0.05	13.035	0.76
24	VGO-HDT (IVH 101/201)	54092	0.74	21.463	744	0.04	1.16	2.8	0.15	15.631	0.85
25	PFCCU-Heater (IFH 002)	21661	0	27.200	744	0.00	0.59	2.2	0.05	3.013	0.07
26	PFCCU-Regen. (IFLS 001)	170940	15.4	23.406	744	2.63	4.00	252.5	43.16	4.704	0.80
27	DCU-1 (IDH 101)	77894	1.34	49.922	744	0.10	3.89	15.2	1.18	17.603	1.37
28	DCU-2 (IDH 102)	77012	1.02	46.134	744	0.08	3.55	4.05	0.31	21.769	1.68
29	HRS1 3 (IUS HRS1 05LZ554)	161009	3.02	23.725	744	0.49	3.82	11.34	1.83	0.427	0.07
30	HRS1 4 (IUS HRS1 05LZ554)	142276	3.07	93.076	744	0.44	13.24	10.54	1.50	2.985	0.42
31	HRS1-5 (IUS HRS1 05LZ554)	143306	160.13	5.777	744	22.95	0.83	14.2	2.03	3.178	0.46
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	1.85	107.298	744	0.23	13.19	8.35	1.03	48.707	5.99
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	3.94	118.901	744	0.49	14.69	5.81	0.72	129.751	16.03
34	NHT -Isom. (NH-2/ H H 101)	53005	0.35	36.921	744	0.02	1.96	4.497	0.24	1.605	0.09
35	PWI LS 110 (PDPP INC - 01)	70957	1.78	2.140	744	0.13	0.15	2.60	0.18	0.342	0.02
36	LS021A (PDPP INC - 02)	71924	0.20	1.154	744	0.01	0.08	23.50	1.69	13.060	0.94
37	MSBP_HOH	158034	2.719	0.771	744	0.43	0.12	40.70	6.43	33.724	5.33
38	MRH 01/02/03/04 (MSBP_CCR)	96964	1.95	74.844	744	0.19	7.26	1.30	0.13	4.612	0.45
						43.16	185.65	74.13		1029.15	
						PM (kg/hr)	NOx (kg/hr)	CO (kg/hr)		SO2 (kg/hr)	

Stack Emission Data as per On-line Analyzer data _ June 2023											
Sl. No.	Stack Name	Avg. Flow rate	PM	NOx	Units Run (max)	PM	NOx	CO	CO	SO2	SO2 (kg/hr)
		Results	(mg/Nm ³)	(mg/Nm ³)	Hrs	(kg/hr)	(kg/hr)	(mg/Nm ³)	(kg/hr)	(mg/Nm ³)	
1	KH01B (KHDS)	22953	5.75	51.106	720	0.13	1.17	13.7	0.31	24.603	0.56
2	FH01 (FCCU)	24235	3.16	38.211	720	0.08	0.93	15.5	0.38	1.882	0.05
3	FH03/COB (FCCU)	84321	22.3	0.884	720	1.88	0.07	7.2	0.61	50.098	4.22
4	CH21 (CDU - II)	90531	0	94.934	720	0.00		3.43	0.31	262.372	23.75
5	CH22 (CDU - II)	33510	0	80.437	720	0.00	2.70	7.42	0.25	64.929	2.18
6	CH223 (CDU - II)	50563	4.93	9.296	720	0.25	0.47	2.6	0.13	68.179	3.45
7	DD-H01 (DHDS)	25998	7.5	100.716	720	0.19	2.62	14.9	0.39	569.378	14.80
8	DS-X-002 (SRU - 01)	29135	54.03	207.577	720	1.57	6.05	73.64	2.15	5919.273	172.46
9	DSX 301 (SRU - 02)	14151	28.56	153.796	720	0.40	2.18	84.070	1.19	16090.048	227.69
10	B5-101 (Biturox)	14174	11.7	39.827	720	0.17	0.56	4.2	0.06	8.770	0.12
11	VH H01/02 (VGO HDS)	52233	6.3	39.438	720	0.33	2.06	25.1	1.31	22.525	1.18
12	NHT CCR - 01	104483	14.24	16.991	720	1.49	1.78	1.85	0.19	2.203	0.23
13	UB07 (Boiler)	111963	8.178	0	720	0.92	0.00	0	0.00	0	0.00
14	UB08 (Boiler)	29524	4.618	10	720	0.14	0.30	1.6	0.05	396.960	11.72
15	UB09 (Boiler) (UX200)	30622	3.66	34.283	720	0.11	1.05	0	0.00	3.814	0.12
16	UB 10 (Boiler)	40255	9.8	107.003	720	0.39	4.31	12.4	0.50	517.314	20.82
17	UB 11 (Boiler)	71246	29.1	90.573	720	2.07	6.45	7.78	0.55	506.982	36.12
18	HRS G 1 (CPP - 01)	161184	4.5	47.700	720	0.73	7.69	6.9	1.11	10.160	1.64
19	GT2/HRS G -02 (CPP - 02)	151867	0	0	720	0.00	0.00	8.004	1.22	0	0.00
20	SRU III Train A (IS LZ 102)	91703	25.480	156.2	720	2.34	14.32	20.456	1.88	2165.926	198.62
21	SRU III Train B (IS LZ 202)	90130	7.8	124.435	720	0.70	11.22	24.1	2.17	1051.339	94.76
22	CDU-III (ICH 101/102)	252659	2.24	64.386	720	0.00	16.27	4	1.01	27.820	7.03
23	DHDT (IGH 101/102)	58678	1.69	26.304	720	0.00	1.54	1.84	0.11	10.302	0.60
24	VGO-HDT (IVH 101/201)	54092	0.84	21.165	720	0.05	1.14	2.7	0.15	12.204	0.66
25	PFCCU-Heater (IFH 002)	21661	0	29.625	720	0.00	0.64	1.6	0.03	0	0.00
26	PFCCU-Regen. (IFLS 001)	170940	8.26	14.747	720	1.41	2.52	202.56	34.63	5.911	1.01
27	DCU-1 (IDH 101)	77894	2.07	55.664	720	0.16	4.34	14.95	1.16	4.401	0.34
28	DCU-2 (IDH 102)	77012	1.43	61.541	720	0.11	4.74	2.37	0.18	22.660	1.75
29	HRS G 3 (IUS HRS G 05LZ554)	161009	2.655	92.661	720	0.43	14.92	10.81	1.74	2.132	0.34
30	HRS G 4 (IUS HRS G 05LZ554)	142276	2.96	78.640	720	0.42	11.19	10.77	1.53	2.564	0.36
31	HRS G-5 (IUS HRS G 05LZ554)	143306	166.27	6.683	720	23.83	0.96	14.27	2.04	4.987	0.71
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	2.14	88.983	720	0.26	10.94	11.4	1.40	116.229	14.29
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	4.8	93.939	720	0.59	11.60	10.83	1.34	127.616	15.76
34	NHT -Isom. (NH-2/ H H 101)	53005	0.12	47.114	720	0.01	2.50	5.05	0.27	0.517	0.03
35	PWI LS 110 (PDPP INC - 01)	70957	1.26	1.539	720	0.09	0.11	2.02	0.14	0.252	0.02
36	LSO21A (PDPP INC - 02)	71924	0.20	3.635	720	0.01	0.26	44.87	3.23	26.502	1.91
37	MSBP_HOH	158034	2.86	4.413	720	0.45	0.70	40.40	6.38	33.342	5.27
38	MRH 01/02/03/04 (MSBP_CCR)	96964	2.55	66.290	720	0.25	6.43	1.07	0.10	5.514	0.53
						41.96	156.71			70.21	865.11
						PM (kg/hr)	NOx (kg/hr)	CO (kg/hr)		SO2 (kg/hr)	

Stack Emission Data as per On-line Analyzer data _ July 2023											
Sl. No.	Stack Name	Avg. Flow rate	PM (mg/Nm ³)	NOx (mg/Nm ³)	Units Run (max)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Results			Hrs						
1	KH01B (KHDS)	22953	5.83	30.251	744	0.13	0.69	13.26	0.30	19.296	0.44
2	FH01 (FCCU)	24235	3.08	13.246	744	0.07	0.32	56.5	1.37	15.401	0.37
3	FH03/COB (FCCU)	84321	21.466	0.359	744	1.81	0.03	25.073	2.11	0	0.00
4	CH21 (CDU - II)	90531	0	77.507	744	0.00		8.63	0.78	197.945	17.92
5	CH22 (CDU - II)	33510	0	74.349	744	0.00	2.49	9.705	0.33	103.910	3.48
6	CH223 (CDU - II)	50563	14.13	13.986	744	0.71	0.71	5.9	0.30	83.456	4.22
7	DD-HO1 (DHDS)	25998	12.73	157.305	744	0.33	4.09	22.97	0.60	491.325	12.77
8	DS-X-002 (SRU - 01)	29135	60	186.614	744	1.75	5.44	68.2	1.99	5717.947	166.59
9	DSX 301 (SRU - 02)	14151	30.6	133.744	744	0.43	1.89	54.04	0.76	12561.248	177.75
10	BS-101 (Biturox)	14174	4.85	35.77	744	0.07	0.51	2.76	0.04	9.013	0.13
11	VH H01/02 (VGO HDS)	52233	7.2	21.107	744	0.38	1.10	28.1	1.47	19.555	1.02
12	NHT CCR - 01	104483	9.1	5.547	744	0.95	0.58	1.3	0.14	1.337	0.14
13	UB07 (Boiler)	111963	18.875	0	744	2.11	0.00	0	0.00	0	0.00
14	UB08 (Boiler)	29524	42.425	10	744	1.25	0.30	1.63	0.05	396.960	11.72
15	UB09 (Boiler) (UX200)	30622	9.9	21.9	744	0.30	0.67	0	0.00	73.476	2.25
16	UB 10 (Boiler)	40255	13.4	103.565	744	0.54	4.17	14.9	0.60	496.872	20.00
17	UB 11 (Boiler)	71246	31.95	124.185	744	2.28	8.85	5.6	0.40	463.013	32.99
18	HRS G 1 (CPP - 01)	161184	48.44	48.356	744	7.81	7.79	4.96	0.80	0.0	0.00
19	GT2/HRS G -02 (CPP - 02)	151867	0	0	744	0.00	0.00	4.197	0.64	0	0.00
20	SRU III Train A (IS LZ 102)	91703	27.136	101.654	744	2.49	9.32	24.456	2.24	2125.180	194.89
21	SRU III Train B (IS LZ 202)	90130	9.186	128.298	744	0.83	11.56	7.940	0.72	2293.096	206.68
22	CDU-III (ICH 101/102)	252659	4.847	63.172	744	0.00	15.96	2.214	0.56	44.201	11.17
23	DHDT (IGH 101/102)	58678	1.692	26.875	744	0.00	1.58	2.010	0.12	16.404	0.96
24	VGO-HDT (IVH 101/201)	54092	1.049	21.475	744	0.06	1.16	3.741	0.20	15.842	0.86
25	PFCCU-Heater (IFH 002)	21661	0	31.268	744	0.00	0.68	4.741	0.10	19.125	0.41
26	PFCCU-Regen. (IFLS 001)	170940	13.445	17.449	744	2.30	2.98	192.264	32.87	11.871	2.03
27	DCU-1 (IDH 101)	77894	1.978	56.235	744	0.15	4.38	17.067	1.33	11.357	0.88
28	DCU-2 (IDH 102)	77012	2.854	43.018	744	0.22	3.31	6.044	0.47	22.606	1.74
29	HRS G 3 (IUS HRS G 05LZ554)	161009	2.365	78.126	744	0.38	12.58	4.579	0.74	3.690	0.59
30	HRS G 4 (IUS HRS G 05LZ554)	142276	3.09	69.164	744	0.44	9.84	9.138	1.30	5.967	0.85
31	HRS G-5 (IUS HRS G 05LZ554)	143306	115.539	5.922	744	16.56	0.85	15.130	2.17	5.103	0.73
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	1.853	140.863	744	0.23	17.32	10.970	1.35	130.005	15.98
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	5.041	97.392	744	0.62	12.03	10.224	1.26	48.928	6.04
34	NHT -Isom. (NH-2/ H H 101)	53005	0.095	42.268	744	0.01	2.24	1.519	0.08	0.00	0.00
35	PWI LS 110 (PDPP INC - 01)	70957	1.679	1.464	744	0.12	0.10	1.831	0.13	0.216	0.02
36	LS021A (PDPP INC - 02)	71924	0.192	1.435	744	0.01	0.10	42.706	3.07	14.984	1.08
37	MSBP _ HOH	158034	3.052	9.408	744	0.48	1.49	41.523	6.56	33.302	5.26
38	MRRH 01/02/03/04 (MSBP _ CCR)	96964	3.296	52.853	744	0.32	5.12	0.805	0.08	6.656	0.65
						46.15	152.24		68.01		902.63
						PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ Aug. 2023											
Sl. No.	Stack Name	Avg. Flow rate	PM (mg/Nm ³)	NOx (mg/Nm ³)	Run Hrs	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Results									
1	KH01B (KHDS)	22953	0	0	744	0.00	0.00	0	0.00	0	0.00
2	FH01 (FCCU)	24235	2.493	51.486	744	0.06	1.25	6.56	0.16	3.85	0.09
3	FH03/COB (FCCU)	84321	0	0.0	744	0.00	0.00	0	0.00	0.0	0.00
4	CH21 (CDU - II)	90531	0	43.026	744	0.00	3.90	4.777	0.43	230.433	20.86
5	CH22 (CDU - II)	33510	0	73.524	744	0.00	2.46	4.852	0.16	83.729	2.81
6	CH223 (CDU - II)	50563	12.298	5.014	744	0.62	0.25	3.298	0.17	92.858	4.70
7	DD-HO1 (DHDS)	25998	12.277	57.51	744	0.32	1.50	18.883	0.49	264.304	6.87
8	DS-X-002 (SRU - 01)	29135	66.627	0	744	1.94	0.00	0	0.00	0	0.00
9	DSX 301 (SRU - 02)	14151	31.414	78.339	744	0.44	1.11	75.833	1.07	11661.64	165.02
10	BS-101 (Biturox)	14174	12.6	47.274	744	0.18	0.67	4.431	0.06	11.365	0.16
11	VH H01/02 (VGO HDS)	52233	6.366	38.597	744	0.33	2.02	1.427	0.07	9.898	0.52
12	NHT CCR - 01	104483	7.9	29.2	744	0.83	3.05	1.5	0.16	37.5	3.92
13	UB07 (Boiler)	111963	14.6	0	744	0.00	0.00	0	0.00	0	0.00
14	UB08 (Boiler)	29524	4.76	0	744	0.00	0.00	1.6	0.05	396.9	11.72
15	UB09 (Boiler) (UX200)	30622	31.9	0	744	0.98	0.00	0	0.00	0	0.00
16	UB 10 (Boiler)	40255	19.6	164.923	744	0.79	6.64	20.573	0.83	846.869	34.09
17	UB 11 (Boiler)	71246	33.6	144.711	744	2.39	10.31	8.1	0.58	688.586	49.06
18	HRSG 1 (CPP - 01)	161184	2.1	62.8	744	0.34	10.12	4.9	0.79	3.7	0.60
19	GT2/HRSG-02 (CPP - 02)	151867	0	0	744	0.00	0.00	2.9	0.44	0	0.00
20	SRU III Train A (IS LZ 102)	91703	22.1	91.737	744	2.03	8.41	17.5	1.60	1099.971	100.87
21	SRU III Train B (IS LZ 202)	90130	9.5	142.386	744	0.86	12.83	24.5	2.21	4953.735	446.48
22	CDU-III (ICH 101/102)	252659	3.3	58.234	744	0.83	14.71	2	0.51	22.617	5.71
23	DHDT (IGH 101/102)	58678	1.7	29.121	744	0.10	1.71	1.4	0.08	4.655	0.27
24	VGO-HDT (IVH 101/201)	54092	1%	22.595	745	0.00	1.22	1.9	0.10	10.861	0.59
25	PFCCU-Heater (IFH 002)	21661	0	27.759	746	0.00	0.60	2.65	0.06	6.781	0.15
26	PFCCU-Regen. (IFLS 001)	170940	6.90	25.667	747	1.18	4.39	247.8	42.36	20.109	3.44
27	DCU-1 (IDH 101)	77894	0.775	71.086	748	0.06	5.54	2.56	0.20	4.253	0.33
28	DCU-2 (IDH 102)	77012	2.70	20.924	749	0.21	1.61	7.907	0.61	10.988	0.85
29	HRSG 3 (IUS HRSG 05LZ554)	161009	2%	82.377	750	0.00	13.26	7.6	1.22	0.446	0.07
30	HRSG 4 (IUS HRSG 05LZ554)	142276	4%	43.418	751	0.01	6.18	8.3	1.18	2.726	0.39
31	HRSG-5 (IUS HRSG 05LZ554)	143306	54.10	4.24	752	7.75	0.61	16.53	2.37	1.935	0.28
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	1.93	138.77	753	0.24	17.06	11.73	1.44	102.208	12.56
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	120.485	120.485	754	14.88	14.88	20.85	2.58	92.501	11.42
34	NHT -Isom. (NH-2/ H H 101)	53005	0.00	0.00	755	0.00	0.00	0	0.00	0	0.00
35	PWI LS 110 (PDPP INC - 01)	70957	9.9000	1.747	756	0.70	0.12	1.925	0.14	0.459	0.03
36	LS021A (PDPP INC - 02)	71924	0.2010	0	757	0.01	0.00	33.42	2.40	6.828	0.49
37	MSBP - HOH	158034	2.1100	57.83	758	0.33	9.14	2.234	0.35	5.658	0.89
38	MRH 01/02/03/04 (MSBP - CCR)	96964	2.9230	4.75	759	0.28	0.46	45.83	4.44	32.068	3.11
						38.70	156.01		69.32		888.35
						PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ Sept 2023											
Sl. No.	Stack Name	Avg. Flow rate	PM (mg/Nm ³)	NOx (mg/Nm ³)	Units Run (max)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Results			Hrs						
1	KH01B (KHDS)	22953	6.045	42.709	720	0.14	0.98	15.9	0.36	9.819	0.23
2	FH01 (FCCU)	24235	2.851	29.061	720	0.07	0.70	5.8	0.14	11.293	0.27
3	FH03/COB (FCCU)	84321	12.792	15.016	720	1.08	1.27	408.512	34.45	6.172	0.52
4	CH21 (CDU - II)	90531	0	133.184	720	0.00		5.060	0.46	184.187	16.67
5	CH22 (CDU - II)	33510	0	76.760	720	0.00	2.57	8.019	0.27	94.446	3.16
6	CH223 (CDU - II)	50563	8.951	14.589	720	0.45	0.74	7.897	0.40	72.547	3.67
7	DD-H01 (DHDS)	25998	4.948	72.250	720	0.13	1.88	12.838	0.33	113.453	2.95
8	DS-X-002 (SRU - 01)	29135	65.111	101.398	720	1.90	2.95	169.851	4.95	5238.078	152.61
9	DSX 301 (SRU - 02)	14151	37.211	79.637	720	0.53	1.13	98.801	1.40	6626.766	93.78
10	BS-101 (Biturox)	14174	11.57	44.604	720	0.16	0.63	0	0.00	0.353	0.01
11	VH H01/02 (VGO HDS)	52233	6.323	44.591	720	0.33	2.33	6.349	0.33	22.528	1.18
12	NHT CCR - 01	104483	10.797	47.872	720	1.13	5.00	2.018	0.21	17.876	1.87
13	UB07 (Boiler)	111963	14.326	0	720	1.60	0.00	0	0.00	0	0.00
14	UB08 (Boiler)	29524	45.760	0	720	1.35	0.00	1.637	0.05	396.96	11.72
15	UB09 (Boiler) (UX200)	30622	51.344	73.122	720	1.57	2.24	0	0.00	124.189	3.80
16	UB 10 (Boiler)	40255	0.464	31.197	720	0.02	1.26	51.476	2.07	165.667	6.67
17	UB 11 (Boiler)	71246	34.993	91.038	720	2.49	6.49	6.194	0.44	426.152	30.36
18	HRS G 1 (CPP - 01)	161184	1.630	67.546	720	0.26	10.89	3.068	0.49	3.644	0.59
19	GT2/HRS G -02 (CPP - 02)	151867	4.444	0	720	0.67	0.00	0	0.00	0	0.00
20	SRU III Train A (IS LZ 102)	91703	25.145	184.326	720	2.31	16.90	11.231	1.03	4800.955	440.26
21	SRU III Train B (IS LZ 202)	90130	10.711	215.332	720	0.97	19.41	17.125	1.54	4371.762	394.03
22	CDU-III (ICH 101/102)	252659	3.282	42.279	720	0.00	10.68	2.785	0.70	14.951	3.78
23	DHDT (IGH 101/102)	58678	1.680	20.666	720	0.00	1.21	1.879	0.11	3.69	0.22
24	VGO-HDT (IVH 101/201)	54092	1.013	23.362	720	0.05	1.26	1.734	0.09	14.374	0.78
25	PFCCU-Heater (IFH 002)	21661	0	30.809	720	0.00	0.67	2.7	0.06	5.845	0.13
26	PFCCU-Regen. (IFLS 001)	170940	9.7	11.018	720	1.66	1.88	209.9	35.88	14.84	2.54
27	DCU-1 (IDH 101)	77894	2.074	49.413	720	0.16	3.85	10.8	0.84	9.891	0.77
28	DCU-2 (IDH 102)	77012	2.5	50.171	720	0.19	3.86	2.382	0.18	21.601	1.66
29	HRS G 3 (IUS HRS G 05L2554)	161009	2.35	16.337	720	0.38	2.63	1.7	0.27	0.278	0.04
30	HRS G 4 (IUS HRS G 05L2554)	142276	4.155	78.459	720	0.59	11.16	10.4	1.48	1.79	0.25
31	HRS G-5 (IUS HRS G 05L2554)	143306	63.2	4.879	720	9.06	0.70	15.96	2.29	2.003	0.29
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	1.8	116.079	720	0.22	14.27	12.64	1.55	38.446	4.73
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	3.36	124.623	720	0.41	15.39	7.4	0.91	89.985	11.11
34	NHT -Isom. (NH-2/ H H 101)	53005	0.14	64.278	720	0.01	3.41	4.907	0.26	0.00	0.00
35	PWI LS 110 (PDPP INC - 01)	70957	23.50	0.602	720	1.67	0.04	0.54	0.04	1.854	0.13
36	LS021A (PDPP INC - 02)	71924	0.19	28.283	720	0.01	2.03	53.70	3.86	28.478	2.05
37	MSBP_HOH	158034	2.60	7.543	720	0.41	1.19	38.25	6.04	25.035	3.96
38	MRH 01/02/03/04 (MSBP - CCR)	96964	1.60	23.58	720	0.16	2.29	0.00	0.00	4.192	0.41
						32.15	153.90		103.52		1197.18
						PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Annexure – 1

AAQMS - Marketing							
Parameter	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
SO2	µg/m3	9.4	9.5	4.4	5.6	6.3	6.7
H2S	µg/m3	12.5	11.3	8.2	9.7	13.7	11.9
NOx	µg/m3	19.6	21.0	19.1	17.6	17.9	21.3
NH3	ug/m3	4.6	2.7	1.1	3.9	7.3	5.1
CO	mg/m3	0.4	0.3	0.3	0.2	0.4	0.4
Benzene	µg/m3	0.0	0.0	0.0	0.0	0.1	0.0
Methane	ppm	0.0	0.0	0.0	0.0	0.0	0.0
NMHC	ppm	0.0	0.0	0.0	0.0	0.0	0.0
PM 10	µg/m3	67.0	49.3	37.0	35.0	44.8	29.5
PM 2.5	µg/m3	40.2	27.8	21.5	20.3	27.7	18.9

AAQMS - Colony							
Parameter	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
SO2	µg/m3	6.1	8.2	15.8	11.0	4.8	6.8
H2S	µg/m3	5.6	7.5	11.6	6.4	3.9	3.8
NOx	µg/m3	19.4	20.2	23.3	17.1	38.9	26.4
NH3	ug/m3	0.0	0.0	1.8	0.1	10.5	6.8
CO	mg/m3	0.5	0.6	0.7	0.4	0.3	0.4
Benzene	µg/m3	0.0	0.0	0.0	0.0	0.1	0.0
Methane	ppm	0.0	0.0	0.0	0.0	0.0	0.0
NMHC	ppm	0.1	0.1	1.0	0.0	0.1	0.0
PM 10	µg/m3	59.9	45.0	28.6	32.6	54.2	26.8
PM 2.5	µg/m3	34.5	21.8	12.9	14.3	104.4	12.7

DHDS							
Parameter	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
SO2	µg/m3	20.8	21.2	21.5	23.4	23.4	12.3
H2S	µg/m3	7.9	8.4	8.3	9.6	9.8	2.7
NOx	µg/m3	11.5	11.3	11.4	9.5	10.1	8.4
NH3	ug/m3	0.4	0.3	0.2	0.2	0.2	0.1
CO	mg/m3	0.8	0.8	0.8	0.9	1.0	1.0
Benzene	µg/m3	0.0	0.0	0.0	0.0	0.0	0.0
Methane	ppm	0.0	0.0	0.0	0.0	0.0	0.0
NMHC	ppm	0.0	0.0	0.0	0.0	0.0	0.0
PM 10	µg/m3	45.9	30.4	24.4	23.1	33.4	19.8
PM 2.5	µg/m3	36.9	23.9	17.9	17.5	21.1	14.3

AAQMS - CISF Township							
Parameter	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
SO2	µg/m3	37.9	10.8	13.4	32.6	6.9	11.3
H2S	µg/m3	22.9	7.7	11.6	24.6	3.5	6.6
NOx	µg/m3	21.6	36.6	11.4	8.3	3.0	3.2
NH3	ug/m3	6.8	13.6	0.8	0.1	1.4	1.4
CO	mg/m3	0.8	0.8	0.4	0.8	0.8	0.2
Benzene	µg/m3	0.0	0.0	0.0	0.0	0.0	0.0
Methane	ppm	0.0	0.2	0.0	0.0	0.0	0.0
NMHC	ppm	0.0	0.2	0.0	0.0	0.0	0.0
PM 10	µg/m3	56.2	41.6	31.9	32.7	40.5	29.2
PM 2.5	µg/m3	32.4	22.5	18.3	15.3	26.4	16.7

AAQMS - PDPP							
Parameter	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
SO2	µg/m3	4.9	4.9	3.9	4.0	4.4	4.5
H2S	µg/m3	0.0	0.2	0.2	0.0	0.0	0.0
NOx	µg/m3	16.3	13.4	12.6	16.1	16.4	12.2
NH3	ug/m3	5.0	1.9	0.1	0.0	0.0	0.0
CO	mg/m3	1.2	1.0	1.2	1.4	1.5	1.7
Benzene	µg/m3	0.0	4.3	12.9	1.7	0.0	0.0
Methane	ppm	0.0	0.0	0.0	0.0	0.0	0.0
NMHC	ppm	0.0	0.0	0.0	0.0	0.0	0.0
PM 10	µg/m3	58.5	35.4	25.2	28.6	38.6	27.3
PM 2.5	µg/m3	35.1	24.1	18.4	17.3	21.6	16.8

Water discharge Quality data for the period April 2023 to Sept. 2023

Effluent _ Outlet - A (monthly average value)								
Parameter	limit	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
pH	6 - 8.5		7.43	7.27	7.57	7.29	7.35	7.38
BOD (3 day @27 C.)	15	ppm	13.7	13.28	13.2	13.39	13.9	14.07
COD	125	ppm	40.3	41.45	42.8	41.9	43.89	44.4
Oil & Grease	5	ppm	3.27	3.24	3.17	3.19	3.2	3.16
Sulphides	0.5	ppm	0.4	0.4	0.4	0.40	0.40	0.40
TSS	100	ppm	17.33	17.2	16.9	14.68	14.55	13.83
Phenol	0.35	ppm	0.14	0.15	0.14	0.15	0.19	0.24

Effluent _ Outlet - B (monthly average value)								
Parameter	limit	unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
pH	6 - 8.5		7.15	7.25	7.3	7.25	7.35	7.5
TSS	100	ppm	11	10.3	12.0	11.5	10.25	11.0
Oil & Grease	5	ppm	3.3	3.4	3.3	3.15	3.5	3.15
BOD (3 day @27 C.)	30	ppm	11.5	13.0	12.1	11.2	12.5	12.5



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well Water-07

Date of Sample: 06.4.2023

Date of Testing: 08.4.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	-	IS 3025 (P:11)	7.1	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
Metals					
3	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
4	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
5	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
6	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
7	Calcium (as Ca)	mg/L	IS 3025 (P:40)	16	75 (Max)
8	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
9	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
10	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
11	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.07	0.3 (Max)
12	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	3.3	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
13	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
14	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002)	0.07 (Max)
15	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
16	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.03	5 (Max)
17	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL=0.005)	0.01 (Max)
18	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL=0.0001)	0.001(Max)
19	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
20	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S. Mahamed Iqbal
Sr. Manager (Quality Control)



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well Water-39

Date of Sample: 13.5.2023

Date of Testing: 16.5.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	.	IS 3025 (P:11)	7.6	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
Metals					
3	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
4	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
5	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
6	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
7	Calcium (as Ca)	mg/L	IS 3025 (P:40)	19	75 (Max)
8	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
9	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
10	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
11	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.08	0.3 (Max)
12	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	3.1	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
13	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
14	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002)	0.07 (Max)
15	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
16	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.07	5 (Max)
17	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
18	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
19	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
20	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S.Mahamed Iqbal
Sr.Manager (Quality Control)



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well Water-25

Date of Sample: 09.6.2023

Date of Testing: 16.6.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	-	IS 3025 (P:11)	7.5	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
Metals					
3	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
4	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
5	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
6	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
7	Calcium (as Ca)	mg/L	IS 3025 (P:40)	22	75 (Max)
8	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
9	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
10	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
11	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.05	0.3 (Max)
12	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	3.9	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
13	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
14	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002)	0.07 (Max)
15	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
16	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.09	5 (Max)
17	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL=0.005)	0.01 (Max)
18	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL=0.0001)	0.001(Max)
19	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
20	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S.Mahamed Iqbal
Sr.Manager (Quality Control)



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well Water-15

Date of Sample: 12.7.2023

Date of Testing: 14.7.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	-	IS 3025 (P:11)	7.3	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
Metals					
3	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
4	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
5	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
6	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
7	Calcium (as Ca)	mg/L	IS 3025 (P:40)	29	75 (Max)
8	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
9	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
10	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
11	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.05	0.3 (Max)
12	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	4	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
13	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
14	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002)	0.07 (Max)
15	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
16	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.08	5 (Max)
17	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
18	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
19	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
20	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S. Mahamed Iqbal
Sr. Manager (Quality Control)



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well Water-45

Date of Sample: 11.8.2023

Date of Testing: 14.8.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	-	IS 3025 (P:11)	7.2	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
Metals					
3	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
4	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
5	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
6	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
7	Calcium (as Ca)	mg/L	IS 3025 (P:40)	30	75 (Max)
8	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
9	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
10	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
11	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.07	0.3 (Max)
12	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	4.2	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
13	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
14	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002)	0.07 (Max)
15	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
16	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.05	5 (Max)
17	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL=0.005)	0.01 (Max)
18	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL=0.0001)	0.001(Max)
19	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
20	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S. Mahamed Iqbal
Sr. Manager (Quality Control)



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

BOREWELL WATER TEST REPORT

Bore well Water-20

Date of Sample: 15.9.2023

Date of Testing: 17.9.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	-	IS 3025 (P:11)	7.6	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
Metals					
3	Silver (as Ag)	mg/L	IS13428 Annexe J	BDL (MDL=0.005)	0.1 (Max)
4	Aluminium (as Al)	mg/L	IS 3025 (P:55)	BDL(MDL=0.002)	0.03 (Max)
5	Boron (as B)	mg/L	IS 3025 (P:57)	BDL(MDL=0.01)	0.5 (Max)
6	Barium (as Ba)	mg/L	IS13428 Annexe F	BDL(MDL=0.01)	0.7 (Max)
7	Calcium (as Ca)	mg/L	IS 3025 (P:40)	31	75 (Max)
8	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	BDL(MDL=0.001)	0.003 (Max)
9	Chromium (as Cr)	mg/L	IS 3025 (P:52)	BDL(MDL=0.01)	0.05 (Max)
10	Copper (as Cu)	mg/L	IS 3025 (P:42)	BDL(MDL=0.01)	0.05 (Max)
11	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.05	0.3 (Max)
12	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	4.4	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	BDL(MDL=0.01)	0.1 (Max)
13	Nickel (as Ni)	mg/L	IS 3025 (P:54)	BDL(MDL=0.01)	0.02 (Max)
14	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	BDL(MDL=0.002)	0.07 (Max)
15	Lead (as Pb)	mg/L	IS 3025 (P:47)	BDL(MDL=0.01)	0.01 (Max)
16	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.07	5 (Max)
17	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.005)	0.01 (Max)
18	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
19	Selenium (as Se)	mg/L	IS 3025 (P:56)	BDL(MDL=0.001)	0.1 (Max)
20	Antimony (as Sb)	mg/L	APHA:3113B	BDL(MDL=0.001)	Max0.1

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S. Mahamed Iqbal
Sr. Manager (Quality Control)



**BHARAT PETROLEUM CORPORATION LIMITED
KOCHI REFINERY**

HSE DEPARTMENT

KR.HSE.SAFE.05.SLMR.SKP

25.08.2023

Sub: Noise level at Boundary Wall.

Noise level at various locations near the boundary wall inside the refinery was measured on 25.08.2023 at **NIGHT TIME**. The observed values are given below.

Sl. No.	Location	Sound level	Remarks
1.	South of tank YT-30 (Near to Parking)	52	-
2.	Near T T gate (PDPP gate)	55	-
3.	South of Project warehouse	53	-
4.	220 KV line crossing near rain water harvesting pond	48	-
5.	DHDS Tower No- 1	52	-
6.	Rear side of DHDS fire station	51	-
7.	Near Chalikkara gate	50	-
8.	Near TK-25	54	-
9.	East of MS Block	55	-
10.	South of DHDS Flare	57	-
11.	Near NHT-CCR-AAQMS (Near MSBP boundary)	56	-
12.	West of tank YT-902(DHDS)	54	-
13.	Rear side of PIBU office(opp. IPTC)	54	-
14.	Bottling plant entrance from refinery(IPTC Road)	55	-
15.	North of LNG skid (GT-2 Road end)	54	-
16.	Near IREP gate	53	-
17.	DCU	55	-
18.	South of UB-12	56	-
19.	North of VGO labour amenity building	56	-
20.	Behind IREP site office	55	-
21.	Below Coke Conveyor area near railway gate(PWC 4)-offline	51	Conveyor Offline
22.	Below Coke Conveyor area near railway gate- RLS-1	53	Conveyor Offline
23.	Below Coke Conveyor area near outlet A -RLS-2	52	Conveyor Offline
24.	Drum Plant gate	56	-

To: DGM (F&S) (r)

GM (HSE) I/C

Smit Kumar Pal
Manager (Safety)



**BHARAT PETROLEUM CORPORATION LIMITED
KOCHI REFINERY**

HSE DEPARTMENT

KR.HSE.SAFE.05.SLMR.SKP

03.08.2023

Sub: Noise level at Boundary Wall.

Noise level at various locations near the boundary wall inside the refinery was measured on 03.08.2023 at day time. The observed values are given below.

Sl. No.	Location	Sound level	Remarks
1.	South of tank YT-30 (Near to Parking)	58	-
2.	Near T T gate (PDPP gate)	61	-
3.	South of Project warehouse	57	-
4.	220 KV line crossing near rain water harvesting pond	55	-
5.	DHDS Tower No- 1	57	-
6.	Rear side of DHDS fire station	58	-
7.	Near Chalikkara gate	59	-
8.	Near TK-25	58	-
9.	East of MS Block	59	-
10.	South of DHDS Flare	59	-
11.	Near NHT-CCR-AAQMS (Near MSBP boundary)	60	-
12.	West of tank YT-902(DHDS)	54	-
13.	Rear side of PIBU office(opp. IPTC)	57	-
14.	Bottling plant entrance from refinery(IPTC Road)	59	-
15.	North of LNG skid (GT-2 Road end)	61	-
16.	Near IREP gate	59	-
17.	DCU	62	-
18.	South of UB-12	61	-
19.	North of VGO labour amenity building	60	-
20.	Behind IREP site office	57	-
21.	Below Coke Conveyor area near railway gate(PWC 4)-offline	58	Conveyor Offline
22.	Below Coke Conveyor area near railway gate- RLS-1	58	Conveyor Offline
23.	Below Coke Conveyor area near outlet A --RLS-2	61	Conveyor Offline
24.	Drum Plant gate	64	-

To: DGM(F&S) (r)

GM (HSE) I/C

Smit Kumar Pal
Manager (Safety)



**BHARAT PETROLEUM CORPORATION LIMITED
KOCHI REFINERY**

HSE DEPARTMENT

KR.HSE.SAFE.05.SLMR.SKP

18.08.2023

Sub: Noise level at Boundary Wall.

Noise level at various locations near the boundary wall inside the refinery was measured on 18.08.2023 at NIGHT TIME. The observed values are given below.

Sl. No.	Location	Sound level	Remarks
1.	South of tank YT-30 (Near to Parking)	51	-
2.	Near T T gate (PDPP gate)	53	-
3.	South of Project warehouse	54	-
4.	220 KV line crossing near rain water harvesting pond	47	-
5.	DHDS Tower No- 1	56	-
6.	Rear side of DHDS fire station	55	-
7.	Near Chalikkara gate	58	-
8.	Near TK-25	56	-
9.	East of MS Block	54	-
10.	South of DHDS Flare	57	-
11.	Near NHT-CCR-A AQMS (Near MSBP boundary)	59	-
12.	West of tank YT-902(DHDS)	54	-
13.	Rear side of PIBU office(opp. IPTC)	56	-
14.	Bottling plant entrance from refinery(IPTC Road)	52	-
15.	North of LNG skid (GT-2 Road end)	58	-
16.	Near IREP gate	57	-
17.	DCU	59	-
18.	South of UB-12	56	-
19.	North of VGO labour amenity building	55	-
20.	Behind IREP site office	56	-
21.	Below Coke Conveyor area near railway gate(PWC 4)-offline	54	Conveyor Offline
22.	Below Coke Conveyor area near railway gate- RLS-1	53	Conveyor Offline
23.	Below Coke Conveyor area near outlet A -RLS-2	54	Conveyor Offline
24.	Drum Plant gate	57	-

To: DGM (F&S) (r)

GM (HSE) I/C

Smit Kumar Pal
Manager (Safety)



**BHARAT PETROLEUM CORPORATION LIMITED
KOCHI REFINERY**

HSE DEPARTMENT

KR.HSE.SAFE.05.SLMR.SKP

03.10.2023

Sub: Noise level at Boundary Wall.

Noise level at various locations near the boundary wall inside the refinery was measured on 03.10.2023 at day time. The observed values are given below.

Sl. No.	Location	Sound level	Remarks
1.	South of tank YT-30 (Near to Parking)	61	-
2.	Near T T gate (PDPP gate)	60	-
3.	South of Project warehouse	58	-
4.	220 KV line crossing near rain water harvesting pond	57	-
5.	DHDS Tower No- 1	59	-
6.	Rear side of DHDS fire station	55	-
7.	Near Chalikkara gate	60	-
8.	Near TK-25	61	-
9.	East of MS Block	58	-
10.	South of DHDS Flare	60	-
11.	Near NHT-CCR-AAQMS (Near MSBP boundary)	61	-
12.	West of tank YT-902(DHDS)	55	-
13.	Rear side of PIBU office(opp. IPTC)	59	-
14.	Bottling plant entrance from refinery(IPTC Road)	62	-
15.	North of LNG skid (GT-2 Road end)	63	-
16.	Near IREP gate	62	-
17.	DCU	65	-
18.	South of UB-12	64	-
19.	North of VGO labour amenity building	60	-
20.	Behind IREP site office	59	-
21.	Below Coke Conveyor area near railway gate(PWC 4)-offline	59	Conveyor Offline
22.	Below Coke Conveyor area near railway gate- RLS-1	60	Conveyor Offline
23.	Below Coke Conveyor area near outlet A -RLS-2	59	Conveyor Offline
24.	Drum Plant gate	63	-

Smit Kumar Pal
Manager (Safety)

To: DGM(F&S) (r) , GM (HSE) I/C