



KR.HSE.ENV.05. HSSE.HECCR/02/2023/ J-11011/43/2016 - IA-II (I)  
25.01.2024

To

The Additional Principal Chief conservator of Forests (C)  
Ministry of Environment, Forest & Climate Change  
4<sup>th</sup> 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 Nos. J-11011/43/2016-IA-II (I) dated 20.10.2016; issued to the "Motor Spirit Block Project" of M/s Bharat Petroleum Corporation Ltd, Kochi at Ambalamugal".**

Please find enclosed the compliance reports 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 said project.

Thanking you,

Very truly yours

For BPCL Kochi Refinery.

*K. P. Thomas*  
25/01/2024

**Mathew P Thomas**

**General Manager (HSE) - in - Charge**

Encl: 1. Six Monthly Compliance Report  
2. Annexure - I Emission Details  
3. Annexure - II Ambient Air Details

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, क्रीमभॉय रोड, बेलार्ड इस्टेट, पी. बी. नं. 688 मुंबई - 400 001

**Compliance Status of Environmental Clearance conditions for installation of "Motor Spirit Block Project" at BPCL – Kochi Refinery, project accorded by EC No. J-11011/43/2016-IA-II (I) dated 20.10.2016**

Status of the project: Project commissioned in 2021		
	COMMENTS	Compliance Status as on 30.09.2023
<b>SPECIFIC CONDITIONS:</b>		
i	M/s BPCL shall comply with new standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186 (E) dated 18th March 2008.	BPCL-KR has complied with this condition.
ii	Continuous on - line stack monitoring for SO <sub>2</sub> , NO <sub>x</sub> and CO of all the stack shall be carried out.	Continuous online monitoring of SO <sub>2</sub> , NO <sub>x</sub> and CO is being carried out for 2 new stacks in the MSB project.
iii	The process emissions [SO <sub>2</sub> NO <sub>x</sub> , HC (Methane & Non-methane)] VOCs and Benzene from various units shall conform to the standards prescribed under the Environment (Protection) Act. At no time, the emission levels shall go beyond the stipulated standards.  In the event of failure of pollution control system(s) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency of the pollution control device has been achieved.	Measurement and detection devices for HC, H <sub>2</sub> S etc. put online in plant area.  Complied.
iv	Leak detection and repair program shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to. Fugitive emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations.	A list of all potential HC/VOC emission points like flanges, valve gland, pump seal etc. in MSBP has been identified. Leak Detection and repair program to detect and control HC/VOC emissions is in place for MSBP units. A well-defined preventive maintenance schedule for pumps, valves, pipelines as being practiced in our running plants is implemented for MSBP. Gas detectors are provided at strategic locations for detecting leakages.
v	SO <sub>2</sub> emissions after expansion from the plant shall not exceed 1579 kg/hr. and further efforts	Sulphur rich off gases from new project units is treated in the existing Sulphur

	shall be made for reduction of SO <sub>2</sub> load through use of low sulphur fuel. Sulphur recovery units shall be installed for control of H <sub>2</sub> S emissions. The overall sulphur recovery efficiency of Sulphur Recovery Unit with tail gas treating shall not be less than 99.9%.	recovery units. BPCL-KR will comply with the SO <sub>2</sub> emissions limit of 1579 Kg/Hr. New GT and HRSG envisaged in project proposal has been dropped during detailed engineering stage based on steam and power optimization. Power requirement is drawn from the state grid. One of the stack is therefore eliminated. Process heaters have been designed for LNG firing, LNG firing provision is provided to MSBP heater to reduce SO <sub>2</sub> emission.
vi	As proposed, record of Sulphur balance shall be maintained at the Refinery as part of the environmental data on regular basis. The basic component of sulphur balance includes sulphur input through feed (sulphur content in crude oil), sulphur output from Refinery through products, by-product (elemental sulphur), atmospheric emissions etc.	Sulphur balance is being maintained at Refinery on regular basis.
vii	Flare gas recovery system shall be installed.	New Flare system was proposed in the project report. However, based on inputs from selected Process Licensor, mitigated flare load is found to be less, hence Flare load from MSBP is connected to existing flare system. A Flare gas recovery system is commissioned as part of the Integrated Refinery Expansion Project (IREP). This has been communicated to MoEF&CC vide letter dated 11th December 2018 and 5th July 2019.
viii	Ambient air quality monitoring stations, {PM10, PM2.5, SO <sub>2</sub> , NO <sub>x</sub> , H <sub>2</sub> S, mercaptan, non-methane-HC and Benzene} shall be set up in the complex in consultation with Kerala State Pollution Control Board (KSPCB), based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modelling exercise to represent short terms GLCs.	6 nos. of AAQMS are already installed at different locations inside refinery premises and are online monitored by PCB. KSPCB visited BPCL-KR to identify additional requirement of AAQMS as part of MSBP and recommended that 2 manual sample points would be sufficient in addition to 6 No's of existing AAQMS. The same was updated in the MSBP plot plan and sent to KSPCB, Trivandrum for approval. KSPCB vide letter ref PCB/ HO/ HWM/ 416/ 90 dated 20/ 01/ 2020 approved the same. An Annual Rate contract is in place for carrying out sampling and analysis of ambient air quality within refinery.

ix	Total water requirement from River Periyar after implementation of IREP and BS VI project shall not exceed 1372.2 m <sup>3</sup> /hr. and prior permission shall be obtained from the competent authority.	Total freshwater requirement for MSBP will be 125M <sup>3</sup> /hr. Govt.of Kerala has given approval for drawing maximum of 3083.3m <sup>3</sup> /hr. water from river Periyar. The total freshwater requirement for BPCL KR post MSBP will be limited within 3083.3 m <sup>3</sup> / hr. The number 1372.2 M <sup>3</sup> / hr. seems to have come in place of 3083.3M <sup>3</sup> /hr as an error in the Environmental Clearance Letter. This was intimated to MoEF&CC along with minor design changes in detailed engineering phase. Letter in this regard has been submitted to MoEF&CC dated 11th December2018 and 5th July 2019. Acknowledgement received from MoEF&CC dated 11.9.2019
x	As proposed, Industrial effluent generation shall not exceed 5.6 m <sup>3</sup> /hr. from proposed expansion and treated in the effluent treatment plant. Treated effluent shall be recycled/reused within the factory premises. Domestic sewage shall be treated in sewage treatment plant (STP).	All effluent generated is being treated in the existing refinery ETP. There will be no untreated effluent discharge from MSBP complex. Domestic sewage is treated in existing refinery STP.
xi	Oil catchers/oil traps shall be provided at all possible locations in rain/storm water drainage system inside the factory premises.	Closed drainage system is provided for tank drains. Oil catchers with traps provided in oil water sewer system.

<b>GENERAL CONDITIONS:</b>		
i	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.	BPCL-KR will adhere to the stipulations made by KSPCB, State Govt. and other statutory bodies.
ii	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Reference on minor changes in the EC has been communicated to MoEF&CC vide letter dated 11th December 2018 and 5th July 2019. Acknowledgement received from MoEF&CC dated 11.9.2019.
iii	The locations of ambient air quality monitoring stations shall be decided in consultation with the KSPCB and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	6 nos. of AAQMS are already installed at different locations inside refinery premises and are online monitored by PCB. KSPCB visited BPCL-KR to identify additional requirement of AAQMS as part of MSBP and recommended that 2

		<p>manual sample points would be sufficient in addition to 6 No's of existing AAQMS. The same was updated in the MSBP plot plan and sent to KSPCB, Trivandrum for approval. KSPCB vide letter ref PCB/ HO/ HWM/ 416/90 dated 20/ 01/ 2020 provided their consent. The said letter was appended with previous half yearly compliance report. An Annual Rate Contract is in place for carrying out sampling and analysis of ambient air quality within refinery.</p>
iv	<p>The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).</p>	<p>To minimize Sound, engineering practice has incorporated in the design as prescribed under EPA rules. Equipment selection has been done taking into consideration of restricting noise levels to acceptable limits. Also we are doing regular noise monitoring in the premises and reports being submitted to PCB on monthly basis.</p>
v	<p>The Company shall harvest rainwater from the roof-tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water</p>	<p>Facilities are made for diverting rainwater from roof tops to recharge ground water.</p>
vi	<p>During transfer of materials, spillages shall be avoided, and garland drains be constructed to avoid mixing of accidental spillages with domestic wastewater and storm water rains.</p>	<p>Drains are constructed for each unit and separate storm water drain is constructed outside unit periphery to avoid mixing of accidental spillages with storm water.</p>
vii	<p>Usage of Personnel Protection Equipment by all employees/ workers shall be ensured.</p>	<p>Usage of PPEs within plant area is already enforced in BPCL KR.</p>
viii	<p>Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.</p>	<p>BPCL-KR conducts periodic training on health, safety, and environment to cover all employees. Pre-employment and routine periodical medical examinations are also undertaken.</p>
ix	<p>The company shall also comply with the environmental protection measures and safeguards proposed in the project report submitted to the Ministry. All the</p>	<p>All recommendations of EIA study are complied. Operation phase - Facilities for detection and monitoring of emissions are installed and put online for all MSBP units.</p>

	recommendations made in the EIA/EMP in respect of Environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.	As part of Environmental Management Plan, saplings are planted to increase green cover, facilities for rain water harvesting are made and sampling stations are added for monitoring air quality. All effluents is being treated in existing ETP.
x	The company shall undertake CSR activities and all relevant measures for improving the socio-economic conditions of the surrounding area.	BPCL undertakes CSR activities every year as per Government guidelines. Various activities are carried out to improve socio-economic condition of area near to project site. The detailed CSR activities as <b>Annexure - 1</b>
xi	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.	As part of eco-development, BPCL is in the process of acquiring around 52 acres of land in the eastern side of MSBP site to be utilized as green cover. MSBP project is an eco-development measure as the auto fuel quality will comply with BS-VI standards. Sulphur in MS will reduce from 50 ppm to 10 ppm with resulting reduction in vehicular pollution.
xii	A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	BPCL-KR is having a separate Environment Management cell to carry out environmental management and monitoring functions. BPCL-KR also has well equipped Centralized Quality Control Laboratory. The same facility is utilized for MSBP.
xiii	The company shall earmark sufficient funds for recurring cost per annum to implement the conditions stipulated by the Ministry of Environmental and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/pollution control measures shall not be diverted for any other purpose.	Industrial and domestic effluents from MSBP is treated in existing treatment Plants. Incremental cost for yearly operation has been budgeted. A list of all potential HC/VOC emission points like flanges, valve gland, pump seal etc. in MSBP has been identified. Leak Detection and repair program to detect and control HC/VOC emissions is in place for all the units in MSBP.
xiv	A copy of the clearance letter shall be sent by the project proponent to be concerned Panchayat, Zila Parisad/Municipal Corporation, Urban local Body and the local NGO, if any, from who suggestions/ representations, if any, were received while processing the proposal.	BPCL-KR has complied with this condition.
xv	The project Proponent shall also submit Six monthly reports on the status of compliance of the	Six monthly compliance reports will be submitted during December (for period

	stipulated Environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective regional office of MoEF, the respective Zonal Office of CPCB and the Kerala State Pollution Control Board. A copy of Environmental clearance and six-monthly compliance status report shall be posted on the website of the company.	April-September) and during June (for period October to March). The same will be sent to the Regional office of MoEF&CC and also uploaded in the website of BPCL.
xvi	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the Kerala State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company	Environmental statement for the Refinery is submitted annually, this statement is included details of MSBP facilities also.
xvii	The project proponent 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 SPCB/Committee and may also be seen at website of the Ministry at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspaper 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 shall be forwarded to the concerned Regional Office of the Ministry.	BPCL- KR has complied with this condition.
xviii	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 start of the project	The board approval for the MSBP project was obtained on 24/02/2016. The date of start of project is considered from the environmental clearance on 20th October 2016.

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	HRS 1 (CPP - 01)	161184	4.67	116.146	744	0.75	18.72	6.75	1.09	59.834	9.64
19	GT2/HRS 2 (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	HRS 3 (IUS HRS 05LZ554)	161009	3.02	23.725	744	0.49	3.82	11.34	1.83	0.427	0.07
30	HRS 4 (IUS HRS 05LZ554)	142276	3.07	93.076	744	0.44	13.24	10.54	1.50	2.985	0.42
31	HRS 5 (IUS HRS 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-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 <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