



KR.HSE.ENV.05. HSSE.HECCR/02/2023/EC No: J-11011/369/2005-IA II (I)  
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 – Environmental Clearance issued by the Ministry of Environment, Forests and Climate Change.**

**Ref: EC No: J-11011/369/2005-IA II (I) dated 2<sup>nd</sup> February 2006, granting environmental clearance for Capacity Expansion cum Modernisation Project (Phase-II).**

Please find enclosed the compliance report on the various conditions laid down by MoEF &CC, pertaining to the half year period from **1<sup>st</sup> April 2023 to 30<sup>th</sup> September 2023** for the Project mentioned in above reference.

Thanking you

Very truly yours  
For BPCL Kochi Refinery

*Mathew P Thomas*  
31/01/2024

**Mathew P Thomas**  
**General Manager (HSE) - in - Charge**

Encl: 1. Six Monthly Compliance Report  
2. Annexure - I Stack Emission Details  
3. Annexure - II Ambient Air Details  
4. Annexure - III Quality of Effluent discharged  
5. Annexure - IV Bore-well Analysis Report.  
6. Annexure - V Noise Surveillance Data.

CC:

1.  
The Member Secretary  
Central Pollution Control Board  
Parivesh Bhawan  
East Arjun Nagar, New Delhi- 110032

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

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

**Compliance status of Environmental clearance conditions for CAPACITY EXPANSION CUM MODERNISATION PROJECT (PHASE-II) accorded by J-11011/369/2005-IA II (I) dated 2nd February 2006**

**Status of the project:** Project commissioned in 2010 -11

Sl No	Conditions	Status as on 30.09.2023
A.	<b>SPECIFIC CONDITIONS</b>	
1.	<p>The gaseous emissions from various process units shall conform to the standards prescribed by the concerned authorities from time to time. The KSPCB may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emissions levels should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.</p>	<p>All emissions within the prescribed standards. No failures of any pollution control system.</p>
2.	<p>On-line continuous monitoring facilities shall be provided on all the stacks of adequate height as per CPCB guidelines. SO<sub>2</sub>, CO, HC, NO<sub>x</sub> etc. shall be maintained within the CPCB limits.</p> <p>Low sulphur fuels shall be used for heaters. Sulphur Recovery Unit (SRU) shall be installed and SO<sub>2</sub> emissions from the plant shall not exceed existing 1607 kg/h and further efforts shall be made to further reduce SO<sub>2</sub> emissions. Low NO<sub>x</sub> burners shall be installed to control the NO<sub>x</sub> emissions.</p>	<p>Online continuous monitoring facilities are provided on all operational stacks.</p> <p>SO<sub>2</sub>, CO, NO<sub>x</sub>, PM, H<sub>2</sub>S and Ni/Vanadium are being monitored as per consent and are within limits</p> <p>BPCL Kochi Refinery is using de-sulfurized fuel gas and low sulphur fuel oil (Sulphur content less than 1%) in old heaters and less than 0.5% in newly installed heaters boilers.</p> <p>Total SO<sub>2</sub> emission from the refinery is within the limit. The allowable limit as per latest CTO is 1579 kg/hr. ; maintaining well below this value.</p> <p>For reducing the sulphur content of fuel gas used in heaters, sulphur recovery unit (SRU) of capacity 80 TPD, has been installed as part of CEMP Phase-II project and 340 x 2 TPD SRU has been installed as part of IREP.</p> <p>Heaters and boilers installed as part of CEMP Phase-II project are provided with low NO<sub>x</sub> burners.</p>

Sl No	Conditions	Status as on 30.09.2023
3.	<p>Continuous ambient air quality monitoring stations for SO<sub>2</sub>, SPM, and H.C. shall be installed in all the 4 directions in consultation with the KSPCB. Data shall be regularly monitored and records maintained and report submitted to the Ministry/CPCB/KSPCB once in six months.</p>	<p>In consultation with KSPCB, the refinery has installed CAAQMS stations in all the four directions. Data on ambient air quality for the period from <b>1<sup>st</sup> April 2023 to 30<sup>th</sup> September 2023</b> is attached as <b>Annexure-II</b>.</p>
4.	<p>As indicated in the EIA/EMP reports, out of total 1700 m<sup>3</sup>/d industrial effluent generated, 360 m<sup>3</sup>/d sour water will be recycled in the plant after stripping of Ammonia and Hydrogen Sulphide and will be used for desalting of crude in de-salters and as wash water in air fin condensates etc. Besides, 300 KL /day, treated waste water will be used for fire fighting, process area cleaning, cooling water make up and for green belt development. Remaining treated effluent will be discharged to Chitrapuzha river after conforming to the prescribed standards. Generation of waste water shall be reduced by installation of sour water stripper unit; use of closed blow down system for all hydrocarbon liquid discharge from the process units, proper segregation and collection of various effluents; paving the process area to avoid contamination of soil, ground water, comprehensive waste water management etc.</p>	<p>A new Sour water Stripping unit (SWS) of capacity 412.8 m<sup>3</sup>/d was installed along with the project. The stripped water is recycled in the plant. Stripped water is used in De-salters in Crude Distillation units</p> <p>Closed blow down (CBD) system is provided in all units.</p> <p>Proper collection /segregation facilities are installed for effluent streams.</p> <p>The effluent treatment plant (ETP) put up as part of CEMP-Phase II project is running continuously. The treated effluent discharged to Chithrappuzha conforms to the standards. Treated water is recycled through RO based DM plant, more than 16000 KL/day of this treated effluent is being used for fire fighting, process area cleaning and green belt development.</p> <p>Process areas are paved to avoid contamination of the soil.</p>
5.	<p>No ground water contamination in and around factory premises shall be ensured by making all the underground lines carrying hydrocarbons, closed drainage system, storage tank etc. leak proof in order to avoid any leakages. Regular monitoring of ground water in and around factory premises shall be carried out by installing piezometer wells and six monthly reports shall be submitted to the Regional Office of this Ministry at Bangalore/CPCB/KSPCB.</p>	<p>Around sixty borewells are dug inside the refinery premises and the water sample from the wells are monitored regularly, to assess the ground water quality, 14 nos of Piezometer wells are also provided for the same.</p> <p>Hydrocarbon storage tanks are provided with MS plates at the bottom to avoid leaching of oil to land. Moreover LDPE lining is also provided on the tank pad of new tanks as an additional precaution to prevent oil seepage to underground water. In addition, closed drainage system is provided for all storage tanks, to avoid any possible land/ ground water contamination during tank draining.</p>

Sl No	Conditions	Status as on 30.09.2023
6.	The domestic waste water shall be treated in the sewage treatment plant and treated waste water conforming to the standards for land application shall be reused for green belt development.	STP of 250 m <sup>3</sup> /day capacity has been installed and running continuously for treating the domestic waste water. The treated effluent is being used for green belt development.
7.	Regular monitoring of the quality of effluent discharged and at river water intake point shall be ensured to ensure no pollution of the Chitrapuzha river.	Quality of treated effluent water discharged to the Chitrapuzha river is being analysed and monitored on regular basis to ensure the stipulated standards. The river water intake to refinery is located at Periyar river and the quality of the same is also monitored.
8.	In-plant control measures for checking fugitive emissions from spillage/raw materials handling etc. should be provided. Proper maintenance of equipment shall be ensured to reduce fugitive emissions.	<p>Closed Blow Down (CBD) systems are provided in all process plants to enable closed loop recycling of all hydrocarbon drains, without fugitive emissions. Double seal floating roof are provided for all the Crude tanks.</p> <p>Hydro carbon detectors are provided as per requirement. Proper maintenance of equipment (including preventive maintenance) is carried out on a regular basis.</p> <p>Quarterly based fugitive emission monitoring and maintenance system (LDAR) has been followed and is being attended any identified emissions / leaks.</p>
9.	Solid waste generated in the form of oil sludge, chemical sludge, catalyst, spent molecular sieves and bio-sludge shall be properly treated / reprocessed / reused or properly disposed-off. Spent catalyst, a hazardous waste shall either be sent back to supplier(s) for reprocessing or disposed-off in the secured landfill. Oil sludge shall be subjected to maximum recovery followed by bio-remediation. Bio-sludge for ETP shall be used as manure after ensuring all the parameters within the permissible limits whereas chemical sludge from ETP shall be collected and disposed in Secured Landfill (SLF).	<p>Post IREP, ETP chemical sludge is processed in DCU. Oily sludge to the maximum possible is processed in DCU.</p> <p>BPCL Kochi Refinery has implemented a scheme for recovery of oil from oily sludge, solids after oil recovery is bio remediated and disposed in TSDF. Spent catalyst is disposed by either returning to the original supplier or selling to the recycler or is disposed in secured land fill.</p> <p>Bio sludge from effluent treatment plant is used as manure.</p>

Sl No	Conditions	Status as on 30.09.2023
10.	Green belt of adequate width and density shall be provided to mitigate the effects of fugitive emissions all around the plant. Green belt shall be developed in 116 hectares out of total 461.7 hectares land with local species in consultation with the DFO and as per the CPCB guidelines.	A full-fledged greenbelt is developed and maintained in the refinery premises.  Part of the green belt that has been disturbed for IREP construction is restored by planting 25000 saplings in the refinery premises and are under various stages of growth. More numbers are added to the list every year.
11.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Health surveillance done regularly and records maintained.
12.	As committed in the EIA/EMP report, the company shall earmark Rs.78.30 crores for environment protection measures and Rs.51.00crores for community development activities.	Complied.
13.	All the other recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Refinery sector shall be implemented. CREP guidelines regarding discharge of treated effluent within 0.4 m <sup>3</sup> /MT of crude shall be strictly followed.	Complied. The discharge of treated effluent was 0.14 m <sup>3</sup> /MT of crude for the half year period from 1 <sup>st</sup> April 2023 to 30 <sup>th</sup> September 2023.
<b>B.</b>	<b>GENERAL CONDITIONS:</b>	
1.	The project authorities must strictly adhere to the stipulations made by the KSPCB and the State Government.	Complied.
2.	No expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment & Forests.	Complied.

Sl No	Conditions	Status as on 30.09.2023
3.	<p>Adequate AAQMS should be established in the downward direction as well as where maximum ground level concentration of SPM, SO<sub>2</sub> and NO<sub>x</sub> are anticipated in consultation with the KSPCB. Data on ambient air quality, fugitive emission and stack emissions shall be regularly submitted to this Ministry including its Regional Office at Bangalore once in six months and monthly to KSPCB.</p>	<p>In consultation with KSPCB, the refinery has installed Six continuous AAQM Stations.</p> <p>Online data are being continuously transferred to CPCB from all AAQMS stations.</p> <p>Data on ambient air quality during the half yearly period from <b>1<sup>st</sup> April 2023 to 30<sup>th</sup> September 2023</b> is attached as <b>Annexure-II</b>.</p> <p>Data on stack emissions during the half yearly period from <b>1<sup>st</sup> April 2023 to 30<sup>th</sup> September 2023</b> is attached as <b>Annexure- I</b>.</p>
4.	<p>The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules. 1989 viz 75 dBA (daytime) and 70 dBA (night time).</p>	<p>Complied.</p> <p>Noise level data attached as <b>Annexure - V</b></p> <p>Continuous Noise monitoring station also installed in the boundary area as part of latest MSB project.</p>
5.	<p>The project authorities shall provide adequate funds (both recurring and non-recurring) to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the condition stipulated herein.</p> <p>The funds so provided should not be diverted for any other purposes.</p>	<p>Complied.</p>
6.	<p>The Regional Office of this Ministry at Bangalore/CPCB/ KSPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation should be submitted to them regularly.</p>	<p>Complied.</p>

SI No	Conditions	Status as on 30.09.2023
7.	<p>The company shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the KSPCB / Committee and may also be seen at Website of the MoEF &amp;CC at <a href="http://envfor.nic.in">http://envfor.nic.in</a>. This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional Office.</p>	Complied.
8.	<p>The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.</p>	<p>The final approval for the implementation of the project was obtained on 27.04.06. The same was informed MoEF &amp; CC vide letter No. 10/MPT/CEMP-II/04 dated 18<sup>th</sup> May, 2006.</p> <p>The project has been commissioned.</p>

Stack Emission Data as per On-line Analyzer data _ April 2023											
Sl. No.	Stack Name	Avg. Flow rate (Nm <sup>3</sup> /hr)	PM (mg/Nm <sup>3</sup> )	NOx (mg/Nm <sup>3</sup> )	Units Run (max)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm <sup>3</sup> )	CO (kg/hr)	SO2 (mg/Nm <sup>3</sup> )	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 <sup>3</sup> )	(mg/Nm <sup>3</sup> )	Hrs	(kg/hr)	(kg/hr)	(mg/Nm <sup>3</sup> )	(kg/hr)	(mg/Nm <sup>3</sup> )	
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 <sup>3</sup> )	(mg/Nm <sup>3</sup> )	Hrs	(kg/hr)	(kg/hr)	(mg/Nm <sup>3</sup> )	(kg/hr)	(mg/Nm <sup>3</sup> )		
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-HO1 (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 <sup>3</sup> )	NOx (mg/Nm <sup>3</sup> )	Units Run (max)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm <sup>3</sup> )	CO (kg/hr)	SO2 (mg/Nm <sup>3</sup> )	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 <sup>3</sup> )	NOx (mg/Nm <sup>3</sup> )	Run Hrs	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm <sup>3</sup> )	CO (kg/hr)	SO2 (mg/Nm <sup>3</sup> )	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 <sup>3</sup> )	NOx (mg/Nm <sup>3</sup> )	Units Run (max)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm <sup>3</sup> )	CO (kg/hr)	SO2 (mg/Nm <sup>3</sup> )	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 05LZ554)	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 05LZ554)	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 05LZ554)	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
<b>Metals</b>					
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
<b>Metals</b>					
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
<b>Metals</b>					
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
<b>Metals</b>					
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
<b>Metals</b>					
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
<b>Metals</b>					
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