



KR.HSE ENV.05.HSSE. ECCR/02/2023/ EC No.J-11011/32/90-IA-II  
25.01.2024

To  
The Additional Principal Chief conservator of Forests (C),  
Ministry of Environment, Forest & Climate Change, 4th Floor, E&F Wings,  
Kendriya sadan, Koramangala, Bangalore-560 034

Dear Sir,

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

**Ref: EC No.J-11011/32/90-IA-II dated 20.8.1991** issued to our Project "Capacity expansion of M/s Bharat Petroleum Corporation Ltd, Kochi Refinery (Formerly Cochin Refineries Ltd.) from 4.5 to 7.5 MMTPA 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 subject project.

The data on ambient air, effluent, CREP recommendations, details of land balance, ground water usage, green belt, solid waste management, rain water harvesting, solar power generation and details of environment management cell being common to all the ECs granted in Kochi Refinery premises, the same are enclosed as part of EC for CEMP-II accorded vide MoEF&CC letter J-11011/369/2005-IA II (I) dated 2<sup>nd</sup> February 2006.

Thanking you

Very truly yours

For BPCL Kochi Refinery

  
Mathew P Thomas

General Manager (HSE) - in - Charge

Encl: 1. Six Monthly Compliance Report.  
2. Annexure - 1 : Stack emission data

Cc:

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

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

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

**Compliance status of Environmental Clearance conditions for Capacity Expansion Project accorded by J-11011/32/90-IA.II DTD.20/08/1991**

**Status of the project: Project commissioned in 1994**

Sl. No.	Stipulations of MoEF & CC	Status as on 30.09.2023
1	The project authorities must strictly adhere to the stipulations laid down by the State Pollution Control Board and the State Government and a comprehensive EIA report must be submitted within two months.	Complied.
2	Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this Ministry.	Complied.
3	The present policy of crude mix refining strategy of minimum 50% Indian crude including B.H and 50% of imported crude should be maintained and implemented under normal conditions.	The stipulated policy has been changed. Capacity is 15.5 MMTPA after new projects and crude mix is chosen to improve the gross refining margin of the Refinery. The new project of grass root refining facilities (IREP) have been implemented with the EC consent (J-11011/341/2011-IA-II (I) dated 22.11.2012; and Amendment dated 23.05.2014) conditions of production and emission/effluent norms.
4	Sulphur Recovery Unit with more than 90% Sulphur recovery should be installed and commissioned before the expansion project is completed and precautions for its continuous operation must be taken. Techno-economic feasibility study for additional stand –by 'S' recovery system may be initiated after the installation of first unit.	Sulphur Recovery Unit with more than 90% sulphur recovery commissioned during March 1995. (Now dismantled)  But additional Sulphur Recovery units with newer technology and higher efficiency of 99.9% have been commissioned as part of later projects viz. DHDS / CEMP - II / IREP.
5	Only LSHS should be used in boilers. The additional capacity for heaters, utility furnace must be based on LSHS use only. Low NOx burners should be used to avoid gaseous formation of NOx.	Complied.  All burners are low NOx burners and NOx emissions are far below the described norms.
6	The gaseous emissions from various process units should conform to the standards prescribed by the concerned authorities from time to time. At no time the emission level should go beyond the stipulated standards. In the event of the failure of any pollution control system adopted by the unit, the respective unit should be put out of operation immediately and should not be	Complied

	restarted until the control measures are rectified to achieve the desired efficiency.	
7	Adequate number (a minimum of 7) of air quality monitoring stations should be set up in the down-wind direction as well as where maximum ground level concentration is anticipated. Stack emission should be monitoring by monitoring unit. The data on stack emission should be submitted to the State Pollution Control Board once in three months and to this Ministry once in six months along with the statistical analysis. The air quality monitoring stations should be selected on the basis of modelling exercise to represent the short term ground level construction.	<p>As per letter No. J-11011/32/90-IA. II dated 19.05.1992. CRL (Now BPCL - KR) was directed to put up 4 Nos. of AAQMS. Based on wind rose pattern at BPCL - KR and modelling exercise conducted, 3 AAQMS were found to be sufficient for monitoring the pollutants from BPCL – KR. KSPCB's approval was obtained to put up these 3 stations in KR premises. 3 Nos. of AAQMS had been installed along with a Data Acquisition Centre and was commissioned in August 1997.</p> <p>Post CEMP- II project, commissioned in 2010 – 2011, BPCL KR has 5 AAQMS stations. The data from all the five AAQMS are being uploaded to CPCB servers.</p> <p>After the commissioning of the PDPP 2021, now BPCL – KR has 6 nos. of AAQ Monitoring Stations.</p> <p>The data from all AAQMS are being provided along with this compliance report. Stack emission data also attached as Annexure I.</p>
8	Fugitive emissions should be regularly monitored, and adequate provision should be made for the same.	<p>Complied.</p> <p>One rate contract for the same has been issued and being done regularly (Once in quarter) and is being attended the identified leaks; if any and maintaining reports.</p>
9	<p>Fugitive emission of HC from storage tanks should be minimized by adopting the following measures:</p> <ul style="list-style-type: none"> <li>a) Provision of Floating Roof Tanks for volatile products</li> <li>b) Replacement of gland packing of pumps by means of mechanical seals.</li> <li>c) Use of submerged filling in product loading gantries</li> </ul>	<ul style="list-style-type: none"> <li>a). Complied.</li> <li>b). All the pumps except pumps in heavy oil or water service are provided with mechanical seals.</li> <li>c). Complied.</li> </ul>
10	There should be no change in the stack design without the approval of the State Pollution Control Board. Alternate Pollution Control System and proper design in the stack should be provided to take care of excess emissions due to failure in any system of the plant.	Complied

11	Total raw water consumption (industrial as well as township) should not exceed the present level (i.e.,16800 m3/day).	Complied. Current consumption is within the revised figures as per consent for IREP. (J-11011/341/2011-IA-II (I) dated 22.11.2012; and Amendment dated 23.05.2014)
12	The project authorities must recycle wastewater to the maximum extent possible. The present practice of ETP effluent discharged into water logged areas should not be continued.  The liquid effluent coming out of the plant should meet the stipulated standards and disposed through the channel only into the outfall point in Chitrapuzha river to be identified by the State Pollution Control Board. Flow of oil and grease into biological system should be avoided.  Waste stream segregator should be installed before ETP.	Complied.
13	Adequate number of effluent quality (oil & grease, COD, BOD, suspended solids, phenols, sulphides, pH and flow) monitoring stations must be set up in consultation with State Pollution Control Board	Complied
14	No oily sludge should be generated and stored as was being done in the past.	As part of IREP project, BPCL-KR has commissioned a Delayed Coker Unit (DCU). Sludge generated is processed in this DCU and the product is Petcoke.
15	The project authority should prepare a well designed scheme for solid and hazardous wastes disposal generated from BPCL - KR (formerly CRL) taking into account the suggestions made by consultants in the EIA report. The plan for disposal duly approved from the State Pollution Control Board should be submitted to the Ministry within six months and adequate space should be provided for it, as far as possible on the premises itself.	Scheme for solid and hazardous waste disposal was approved by KSPCB. Scheme was subsequently submitted to MoEF &CC in March 1993.  BPCL Kochi Refinery has implemented a scheme for recovery of oil from oily sludge. The oil recovery process consists of a series of physical separation processes. The oil recovered is reprocessed in the refinery process units. The sludge after the oil recovery is transferred for Bioremediation, which is a "The Energy and Resources Institute (TERI)" suggested method.  Spent catalyst is disposed by either returning to the original supplier or selling to the recycler or is disposed in delayed Coker unit / approved agency of TSDF.  ETP Chemical sludge is disposed in delayed Coker unit.  Bio sludge from effluent treatment plant is used as manure in the different green parks

16	Green belt, 500 meters wide, as recommended by the consultants in their report should be developed and maintained. The treated effluent conforming to the standard should be used for green belt development plan considering attenuation factors, soil characteristics etc. should be prepared and submitted to this Ministry within 6 months.	Complied.
17	Relocate LPG spheres so that risk due to these remains within the plant area	Complied.  As it was not feasible to relocate the LPG spheres, it had been desired by MoEF &CC to acquire land in the adjoining area where impact will be more. Accordingly, the adjoining land of 63 acres had been acquired by BPCL – KR (formerly CRL), that has been occupied by IOC, HPC and BPC area.  Further, 75% of LPG / Propylene storage is in mounted bullets.
18	A detailed risk analysis study based on Maximum Credible Accident Analysis should be done and submitted to this Ministry once the process design / technology and lay out is frozen. Based on this, a Disaster Management Plan has to be prepared and after approval by the concerned Nodal Agency, should be submitted to this Ministry within six months.	Risk analysis study had been conducted and was submitted to MoEF &CC in October 1991. Disaster Management Plan was submitted to MoEF &CC in February 1992.  BPCL – KR has an updated ERDMP.
19	Feasibility of using 20 tonner truck may be studied / assessed wherever road transport is being envisaged and report submitted to this Ministry in three months.	20 Tonner trucks are utilised wherever feasible.
20	The project authority must set up laboratory facilities for collection and analysis of samples under the supervision of competent technical personnel, who will directly report to the Chief Executive.	Complied.
21	A Separate Environment Management Cell with suitably qualified people to carry out various functions should be set up under the control of Senior Executive, who will report directly to the Head of the organization.	Already exists.
22	The funds earmarked for the environmental protection measures should not be diverted for other purposes and year-wise expenditure should be reported this Ministry.	Complied with. An estimated amount of Rs.74/-crores have been spent during implementation of Capacity Expansion Project towards environmental protection measures.

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-H01 (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-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	HRSG 1 (CPP - 01)	161184	1.630	67.546	720	0.26	10.89	3.068	0.49	3.644	0.59
19	GT2/HRSG -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	HRSG 3 (IUS HRSG 05L2554)	161009	2.35	16.337	720	0.38	2.63	1.7	0.27	0.278	0.04
30	HRSG 4 (IUS HRSG 05L2554)	142276	4.155	78.459	720	0.59	11.16	10.4	1.48	1.79	0.25
31	HRSG-5 (IUS HRSG 05L2554)	143306	63.2	4.879	720	9.06	0.70	15.96	2.29	2.003	0.29
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	1.8	116.079	720	0.22	14.27	12.64	1.55	38.446	4.73
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	3.36	124.623	720	0.41	15.39	7.4	0.91	89.985	11.11
34	NHT -Isom. (NH-2/ H H 101)	53005	0.14	64.278	720	0.01	3.41	4.907	0.26	0.00	0.00
35	PWI LS 110 (PDPP INC - 01)	70957	23.50	0.602	720	1.67	0.04	0.54	0.04	1.854	0.13
36	LS021A (PDPP INC - 02)	71924	0.19	28.283	720	0.01	2.03	53.70	3.86	28.478	2.05
37	MSBP_HOH	158034	2.60	7.543	720	0.41	1.19	38.25	6.04	25.035	3.96
38	MRH 01/02/03/04 (MSBP - CCR)	96964	1.60	23.58	720	0.16	2.29	0.00	0.00	4.192	0.41
						32.15	153.90		103.52		1197.18
						PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

## Annexure – 1

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

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

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

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

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

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

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

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



QUALITY CONTROL DEPARTMENT  
BPCL-KOCHI REFINERY, AMBALAMUGAL

**BOREWELL WATER TEST REPORT**

Bore well Water-07

Date of Sample: 06.4.2023

Date of Testing: 08.4.2023

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable limit
1	pH	-	IS 3025 (P:11)	7.1	6.5 – 8.5
2	Oil	mg/L	IS 3025 (P:39)	nil	nil
<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