



KR.HSE.ENV.05. HSSE.HECCR/01/2025/ J-11011/341/2011-IA-II (I)
30.06.2025

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 Nos.J-11011/341/2011-IA-II (I) dated 22.11.2012; and Amendment dated 23.05.2014 issued to
the "Integrated Refinery Expansion Project (IREP) 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 1st October 2024 to 31st March 2025 for the said project.

Thanking you,

Very truly yours

For BPCL Kochi Refinery.

Roshan Shihab P M
General Manager (HSE)

Encl: 1. Six Monthly Compliance Report with supporting / monitoring documents

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, अम्बलमूगल - 682 302, एरणाकुलम जिला, केरल, दूरभाष: 0484 - 2722061 - 69 फैक्स: 0484 - 2720961 / 2721094
पंजीकृत कार्यालय: भारत भवन, 4 & 6, कुरिम्बोय रोड, बलार्ड एस्टेट, पी. बी. नं. 688, मुंबई - 400 001

Compliance Status of Environmental Clearance conditions for installation of "Integrated Refinery Expansion Project (IREP) at BPCL – Kochi Refinery project accorded by J-11011/341/2011-IA-II (I) dated 22.11.2012; and Amendment dated 23.05.2014.

Status of the project: Project commissioned in 2016		
	COMMENTS	Compliance Status as on 31.03.2025
SPECIFIC CONDITIONS:		
i	Compliance to all the environmental conditions stipulated in the environmental clearance letter nos. J-11011/32/90-IA. II dated 20 th August 1991 J-11011/78/1996-IA. II (I) dated 5 th March 1997 and J-11011/238/2008-IA. II (I) dated 18 th February 2009 shall be satisfactorily implemented and compliance reports submitted to the Ministry's Regional Office at Bangalore.	Complied.
ii	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 18 th March 2008.	Complied. Monthly monitoring reports are being submitted to State PCB.
iii	Adequate stack height shall be provided to heaters, furnaces, VGO, HSD and Utility boilers as per CPCB / Kerala State Pollution Control Board (KSPCB) guidelines to disperse gases emissions into the atmosphere. Low NOx burners shall be provided to Heaters/furnaces with on-line analysers. Low sulphur fuel shall be used.	Complied.
iv	Continuous on-line stack monitoring for SO ₂ , NO _x and CO of all the stacks shall be carried out.	Complied. Online continuous monitoring facilities are provided for SO _x , NO _x , CO & SPM on all operational stacks. BPCL KR has an Annual Rate Contract with NABL accredited lab for the manual sampling and analysis of stack emission parameters like SO ₂ , CO, NO _x , PM, H ₂ S and Ni/Vanadium. BPCL Kochi Refinery is using de-sulfurized fuel gas and low sulphur fuel oil (Sulphur content less than 1%) in old heaters and less than 0.5% in newly installed heaters boilers.
v	The process emissions [SO ₂ NO _x , 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.	Complied. Total SO ₂ emission from the refinery is within the limit. The allowable limit as per latest CTO is 1579 kg/hr; maintaining well below this value.

	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.	
vi	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.	Complied. Quarterly based fugitive emission monitoring and maintenance system (LDAR) has been followed and is being attended any identified emissions / leaks Total 926 No's of Hydrocarbon (HC) detectors, 267 No's of Hydrogen sulphide (H₂S) detectors and 42 No's of Hydrogen (H₂) detectors are installed at different locations of refinery including product loading, storage tank farms and process plants etc. Most of sensors are made up of M/s Honeywell. HC sensors belong to Infra-red type and H₂S/H₂ sensors belong to electrochemical type. Hydrocarbon detectors are provided as per requirement. Proper maintenance of equipment (including preventive maintenance) is carried out on a regular basis.
vii	SO₂ emissions after expansion from the plant shall not exceed 1518 kg/hr and further efforts shall be made for reduction of SO₂ load through use of low sulphur fuel. Sulphur recovery units shall be installed for control of H₂S emissions. The overall sulphur recovery efficiency of Sulphur Recovery Unit with tail gas treating shall not be less than 99.9%. (The SO₂ emission was reduced from 1582 Kg/Hr. to 1518 Kg/Hr. based on the EC amendment dated 23.05.2014).	Complied. Now the total SO_x emission limit has been revised to 1579 kg/hr. as per latest MSB Project EC. Maintaining well below this value. For reducing the sulphur content of fuel gas used in heaters, Sulphur recovery unit (SRU) of capacity 680 TPD, has been installed as part of IREP (Integrated Refinery Expansion Project). Heaters and boilers installed as part of IREP are provided with low NO_x burners.
viii	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-	Complied.

	product (elemental sulphur), atmospheric emissions etc.	
ix	Flare gas recovery system shall be installed.	Installed in February 2018.
x	Ambient air quality monitoring stations [PM_{10} , $PM_{2.5}$, SO_2 , NO_x , H_2S , Mercaptan, non-methane-HC and Benzene] shall be set up in the complex in consultation with Kerala State Pollution Control Board, 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 term GLCs.	Complied. 6 No's of ambient air quality monitoring stations (AAQMS) are installed at the peripheries of the refinery to enable close monitoring of ambient air quality near the refinery area. The ambient air quality information is also communicated to public through an electronic display board.
xi	Ambient air quality data shall be collected as per NAAQES standards notified by the Ministry on 16 th November 2009 and trend analysis w.r.t. past monitoring results shall also be carried out. Adequate measures based on the trend analysis shall be taken to improve the ambient air quality in the project area.	Complied.
xii	The gaseous emissions from DG set shall be dispersed through adequate stack height as per CPCB standards. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution. Besides, acoustic enclosure/silencer shall be installed wherever noise levels exceed the limit.	Complied. DG set are used only in the extreme emergency(for lighting)
xiii	Total water requirement from River Periyar after expansion shall not exceed 3083.3 m ³ /hr. and prior permission shall be obtained from the competent authority. Industrial effluent generation will be 1400 m ³ /hr and treated in the effluent treatment plant. Treated effluent shall be recycled/reused within the factory premises and remaining treated effluent shall be discharged into Chitrapuzha River after conforming to the standards prescribed for the effluent discharge and obtaining permission from the KSPCB, which shall not exceed 410 m ³ /hr. Domestic sewage shall be treated in sewage treatment plant (STP).	Complied. Steam condensate in the process plants is being recycled back to the boilers as feed water for the steam generation, thereby resulting in reduction in the freshwater consumption. Approximately 130-150 m ³ /hr. steam condensate is being recycled to steam boilers in the refinery. The stripped water from the stripped water units is recycled as make up water to the desalting process in the crude unit. 150 m ³ /hr. of liquid effluent generation is avoided by recycle. Treated effluent water from the wastewater treatment plants are recycled in RO plant
xiv	All the effluents after treatment shall be routed to a properly lined guard pond for equalization and final control. In the guard pond, automatic monitoring system for flow rate, pH and TOC shall be provided.	Complied. Quality of treated effluent water discharged to the Chitrapuzha river is being analysed and monitored on continuous & regular basis to ensure the stipulated standards. The river water

		intake to refinery is located at Periyar river and the quality of the same is also monitored.
xv	Oil catchers /oil traps shall be provided at all possible locations in rain/storm water drainage system inside the factory premises.	Provided.
xvi	A study shall be conducted to identify the source of odour and remedial measures to control the odour problem shall be taken. Study report shall be submitted to the Ministry's Regional office at Bangalore within 6 months from the date of issue of this letter.	Complied.
xvii	Improvement in the sludge handling area is required and scheme for final disposal of sludge shall be prepared and submitted to the Ministry's Regional office at Bangalore.	Sludge handling area housekeeping improved and Final sludge disposal scheme submitted.
xviii	Oily sludge shall be disposed-off into Coker. Annual Oily sludge generation and disposal data shall be submitted to the Ministry's Regional Office and CPCB.	Complied. Oily sludge is disposed through Delayed Coker Unit (DCU) as feed mix. Annual sludge generation and disposal data being submitted to Regional Office and CPCB.
xix	The Company should strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in October, 1994 and January, 2000. Hazardous waste should be disposed of as per Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 and amended time to time.	Complied. Reports are being submitted to KSPCB on monthly basis.
xx	The membership of common TSDF should be obtained for the disposal of hazardous waste. Copy of authorization or membership of TSDF should be submitted to Ministry's Regional Office at Bangalore. Chemical/inorganic sludge shall be sent to treatment storage disposal facility (TSDF) for hazardous waste. Spent catalyst shall be sent to authorize recyclers/re-processors.	BPCL-KR has entered into a waste disposal annual Rate Contract with M/s Kerala Enviro Infrastructure Limited to dispose hazardous waste. Spent catalyst is being sent to authorized recyclers/re-processors / disposal agencies.
xxi	Proper oil spillage prevention management plan shall be prepared to avoid spillage/leakage of oil/petroleum products and ensure regular monitoring.	BPCL-KR is having an oil spillage contingency plan for SPM. Inside the refinery complex, adequate facilities are maintained to prevent and contain oil spillage.
xxii	The company shall strictly follow all the recommendation mentioned in the Charter on Corporate Responsibility for Environmental protection (CREP).	Complied.

xxiii	To prevent fire and explosion at oil and gas facility, potential ignition sources shall be kept to a minimum and adequate separation distance between potential ignition sources and flammable materials shall be in place.	Complied as per OISD guidelines. Strictly following the Permit-to-Work system.
xxiv	Green belt shall be developed at least in 33% of the plant area in and around the plant premises to mitigate the effects of fugitive emissions all around the plant as per the CPCB guidelines in consultation with DFO. Thick green belt with suitable plant species shall be developed around unit. Selection of plant species shall be as per the CPCB guidelines.	BPCL-KR is having a total area of 1336.05 acres of land (including the new projects MSBP / PDPP). In this, Plant area accounts (including offsite, Pipe rack, Buildings, Roads) for 767.20 acres. The statutory requirement of green belt as specified in Environmental Clearance is 33% of the plant area. Hence the green cover requirement is 253.20 acres. Based on latest survey done by Kerala State Remote Sensing And Environment Centre, we are having a total green cover of 441.263 acres which is well above required 253.20 acres required as per EC conditions.
xxv	Company shall prepare project specific environmental manual and a copy shall be made available at the project site for the compliance.	Complied.
xxvi	All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented.	Complied
xxvii	All the issues raised and commitment made during the public hearing/consultation meeting held on 14 th February 2012	All feasible and applicable concerns addressed.
xxviii	Company shall adopt Corporate Environment Policy as per the Ministry's O.M. No. J-11013/41/2006-IA.II (I) dated 26 th April, 2011 and implemented.	BPCL as a Corporation is having a Corporate HSSE Policy which includes Environment also.
xxix	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, Safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied.

GENERAL CONDITIONS:

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.	BPCL-KR had sought some amendments to the EC conditions from MoE&F. MoE&F has accorded the EC amendment on 23 rd May 2014.
iii	The project authorities must strictly comply with the rules and regulations under manufacture, Storage and import of Hazardous Chemical Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.	BPCL-KR has obtained approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. BPCL-KR complied the rules and regulations under manufacture, Storage and import of Hazardous Chemical Rules, 2000.
iv	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).	The overall noise level will be limited at the fence as prescribed under EPA rules. Monitoring report attached.
v	A separate Environmental Management Cell equipped with full-fledged laboratory facilities must 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. We have well equipped Centralized Quality Control Laboratory also to support monitoring.
vi	Adequate funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures and shall be used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	BPCL-KR has earmarked adequate funds for environment pollution control measures.

vii	The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Six monthly compliance reports are being submitted by BPCL-KR as per the requirement.
viii	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the Company by the proponent.	BPCL-KR has complied with this condition.
ix	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx, HC (Methane of Non-methane), VOCs (ambient levels as well as stack emissions) or critical sectorial parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Six monthly compliance reports are being submitted by BPCL-KR after receipt of the Environmental Clearance for the IREP project. The same will be sent to the Regional Office of MoEF &CC and also uploaded in the website. The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx, HC (Methane / Non-methane), VOCs (ambient levels as well as stack emissions) or critical sectorial parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.
x	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry/CPCB/SPCB shall monitor the stipulated conditions.	Six monthly compliance reports are being submitted by BPCL-KR after receipt of the Environmental Clearance for the IREP project. The same will be sent to the Regional Office of MoEF&CC and also uploaded in the website.
xi	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the Project proponent to the concerned 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 along with the status of compliance of environmental	Complied.

	conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	
xii	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 and may also be seen at website of the Ministry of Environment and Forests at http://envfor.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and the copy of the same shall be forwarded to the Regional Office.	BPCL-KR has complied with this condition.
xiii	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	The Board approval for pre-project activities for the IREP project was obtained on 31.01.2011 and capital approval was obtained by the Board on 31.03.2012. Land development work commenced in line with the above approval.

**CORPORATE RESPONSIBILITY FOR ENVIRONMENTAL PROTECTION (CREP)
PROGRESS REPORT ON ACTION POINT**

Sl. No.	Task	Remarks/Status
1	All the refineries provide on-line emission and effluent monitoring systems and give linkages to SPCB and CPCB server and detailed note shall be submitted by individual refineries indicating number of sensors, make and type etc.	Online connectivity of all Six AAQMS given and intimated to CPCB/KSPCB. Total 926 No's of Hydrocarbon (HC) detectors, 267 No's of Hydrogen sulphide (H ₂ S) detectors and 42 No's of Hydrogen (H ₂) detectors are installed at different locations of refinery including product loading, storage tank farms and process plants etc. Most of sensors are made up of M/s Honeywell. HC sensors belong to Infra-red type and H ₂ S/H ₂ sensors belong to electrochemical type.
2	The refineries shall submit action plan to achieve zero discharge (except once through cooling water in coastal region) within three months.	As part of integrated Refinery cum expansion project (IREP), an integrated ETP has been setup and the treated effluent is routed to RO plant for further processing and recycling water as DM water.
3	The HSE department of refineries shall co-ordinate with marketing divisions for submission of note on evaporation during loading, leakage possibilities, steps taken for fire safety, management of oily sludge	HSE department of BPCL has initiated coordination and various measures to control evaporation during loading, leakage, fire safety, management of oily sludge etc. It includes vapor recovery system, bottom loading, fugitive emission survey, LDAR etc. Separate scheme is adopted for the management of oily sludge which includes centrifuging, oil recovery and bioremediation.
4	The refineries who have not completed the task of providing low NO _x burners shall complete within six month and submit completion note without further delay.	All the heaters under CEMP phase-II/IREP have been provided with low NO _x burners.

1. Air Pollution Management

a)	All the Refineries located in the critically polluted areas, identified by CPCB, will submit an action plan for phase wise reduction of SO ₂ emission from the present level:	BPCL Kochi Refinery comes under severely polluted cluster. The allowable limit as per latest CTO is 1579 kg/hr: maintaining well below this value of 566 kg/hr. only during this reported period. It contributes to net reduction in SO₂ emission by producing Euro- VI MS and Diesel. Following steps are taken to reduce SO₂ emissions from the refinery. • Modifications to plant fuel system to facilitate usage of low sulfur liquid fuel. • Amine treatment of fuel gas • Sulfur Recovery Units with 99.9% efficiency as part of IREP with inclusion of TGTU (Tail Gas Treating Unit) • Low Pressure Amine treatment of vacuum column vent. • Employing Biturox technology for Bitumen production, where off gas is incinerated and further treated.
b)	Future Refineries will have sulphur recovery with minimum 99% efficiency.	SRUs have more than 99% efficiency. New SRU have 99.9% efficiency.
c)	Road map to improve the efficiency of SRU:	BPCL Kochi refinery has been explored the possibility of Oxygen enrichment technology for enhancing the efficiency of SRU and the same commissioned. WSA project is also under discussion.
d)	With regard to NO _x emission, the new Refineries / process units will install low NO _x burners. For retrofitting of low NO _x burners in existing units the same expert committee will suggest the strategies and action plan within six months:	The expert committee, during their visit to Kochi Refinery, had suggested replacing the burners in heaters with more than 10 million Kcal/hr duty with low NO _x type burners. We have installed low NO _x burners for ten heaters in the existing Refinery. Moreover, all the new process heaters and steam boilers (total six numbers) installed as part of capacity expansion cum modernization project, CEMP - Phase II and all IREP units have been provided with low NO _x burners.
e)	The Expert Committee will also suggest an action plan, within 6 months, for control and monitoring of hydrocarbon loss and VOC emissions, leak detection and repair (LDAR) program and vapor recovery systems (for loading and unloading operations within Refineries only):	Following provisions exists for VOC control - Provision of mechanical seals on pumps for leak free operation. - Use of submerged filling in product loading gantries. - Closed blow down system for process plants. - Floating roof tanks for volatile product storage. - Conversion of floating roof tanks to double seal arrangement. - Closed loop sampling system in process plants. - Covered facility for oily effluent storage. - VOC control system is in place in new ETPs for treatment of VOCs generated during in the effluent treatment area. 926 No's of HC detectors, 267 No's of H₂S detectors and 42 No's of H₂ detectors are installed at different

		locations of refinery including product loading, storage tank farms and process plants etc. j) Benzene monitoring is carried out using "dragger" chip technique in the aromatic recovery unit on a daily basis. k) Six ambient air quality monitoring stations (AAQMS) are working online to monitor the ambient air quality on continuous basis. They provide eleven ambient air quality parameters, including hydrocarbons and the data is transferred online to CPCB/KSPCB. l) Vapor recovery system is being implemented in ISOM Naphtha tank farm. m) New vapor recovery system is being implemented for Benzene & Toluene truck loading area.
f)	The flare losses to be minimized and monitored regularly	Flare losses are monitored continuously through flare meters installed in the process units on a daily basis and are reviewed at the senior management level Further, the fuel gas flow to the pilot burner is maintained at the minimum level required to sustain the pilot flame. Various process schemes implemented to reduce flaring. Advanced process control (APC) system was implemented in hydrogen network for decreasing hydrogen flaring. Flare Gas recovery system is installed as part of IREP project and commissioned in December 2017.
g)	Refineries will install continuous emission monitoring systems for SO ₂ and NO _x in major stacks. Action plan for this will be submitted within six months.	Kochi Refinery has provided continuous SO ₂ and NO _x analyzing system for all the heater/boiler stacks and is connected to the CPCB server system.
h)	Refineries will also monitor total HC and Benzene in the premises (particularly in loading / unloading operations and ETP). The status and action plan will be submitted within six months	18 No's of HC detectors are installed in the truck loading/wagon loading area. 2 No's of HC detectors and 2 No's of H₂S detectors are installed in ETP-V area. Benzene monitoring is carried out using "dragger" chip technique in the aromatic recovery unit daily. 6 No's of ambient air quality monitoring stations (AAQMS) are installed at the peripheries of the refinery to enable close monitoring of ambient air quality near the refinery. The ambient air quality information is also communicated to public through an electronic display board.
2. Wastewater Management:		
a)	Refineries will prepare an action plan for conservation of water resources and maximizing reuse / recycle of treated effluent within six months. The treated effluent discharge quantity will be limited to 0.4 m ³ /tons (for 90% of time) except for the monsoon season:	The discharge of treated water from Kochi refinery is 0.20 m³ /MT of crude processed. Steam condensate in the process plants is being recycled back to the boilers as feed water for the steam generation, there by resulting in reduction in the freshwater consumption. Approximately 130-150

		m³/hr. steam condensate is being recycled to steam boilers in the refinery. The stripped water from the stripped water units is recycled as make up water to the desalting process in the crude unit. 150 m³/hr. of liquid effluent generation is avoided by recycle. Treated effluent water from the wastewater treatment plants are recycled in RO DM plant.
3	Oil spill response facilities at Coastal Refineries will be in position within two years:	Oil spill response (OSR) facility at Cochin port is already in place. Additionally, BPCL Kochi refinery has procured oil containment booms as part of SBM facilities commissioning to augment the capabilities of oil spill response related facilities. We have also conducted a mock drill to build confidence for the safe operation of SBM facilities with the help of port trust/coast guard personnel. It was decided to further strengthen the oil spill response facilities at Cochin port through purchase and installation of additional equipment and the major share of the investment was shouldered by BPCL Kochi refinery. Advance payment has been released to Cochin port trust for procurement of equipment.

- 3. Solid Waste Management:** Refineries will explore new technologies for reduction in the generation of oily sludge. Strategy and action plan for liquidation of existing sludge will be submitted within six months

To reduce the sludge generation, Kochi Refinery follows the following best practices:

- ETP oily sludge is processed continuously in DCU. The oily sludge generated from tank cleaning is also processed in DCU.
- Any excess sludge generated have the provision for oil recovery through centrifuging.
- Switching of service of storage tanks between different crude oils (high wax and low wax) ensures minimum formation of sludge at the bottom of storage tanks.
- Use side entry mixers in the crude oil tank for minimization of sludge accumulation.

- 4. Refineries will carry out monitoring and survey to assess HC loss and concentration of VOC in Ambient Air / Waste Water Treatment Plant.**

- a) BPCL Kochi refinery has implemented leak detection and repair (LDAR) program using portable hydrocarbon detection instrument. These programs are carried out on continuous basis on many valves, flanges etc. in all process units and offsite areas. The leaks identified are attended by maintenance crew immediately and are monitored on regular basis. During the Period **1st October 2024 to 31st March 2025**
- b) Secondary seals have been provided in 53 storage tanks storing volatile hydrocarbons to reduce fugitive hydrocarbon emissions.
- c) HC detectors are installed in sufficient numbers at the storage tank farm areas, process plants, product loading areas and LPG bottling plants to identify any hydrocarbon leaks immediately.

d) Six ambient air quality monitoring stations (AAQMS) are working online to monitor the ambient air quality on continuous basis. The ambient air quality information is also communicated to public through an electronic display board.

e) Pressure relief valves for column and vessel are routed to flare to avoid fugitive emission during emergencies.

f) Two numbers of continuous Noise monitoring stations have been installed.

5. Refineries will assess the quantity of flare gas (install the measurement system if the same is not possible)

a. At BPCL Kochi refinery, flare losses are monitored continuously from different process units and are reviewed at the senior management level on a daily basis. Flare meters are installed in the process units for this purpose.

Further, the fuel gas flow to the pilot burner is maintained at the minimum level required to sustain the pilot flame.

Various process schemes implemented to reduce flaring

Advanced process control (APC) system was implemented in Hydrogen network for decreasing hydrogen flaring.

Flare gas recovery system is installed as part of IREP project, and it can recover around 7.25 TPD flare gas to fuel gas system.

6. Assessment of Potential leakages from petroleum storage tanks

Inspection of petroleum storage tanks is being carried out by following API 653 standard, OISD standard 129 and other relevant standards. Maintenance work is carried out as per the standard procedure when tank is taken for the outage.

Total 45 No's of bore wells have been constructed at various locations inside the refinery in order to monitor the ground water for any hydrocarbon leakages from the refinery storage tanks and processing plants. The ground water samples from the bore wells are tested periodically for presence of hydrocarbons. In addition, 14 piezometer wells have been installed for monitoring of ground water quality.

7. Cleaner Technology options and information to be provided to CPCB

Clean technologies adopted to combat Air Pollution includes:

1. BPCL Kochi refinery has consistently met all deadlines for up gradation of auto fuel quality, set by the Government of India. KR is producing MS and HSD of BS VI norms.
2. Hydro desulphurization of feed stock to fluid catalytic cracking unit (FCCU)
3. Modifications in plant fuel system facilitate to usage of low sulfur Bombay high vacuum residue as liquid fuel, to lower sulfur dioxide emissions during processing of crude.
4. Amine treatment of fuel gas for removal hydrogen sulfide to produce sweet fuel gas.
5. Installation five trains of sulfur recovery unit with more than 99.9% recovery.
6. Low pressure amine treatment of vacuum column vent gas. This is a unique environmental protection technology developed by BPCL KR for removing toxic hydrogen sulfide gas produced during vacuum distillation process. This technology has been developed exclusively with in-house expertise. The uniqueness of the technology lies in the fact that the process for hydrogen sulfide removal is carried out under extremely low pressure drop conditions.

7. Desulphurization of low-pressure gas from crude unit overhead and kerosene unit fractionator utilizing amine absorption.
8. Reduction furnace for conversion of ammonia stream to nitrogen in order to reduce NOx emissions.
9. State of the art Biturox Technology has been adopted for production of Bitumen without any harmful emission. Unlike the traditional bitumen blowing technology, this technology helps for no odor or pollutants emissions. The off gases generated is subjected to incineration and caustic scrubbing in this technique. The wastewater stream generated is also oxidized, thereby resulting in zero BOD for effluent. The freshwater consumption is also significantly reduced by the adoption of this technique.
10. An electrostatic precipitator has been installed downstream of CO boiler for minimizing particulate matter emission from FCCU regenerator flue gases. As part of PFCCU (part of IREP project) we have installed a tertiary cyclone separator and another ESP (Electrostatic precipitator) for particulate capture.
11. Closed loop sampling system in process plants.
12. Flare gas recovery system is installed as part of IREP project to recover **7.25 TPD average** flare gas to fuel gas system

b) Clean technologies adopted to improve effluent water quality:

1. Installed total 12.9 MW capacity of solar energy plant during the last year.
2. We have 4 effluent treatment plants catering to the different process units.
3. Installation of 5 numbers of sour water strippers and recycling of stripped water in process units.
4. Provision of two stage API oil separation system for effluent streams.
5. Spent caustic treatment utilizing H₂O₂ and air oxidation methods for treatment in an environment friendly way.
6. Closed drainage system for tank farm drains.
7. Two stage biological treatment system for effluent streams including tricking filter and activated sludge process, automated Chemostat Treatment and sequential batch reactor.(SBR)
8. Hydrogen Peroxide is utilized in our ETP's instead of FeCl₃ to avoid chemical sludge formation.
9. Chemical de-contamination technique is being adopted at BPCL KR during turnarounds. The vessels, columns etc. are decontaminated using specially formulated chemical which is environment friendly, non-hazardous and fully biodegradable. The Hydrocarbons are recovered in the form of slop after de-emulsification process.
10. The MSW based Compressed Biogas (CBG) plant with a capacity of 5.6 TPD under construction.

c) Clean technologies implemented for optimal solid waste management

Mechanical oil recovery system for oil recovery from oily sludge. Post IREP ETP sludge is processed in DCU.

1. In-situ recovery of oil from crude tank bottom sludge.
2. BPCL Kochi refinery constructed two secured landfills for the safe disposal of hazardous solid wastes as per the standard norms laid down by CPCB. The first landfill pit has a capacity of 590m³ and is dedicated to the disposal of FCC catalyst fines and spent molecular sieves. The second land fill pit with a capacity of 390 m³ is dedicated for the disposal of sludge from effluent treatment plants.
3. Installation of biogas plant of capacity 1 T/day to convert canteen food waste into gas for use in canteen. The plant is developed based on the NISARGRUNA technology developed by Bhabha Atomic Research Centre. (BARC)
4. We have an Annual Rate Contract with KEIL (Kerala Enviro Infrastructure Limited) for disposing solid hazardous wastes at their TSDF facility.
5. Wherever possible, spent catalyst containing recoverable metals are disposed /sold to authorized recyclers.
6. Paper waste recycling program to dispose old paper to get new printable A4 paper.

Sustainable Development Projects and Activities added during 1st Oct. 2024 to 31st March 2025

S.NO	Energy Conservation Schemes	MTOE Reduction
1	APC implementation in following Units /areas: 1. Boiler - UB7 Deaerator 2. Tail gas Treatment Unit 3. VGO Sulphur Recovery Unit 4. APC implementation in PDPP unit (PDA & PDE)	2637.4
3	Implementation of phase-I Electrical heat tracing project (3 VGO lines have been converted to Electrical Heat Tracing from Steam Tracing service)	2219
4	Steam savings in sour water stripper has been achieved by utilizing PFCCU unit Sour Water as CDU-3 Desalter wash water	1550
5	Implement APC control in deaerators in old utility (HRSG - 2) and DHDS Utility to reduce LP steam consumption.	486
6	After altering column process conditions lean oil circulation pump (IFP109) has been stopped, this has resulted saving of power.	169.2
7	After connecting LCO pump around and LCO product pump discharge line, LCO product pump (IFP103) has been stopped.	90.3
8	NHT-1 Sour water has been routed to IREP Sour water stripper thereby achieving saving of steam in DHDS SWS	450
9	Isolation & dismantling of old TG HP and MP steam headers at Boiler house area to reduce condensate loss through traps during FCCU shutdown	285.5
10	Air Fin blade replacement project in IREP units	1037
11	Stoppage of FO firing in UB12/13 boilers for non-monsoon season thereby saving 0.4TPH of MP steam consumed in atomizing.	125
12	DHDS Heater Revamp for efficiency improvement Steam : 10 TPD, Fuel : 2 TPD (Without considering the throughput effect)	1322
13	In utility, Auto stopping of Cooling tower fans based on delta T of supply and Return header in UCT1/3 & UCT2	46
14	In utility, rerouting of UCWP301A turbine exhaust steam line which is under culvert to avoid condensation during monsoon.	68
15	In FCCU unit, seal pot vent diverted from flare to WGC suction, thereby reducing flare loss	1736
16	APC Implementation in HRSG 3/4/5 blowdown control to minimize blowdown while maintaining drum Silica and TDS within limits	428

GREEN INITIATIVES or RENEWABLE ENERGY Projects

- 3.37 MW Solar plant at Rainwater Harvesting Pond Commissioned
- 6.0 MWp Solar plant commissioned at CISF Colony
- 3.83 MWp solar plant at Shore Tank Farm, Puthuvypu, Kochi, Commissioned.

GREEN COVER AT KOCHI REFINERY

BPCL, Kochi Refinery has always given highest preference towards care for environment and their protection. The company has already incorporated pollution control measures in their design itself and has also grown an extensive green cover on its periphery and within for which the refinery goes by the name BPCL Green Kochi Refinery. Recognizing the company's commitment towards environment care and protection, it has been certified for ISO 14001, which was first in the state of Kerala.

Total green cover area at BPCL, Kochi Refinery is around 441.26 acres.

Kochi Refinery maintains an Eco- Park and many theme based parks such as Rainbow Park, Amrutha Sarass, Varshodyan, Kalpkodyan, Herbal Park, Bamboo Park, Miyawaki Forests etc. These were developed as a part of Greenbelt initiatives, and they blend with the nature and is inhabited with diverse trees, flowering plants, herbal trees, and fruit bearing trees. Three number of Butterfly parks were set up towards enhancement of Biodiversity. As part of PDP Project green belt development, we have planted more than 20,000 saplings this year to make greenery in Petrochemical complex. A Mini Miyawaki forest was developed near coke dome and PDP Project area. Further, Kochi Refinery has other dense vegetation in the form of plantation and natural growth which constitutes to the green cover. The diversified green belt within the Refinery has drawn attention from even seasonal migratory birds.

With the reference of Environmental clearance for the project of Integrated Refinery Expansion Project (IREP)), as committed in the EIA/EMP report, the BPCL – KR has done environmental protection measures and community development activities.

Environment Protection Measures:

BPCL – KR has been spent huge amount on Environment management associated with CEMP-II and IREP as per commitment in Environment Management Plan (EMP) were:

- Wastewater treatment system
- Tall Stacks for wide dispersion of pollutants
- A closed, automated coke transferring system aims for gains in environmental, economic and safety performance
- Stack gas monitoring (online facilities)
- Land acquisition for safety of the surrounding environment
- Green belt development

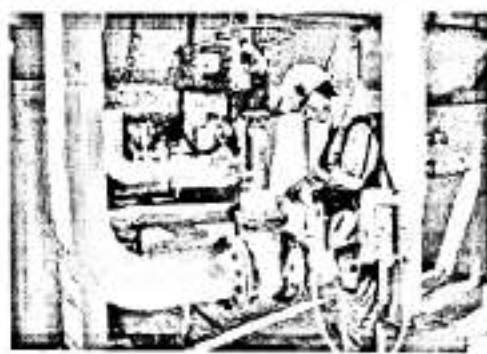
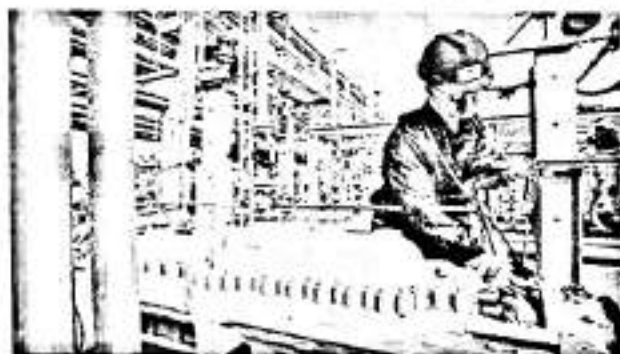


Bharat Petroleum Corporation Limited

(Refineries Division)

Kochi Refinery, Ambalamugal, Kochi, Ernakulam-682 302, Kerala, India

Reports on Fugitive Emission Management (Leak Detection & Repair)



Study Period: January 2025

Prepared By

Nitya
Work for Quality

NITYA LABORATORIES

Address: Plot No.118, Church Road, Behind Kausik Vatika, Bhagat Singh Colony, Ballabgarh, Faridabad, Delhi
NCR, India

Tel.: +91-129-2241021

Mobile No.: +91-9873924093, +91-9013591021, +91-9013552273

E-Mail ID: info@nityalab.com

Website: www.nityalab.com

LDAR (Fugitive Emission) Survey Report for Bharat Petroleum Corporation Limited, Kochi Refinery

Name of Client : M/s Bharat Petroleum Corporation Limited
(Refinery Division)
Kochi Refinery, Ambalamugal
Kochi, Ernakulam-682 302, Kerala, India

Name of Vendor : M/s Nitya Laboratories
Plot No.118, Church Road, Behind Kausik Vatika
Bhagat Singh Colony, Ballabgarh-121 004
Distt. Faridabad (Haryana) Delhi NCR, India

Nature of Job : Conducting Fugitive Emission Survey as Part of LDAR Program at
BPCL Kochi Refinery

Report Period : April 2024

FOR NITYA LABORATORIES

RAVINDER MITTAL
Head-Environmental Division

CONTENTS

Sr No.	LOCATION	PAGE NO.
	Executive Summary	3
	Plant Wise Summary	3-4
	LDAR Record	5-12
1.0	Introduction	13
2.0	About LDAR	14-15
3.0	Method of the study	16-17
4.0	Volatile Organic Compounds (VOCs)	18
5.0	Leak Detection and Quantification Methods	18-21
6.0	Unit Detail of VOC	22-713
	VOC Point Detail of ARU-H.C	22-30
	VOC Point Detail of CDU-II	51-105
	VOC Point Detail of TANK FROM LPG GROUP	106-114
	VOC Point Detail of TRUCK LOADING AREA	115-131
	VOC Point Detail of MSBP-PENEX	132-184
	VOC Point Detail of CCR-NHT	185-233
	VOC Point Detail of VGO -HSD	234-268
	VOC Point Detail of TANK FROM 1 OFFSIDE AREA	269-291
	VOC Point Detail of CDU-III	292-374
	VOC Point Detail of PFCCU	375-434
	VOC Point Detail of DCU	435-507
	VOC Point Detail of DHDT	508-559
	VOC Point Detail of VGO-HDT	560-625
	VOC Point Detail of PDA ACRYLIC ACID UNIT	626-665
	VOC Point Detail of PDA OXO ALCOHAL UNIT	666-699
	VOC Point Detail of TANK FROM II OFF SIDE AREA	700-713
7.0	Unit Detail of Benzene	31-50
	Benzene Point Detail of ARU	31-50

Executive Summary

Bharat Petroleum Corporation Limited (Refineries Division) has intended to conduct the Fugitive Emission survey/Leak Detection and Repair (LDAR) program at its refinery Kochi, Kerala. As a part of this program Bharat Petroleum Corporation Limited (Refineries Division) has awarded the contract to M/s Nitya Laboratories for conducting the LDAR survey for the period 01/2024 to 01/2026.

The LDAR Program at site included the detection, tagging and measurement of VOC emission from these identified points which included valves, pump seal, compressor & pressure relieve valves for the measurement for the Month April 2024.

Plant Wise Summary of VOC

Sr. No.	Date of Monitoring	Unit	Total Nos of Points Monitored	Total Nos of Leakage	Total Leak (kg/hr)	Total Leak (kg/day)
1	21-01-2025	ARJ-HC	359	7	0.00109	0.04527
2	22-01-2025	CDU-II	2277	30	0.011540	0.297008
3	24-01-2025	TANK FORM LPG GROUP	361	7	0.002086	0.070128
4	29-01-2025	TRUCK LOADING AREA	871	12	0.00568451	0.13643604
5	30-01-2025	MSBP-PENEX	2165	17	0.004917	0.138111
6	31-01-2025	CCR-NHT	2007	15	0.004759	0.114226
7	01-02-2025	VGO-HSD	1413	20	0.00736080	0.17797222
8	06-02-2025	TANK FROM -1	930	17	0.004000	0.096013
9	07-02-2025	CDU-III	3428	13	0.006061	0.145458
10	10-02-2025	PFCCU	2474	19	0.007608	0.182624
11	13-02-2025	DCU	2994	15	0.004455	0.106906
12	15-02-2025	DHDT	2139	19	0.0073648	1.1735059
13	17-02-2025	VGO-HDT	2725	12	0.00424104	0.10180318
14	02-02-2025	PDA ACRYLIC ACID UNIT	1612	13	0.005899	0.161205
15	02-02-2025	PDA OXO ALCOHOL UNIT	1364	11	0.003585	0.086055
16	05-02-2025	TANK FROM OFF SIDE AREA-2	585	5	0.0012667	0.0304003
TOTAL			27504	232	0.08191785	3.06413184

Confirmatory Statement: The monitored values are within the limits as per CPCB Guidelines

Stack Emission Data as per On-line Analyzer data _ December 2024

SL No.	Stack Name	Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Avg. Value								
1	KH01B (KHDS)	22953	11.8	97.851	0.27	2.25	11.75	0.27	22.355	0.51
2	FH01 (FCCU)	24235	1.3	38.669	0.03	0.94	6.6	0.16	8.647	0.21
3	FH03/COB (FCCU)	84321	23.8	13.231	2.01	1.12	53.6	4.52	25.508	2.15
4	CH21 (CDU - II)	90531	0	78.761	0.00	7.13	2.08	0.19	55.456	5.02
5	CH22 (CDU - II)	13510	0	72.538	0.00	2.43	1.9	0.06	27.030	0.91
6	CH223 (CDU - II)	10503	2.4	33.786	0.12	1.71	1.2	0.06	71.135	3.60
7	DO-H01 (DHDS)	25998	3.00	38.830	0.08	1.01	5.6	0.15	65.743	1.71
8	DS-X-002 (SRU - 01)	29135	36.9	183.662	1.08	5.35	229.4	6.68	3804.677	110.85
9	DSX 301 (SRU - 02)	14151	27.1	154.026	0.38	2.18	76.88	1.09	8251.825	116.77
10	B5-101 (Biturox)	14174	18	29.980	0.26	0.42	7.483	0.11	9.978	0.14
11	VH H01/02 (VGO HDS)	52233	5.1	40.526	0.27	2.12	4.6	0.24	8.664	0.45
12	NHT CCR - 01	104483	7.4	38.264	0.77	4.00	13.25	1.38	39.188	4.09
13	UB07 (Boiler)	111963	9.45	0.624	1.06	0.07	12.77	1.43	7.883	0.88
14	UB08 (Boiler)	29524	17.17	0.583	0.51	0.02	4	0.12	5.682	0.17
15	UB09 (Boiler) (UX200)	39622	0.33	11.2	0.01	0.34	2.867	0.09	0	0.00
16	UB 10 (Boiler)	40233	4.8	101.832	0.19	4.10	3.78	0.15	405.449	16.32
17	UB 11 (Boiler)	71246	28.2	184.703	2.01	13.16	8.2	0.58	953.857	67.96
18	HRSG 1 (CPP - 01)	161184	0	46.475	0.00	7.49	3.3	0.53	3.255	0.52
19	GT2/HRSG -02 (CPP - 02)	151867	2.67	83.932	0.41	12.75	10.2	1.55	27.102	4.12
20	SRU III Train A (IS LZ 102)	91703	25.8	62.815	2.37	5.76	6.99	0.64	1233.286	113.10
21	SRU III Train B (IS LZ 202)	90130	13.3	25.794	1.20	2.32	2.2	0.20	311.424	28.07
22	CDU-III (ICH 101/102)	252659	0.6	57.991	0.00	14.65	1.6	0.40	37.892	9.57
23	DHDT (IGH 101/102)	58678	1.47	26.298	0.00	1.54	5.9	0.35	8.532	18.27
24	VGO-HDT (IVH 101/201)	54092	0.97	31.582	0.05	1.71	0.73	0.04	19.367	1.05
25	PFCCU-Heater (IFH 002)	21661	0	32.3	0.00	0.70	6.7	0.15	8.987	0.19
26	PFCCU-Regen. (IFLS 001)	170940	13.74	10.893	2.35	1.86	200.8	34.32	10.168	1.74
27	DCU-1 (IDH 101)	77894	1.57	51.118	0.12	3.98	3.7	0.29	15.037	1.17
28	DCU-2 (IDH 102)	77012	0.9	47.535	0.07	3.66	5.4	0.42	11.433	0.88
29	HRSG 3 (IUS HRSG 05LZ554)	161009	3.3	44.867	0.53	7.22	11.4	1.84	7.859	1.27
30	HRSG 4 (IUS HRSG 05LZ554)	84276	3.569	92.256	0.51	13.13	9.02	1.28	2.095	0.30
31	HRSG-5 (IUS HRSG 05LZ554)	143306	54.7	5.677	7.84	0.81	15.6	2.24	6.265	0.90
32	UB 12 (Boiler) (IUS UB12 LZ08)	122937	2.14	100.806	0.26	12.39	7.75	0.95	44.089	5.42
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	3.06	96.979	0.38	11.98	4.15	0.51	45.935	5.67
34	NHT -Isom. (NH-2/ H H 101)	53005	0.00	57.8	0.00	3.06	0.823	0.04	0.00	0.00
35	PW1 LS 110 (PDPP INC - 01)	70957	0.64	0.011	0.05	0.04	1.03	0.07	0.376	0.03
36	LS021A (PDPP INC - 02)	31424	0.18	5.215	0.01	0.38	2.66	0.19	4.413	0.32
37	MSBP_HOH	158034	0.93	7.833	0.15	1.24	29.50	4.66	26.664	4.21
38	MRH 01/02/03/04 (MSBP_CCR)	90904	1.90	86.072	0.18	8.35	4.88	0.47	10.205	0.99
					25.51	163.37		68.43		529.53
					PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ October 2024

Sl. No.	Stack Name	Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Avg. Value								
1	KHD1B (KHDS)	22953	5.6	17.894	0.13	0.41	18.27	0.42	22.058	0.51
2	FH01 (FCCU)	24235	4.7	4.526	0.11	0.11	34.67	0.84	59.724	1.45
3	FH03/COB (FCCU)	84321	4.89	8.711	0.41	0.73	105.4	8.89	3.291	0.28
4	CH21 (CDU - II)	90531	0	7.1	0.00	0.64	134.29	12.16	13.014	1.18
5	CH22 (CDU - II)	33510	0	35.3	0.00	1.18	8.2	0.27	13.940	0.47
6	CH223 (CDU - II)	30563	78.362	0	3.96	0.00	0	0.00	0	0.00
7	DD-HO1 (DHDS)	25998			0.00	0.00		0.00		0.00
8	DS-X-002 (SRU - 01)	29135			0.00	0.00		0.00		0.00
9	DSX 301 (SRU - 02)	14151			0.00	0.00		0.00		0.00
10	BS-101 (Biturox)	14174	51.7	1.8	0.73	0.03	4.5	0.06	35.350	0.50
11	VH HD1/02 (VGO HDOS)	52233			0.00	0.00		0.00		0.00
12	NHT CCR - 01	104883	128.56	6.5	13.43	0.68	3.9	0.41	52.849	5.52
13	UB07 (Boiler)	111963	9	10.5	1.01	1.18	2.5	0.28	0	0.00
14	UB08 (Boiler)	29524			0.00	0.00		0.00		0.00
15	UB09 (Boiler) (UX200)	30622			0.00	0.00		0.00		0.00
16	UB 10 (Boiler)	40255	52.1	37.2	2.10	1.50	0.5	0.02	154.562	6.22
17	UB 11 (Boiler)	71246			0.00	0.00		0.00		0.00
18	HRSG 1 (CPP - 01)	161184	0	9.5	0.00	1.53	1.894	0.31	0.0	0.00
19	GT2/HRSG -02 (CPP - 02)	151867	2.6	81.957	0.39	12.45	8.3	1.26	1.474	0.22
20	SRU III Train A (IS LZ 102)	91703	25.1	73.070	2.30	6.70	27.44	2.52	988.979	90.69
21	SRU III Train B (IS LZ 202)	90730	11.98	37.574	1.08	3.39	2.3	0.21	444.815	40.09
22	CDU-III (ICH 101/102)	252659	1.08	55.118	0.00	13.93	21.9	5.53	31.816	8.04
23	DHDT (IGH 101/102)	58678	1.77	36.461	0.00	2.14	2.9	0.17	14.499	26.10
24	VGO-HDT (IVH 101/201)	54092	0.885	31.093	0.05	1.68	1.26	0.07	21.374	1.16
25	PFCCU-Heater (IFH 002)	21661	0	40.5	0.00	0.88	0	0.00	14.433	0.31
26	PFCCU-Regen. (IFLS 001)	170940	34.3	5.701	5.86	0.97	186.1	31.81	10.465	1.79
27	DCU-1 (IDH 101)	77894	0.9	8.423	0.07	0.66	12.67	0.99	0	0.00
28	DCU-2 (IDH 102)	77012	0.97	57.655	0.07	4.44	7.8	0.60	24.204	1.86
29	HRSG 3 (IUS HRSG 05LZ554)	161809			0.00	0.00		0.00		0.00
30	HRSG 4 (IUS HRSG 05LZ554)	142279	3.7	99.770	0.53	14.19	8.3	1.18	2.107	0.30
31	HRSG-5 (IUS HRSG 05LZ554)	141306	82.2	6.174	11.78	0.88	14.25	2.04	7.013	1.01
32	UB 12 (Boiler) (IUS UB12 LZ08)	127932	2.2	91.735	0.27	11.28	8.54	1.05	28.838	3.55
33	UB 13 (Boiler) (IUS UB12 LZ08)	121407	3.1	87.016	0.38	10.75	5.8	0.72	33.359	4.12
34	NHT -Isom. (NH-2/ H H 101)	53005			0.00	0.00		0.00		0.00
35	PW1 LS 110 (PDPP INC - 01)	70957	0.57	0.688	0.04	0.04	0.80	0.06	0.170	0.03
36	LS021A (PDPP INC - 02)	31924	0.19	98.632	0.01	7.09	93.75	6.74	58.207	4.19
37	MSBP - HDH	158034	0.95	1.984	0.15	0.95	29.00	4.58	17.115	2.70
38	MIRH 01/02/03/04 (MSBP - CCR)	96764	2.20	71.518	0.21	6.93	1.87	0.38	8.388	0.81
					45.10	107.34		83.56		203.09
Note: Turnaround shutdown activities were there. Hence many units were under maint during the period Oct 2024					PM (kg/hr)	NOx (kg/hr)	CO (kg/hr)		SO2 (kg/hr)	

Stack Emission Data as per On-line Analyzer data _ January 2025

Sl. No.	Stack Name	Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Avg. Value								
1	KH01B (KHDS)	12953	10.04	106.717	0.23	2.45	11.3	0.26	28.568	0.66
2	FH01 (FCCU)	24235	1.1	24.152	0.03	0.59	11.23	0.27	19.919	0.48
3	FH03/COB (FCCU)	84321	23.06	22.627	1.94	1.91	140.5	11.85	17.365	1.46
4	CH21 (CDU - II)	90531	0	106.332	0.00	9.63	1.7	0.15	35.183	3.19
5	CH22 (CDU - II)	23510	0	82.4	0.00	2.76	3.04	0.10	17.948	0.60
6	CH223 (CDU - II)	59563	4.6	34.5	0.23	1.74	2.96	0.15	16.043	0.81
7	DD-HO1 (DHDS)	25958	3.20	24.260	0.08	0.63	3.8	0.10	22.309	0.58
8	DS-X-002 (SRU - 01)	29125	35.56	117.882	1.04	3.43	77.2	2.25	3915.423	114.08
9	DSX 301 (SRU - 02)	14151	25.2	127.545	0.36	1.80	60.3	0.85	6314.206	89.35
10	BS-101 (Bitarox)	14174	31.7	33.396	0.45	0.47	5.83	0.08	13.097	0.19
11	VH H01/02 (VGO HDS)	52232	11.4	50.8	0.60	2.65	7.2	0.38	48.799	2.55
12	NHT CCR - 01	104403	7.9	51.9	0.83	5.42	2.4	0.25	38.035	3.97
13	UB07 (Boiler)	111963	9.8	0.894	1.10	0.10	3.2	0.36	6.819	0.76
14	UB08 (Boiler)	29524	14.9	0.252	0.44	0.01	4.3	0.13	3.216	0.09
15	UB09 (Boiler) (UX200)	38632	1.67	57.9	0.05	1.77	5.751	0.18	0	0.00
16	UB 10 (Boiler)	48255	0	1.23	0.00	0.05	0.090	0.00	0	0.00
17	UB 11 (Boiler)	71246	28.5	184.531	2.03	13.15	7.7	0.55	945.365	67.35
18	HRSG 1 (CPP - 01)	161184	0	44.2	0.00	7.12	2.8	0.45	6.326	1.02
19	GT2/HRSG -02 (CPP - 02)	151867	2.5	128.464	0.38	19.51	5.661	0.86	0	0.00
20	SRU III Train A (IS LZ 102)	91793	19.5	132.659	1.79	12.17	7.05	0.65	4888.673	448.31
21	SRU III Train B (IS LZ 202)	90130	13.75	73.135	1.24	6.59	2.5	0.23	821.126	74.01
22	CDU-III (ICH 101/102)	252659	0.32	62.775	0.00	15.86	1.5	0.38	37.588	9.50
23	DHDT (IGH 101/102)	58678	1.5	27.712	0.00	1.63	4.1	0.24	12.429	48.18
24	VGO-HDT (IVH 101/201)	54092	0.89	32.803	0.05	1.77	1.8	0.10	27.175	1.47
25	PFCCU-Heater (IFH 002)	21661	0	32.5	0.00	0.70	1.8	0.04	13.073	0.28
26	PFCCU-Regen. (IFLS 001)	170940	15.75	13.653	2.69	2.33	177.4	30.32	16.436	2.81
27	DCU-1 (IDH 101)	77894	1.34	45.349	0.10	3.53	4.3	0.33	16.085	1.25
28	DCU-2 (IDH 102)	77012	0.5	39.294	0.04	3.03	6.8	0.52	15.305	1.18
29	HRSG 3 (IUS HRSG 051.2554)	161089	3.2	78.306	0.52	12.61	8.8	1.42	1.156	0.19
30	HRSG 4 (IUS HRSG 051.2554)	142176	3.4	85.403	0.48	12.15	8.8	1.25	2.196	0.31
31	HRSG-5 (IUS HRSG 051.2554)	142306	15.44	3.770	2.21	0.54	18.5	2.65	1.526	0.22
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	2.2	71.542	0.27	8.79	8.6	1.06	33.346	4.10
33	UB 13 (Boiler) (IUS UB12 LZ08)	125607	2.9	98.850	0.36	12.21	5.9	0.73	44.142	5.45
34	NHT-Isom. (NH-2/ H H 101)	53905	0.25	57.963	0.01	3.07	2.40	0.13	0.00	0.00
35	PWLS 110 (PDPP INC - 01)	70957	0.65	0.650	0.05	0.05	1.10	0.08	8.413	0.03
36	LS021A (PDPP INC - 02)	71924	0.00	2.843	0.00	0.20	0.23	0.02	1.192	0.09
37	MSBP_HOH	158024	0.89	8.456	0.14	1.34	21.50	4.98	21.445	4.97
38	MRH 01/02/03/04 (MSBP_CCR)	96964	1.80	85.289	0.17	8.65	2.90	0.28	6.431	0.62
					19.90	182.43		64.62		890.11
					PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ February 2025

Sl. No.	Stack Name	Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Avg. Value								
1	KHD1B (KHDS)	22953	4.43	100.111	0.10	2.30	11.42	0.26	31.485	0.72
2	FH61 (FCCU)	24235	1.08	33.646	0.03	0.82	16.61	0.40	12.311	0.30
3	FH63/COB (FCCU)	84311	18.68	2.458	1.58	0.21	203.3	17.34	1.893	0.16
4	CH21 (CDU - II)	90531	0	96.2	0.00	8.71	3.98	0.36	37.529	3.40
5	CH22 (CDU - II)	33510	0	77.8	0.00	2.61	6.11	0.20	25.782	0.86
6	CH223 (CDU - II)	50563	5.248	28.887	0.27	1.46	1.58	0.08	29.574	1.50
7	OD-HO1 (DHDS)	25918	2.60	33.536	0.07	0.87	3.6	0.09	17.353	0.45
8	OS-X-002 (SRU - 01)	29135	32.9	130.184	0.96	3.79	54.9	1.60	3201.310	93.27
9	OSX 301 (SRU - 02)	14151	25.355	120.2	0.36	1.70	42.7	0.60	5855.956	82.87
10	BS-101 (Bhurol)	14174	6.62	41.670	0.09	0.59	5.606	0.08	4.504	0.06
11	VH-HO1/02 (VGO HDS)	52233	7.4	46.040	0.39	2.40	7.8	0.41	19.168	1.00
12	NHT CCR - 01	104483	7.8	49.8	0.81	5.20	9.78	1.02	5.623	0.59
13	UB07 (Boiler)	111963	9.8	0.615	1.10	0.07	3.94	0.44	3.997	0.45
14	UB08 (Boiler)	29524	10.2	0.278	0.30	0.01	5.1	0.15	5.256	0.16
15	UB09 (Boiler) (UX200)	30622	0.17	24.5	0.01	0.75	3.747	0.11	0	0.00
16	UB 10 (Boiler)	40255	6.1	14.5	0.25	0.58	10.02	0.40	83.540	3.36
17	UB 11 (Boiler)	71246	28.3	172.073	2.02	12.26	8.14	0.58	971.326	69.35
18	HRSG 1 (CPP - 01)	161184	0	48.3	0.00	7.79	1.9	0.31	7.361	1.19
19	GT2/HRSG - 02 (CPP - 02)	151867	2.4	143	0.36	21.72	2.870	0.44	0	0.00
20	SRU III Train A (IS LZ 102)	91703	19.34	86.581	1.77	7.94	7.95	0.73	1053.685	96.63
21	SRU III Train B (IS LZ 202)	90130	15.66	72.891	1.41	6.57	2.44	0.22	908.845	81.91
22	CDU-III (ICH 101/102)	352659	0.142	62.716	0.00	15.85	1.25	0.32	38.520	9.73
23	DHDT (IGH 101/102)	58678	1.5	34.921	0.00	2.05	3.14	0.18	16.064	53.33
24	VGO-HDT (IVH 101/201)	54092	0.84	35.055	0.05	1.90	2.92	0.16	21.208	1.15
25	PFCCU-Heater (IFH 002)	21661	0	42.6	0.00	0.92	1.7	0.04	13.842	0.30
26	PFCCU-Regen. (IFLS 003)	170940	14.46	8.303	2.47	1.42	210.9	36.05	13.727	2.35
27	DCU-1 (IDH 101)	77894	1.36	32.199	0.31	2.51	32.8	1.00	16.349	1.27
28	DCU-2 (IDH 102)	77012	1.05	53.784	0.08	4.14	2.8	0.22	22.676	1.75
29	HRSG 3 (IUS HRSG 05L2554)	161809	3.2	84.942	0.52	13.68	5.45	0.88	3.523	0.57
30	HRSG 4 (IUS HRSG 05L2554)	142276	3.3	80.953	0.47	11.52	4.5	0.64	1.564	0.28
31	HRSG-5 (IUS HRSG 05L2554)	143306	0	1.17	0.00	0.17	0	0.00	0.534	0.08
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	2.237	87.463	0.27	10.75	6.03	0.74	42.983	5.28
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	2.57	94.379	0.32	11.66	3.88	0.48	44.156	5.48
34	NHT -Isom. (NH-2/ H H 101)	53005	0.18	42.989	0.01	2.28	6.70	0.36	3.558	0.19
35	PW 15 110 (POPP INC - 01)	70957	0.54	0.674	0.04	0.05	1.21	0.09	0.444	0.03
36	LS021A (POPP INC - 02)	71924	0.09	2.884	0.00	0.21	0.24	0.02	1.240	0.09
37	MSBP - HOH	158034	0.87	12.523	0.14	1.98	33.17	5.24	29.694	4.69
38	MRH 01/02/03/04 (MSBP - CCR)	96964	1.65	88.910	0.16	8.62	0.81	0.08	10.109	1.05
					16.49	178.03		72.11		525.82
					PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ March 2025

Sl. No.	Stack Name	Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Avg. Value								
1	KI101B (KIDS)	22953	5.2	92.484	0.12	2.12	11.31	0.26	29.409	0.68
2	FI101 (FCCU)	24235	1.8	17.683	0.04	0.43	23.73	0.58	10.823	0.26
3	FI103/COB (FCCU)	84321	23.65	7.192	1.99	0.61	683.67	57.65	11.021	0.93
4	CH21 (CDU - II)	90531	0	96.6	0.00	8.75	4.9	0.44	42.281	3.83
5	CH22 (CDU - II)	33510	0	80.2	0.00	2.69	9	0.30	19.059	0.64
6	CH223 (CDU - II)	50563	5.33	21	0.27	1.06	0.56	0.03	27.848	1.41
7	DD-HO1 (DHDS)	25998	2.11	28.810	0.05	0.75	3.5	0.09	20.206	0.53
8	DS-X-002 (SRU - 01)	29135	37.9	168.737	1.10	4.92	54.34	1.58	2889.975	84.20
9	DSX 301 (SRU - 02)	14151	39.77	129.204	0.56	1.83	59.06	0.84	6591.782	93.28
10	BS-101 (Bisurox)	14174	3.5	46.219	0.05	0.66	5.4	0.08	5.441	0.08
11	VH101/02 (VGO HDS)	52233	8.06	28.387	0.42	1.48	7.09	0.37	40.472	2.11
12	NHT CCR - 01	104483	8.007	48.996	0.84	5.12	1.01	0.11	9.802	1.02
13	UB07 (Boiler)	111963	11.13	0.478	1.25	0.05	4.3	0.48	3.770	0.42
14	UB08 (Boiler)	29524	10.13	0.836	0.30	0.02	2.42	0.07	15.779	0.47
15	UB09 (Boiler) (UX200)	30622	0.17	0.3	0.01	0.01	2.810	0.09	0	0.00
16	UB 10 (Boiler)	40255	6.1	11.911	0.25	0.48	1.93	0.08	54.436	2.19
17	UB 11 (Boiler)	71246	24.46	157.989	1.74	11.26	8.62	0.61	798.355	56.88
18	HRSG 1 (CPP - 01)	161184	0	43.219	0.00	6.97	1.9	0.31	7.768	1.25
19	GT2/HRSG -02 (CPP - 02)	151867	2.66	111.801	0.40	16.98	5.9	0.90	2.729	0.41
20	SRU III Train A (IS LZ 102)	91703	17.63	140.902	1.62	12.92	12.2	1.12	2986.343	273.86
21	SRU III Train B (IS LZ 202)	90130	16.3	85.823	1.47	7.74	2.56	0.23	1494.142	134.67
22	CDU-III (ICH 101/102)	252659	0.021	62.616	0.00	15.82	0.82	0.21	49.078	12.40
23	OHDT (IGH 101/102)	58678	1.35	32.722	0.00	1.92	1.9	0.11	25.823	87.67
24	VGO-HDT (IVH 101/201)	54092	0.738	32.717	0.04	1.77	1.19	0.06	25.562	1.38
25	PFCCU-Heater (IFH 002)	21661	0	36.3	0.00	0.79	1.18	0.03	14.363	0.31
26	PFCCU-Regen. (IFLS 001)	170940	9.1	4.785	1.56	0.82	222.8	38.09	13.186	2.25
27	DCU-1 (IDH 101)	77894	1.39	53.002	0.11	4.13	1.35	0.11	28.848	2.25
28	DCU-2 (IDH 102)	77012	0.747	42.740	0.06	3.29	8.16	0.63	20.672	1.59
29	HRSG 3 (IUS HRSG 05LZ554)	161009	3.263	80.987	0.53	13.04	5.63	0.91	1.593	0.26
30	HRSG 4 (IUS HRSG 05LZ554)	142276	3.905	69.743	0.56	9.92	1.996	0.28	2.730	0.39
31	HRSG-5 (IUS HRSG 05LZ554)	143306	47.1	5.521	6.75	0.79	17.09	2.45	7.681	1.10
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	2.2	90.596	0.27	11.14	9.17	1.13	38.450	4.73
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	2.644	96.354	0.33	11.90	7.65	0.94	41.863	5.17
34	NHT-Isom. (NH-2/ J H 101)	53005	0.87	12.76	0.05	0.68	2.438	0.13	0.00	0.00
35	PW1 LS 110 (PDPP INC - 01)	70957	0.44	0.704	0.03	0.05	1.27	0.09	0.468	0.03
36	LS021A (PDPP INC - 02)	71924	0.00	2.947	0.00	0.21	0.26	0.02	1.268	0.09
37	MSBP_HOH	158034	0.88	11.529	0.14	1.82	31.20	4.93	28.790	4.55
38	MRH 01/02/03/04 (MSBP_CCR)	96964	1.85	78.496	0.18	7.61	0.32	0.03	9.195	0.89
					23.07	172.52		116.34		784.18
					PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

Stack Emission Data as per On-line Analyzer data _ November, 2024

Sl. No.	Stack Name	Flow rate (Nm ³ /hr)	PM (mg/Nm ³)	NOx (mg/Nm ³)	PM (kg/hr)	NOx (kg/hr)	CO (mg/Nm ³)	CO (kg/hr)	SO2 (mg/Nm ³)	SO2 (kg/hr)
		Avg. Value								
1	KH01B (KHDS)	22953	0.727	95.719	0.02	2.20	15.88	0.36	13.770	0.32
2	FH01 (FCCU)	24235	0.807	25.012	0.02	0.61	7.9	0.19	7.559	0.18
3	FH03/COB (FCCU)	84321	21.3	27.1	1.80	2.29	172.578	14.55	0	0.00
4	CH21 (CDU - II)	90531	0	65.1	0.00	5.89	6.35	0.57	56.709	5.13
5	CH22 (CDU - II)	33510	0	45.5	0.00	1.52	6.8	0.23	36.050	1.21
6	CH223 (CDU - II)	50563	8.7	66.2	0.44	3.35	67.7	3.42	83.635	4.23
7	DD-HO1 (DHDS)	25998	4.2	42.0	0.11	1.09	1.4	0.04	47.4	1.23
8	OS-X-002 (SRU - 01)	29135	15.22	36	0.44	1.05	219	6.38	2403	70.01
9	OSX 301 (SRU - 02)	14151	29.1	79.087	0.41	1.12	103.4	1.46	7146.599	101.13
10	BS-101 (Biturox)	14174	22.8	3.077	0.32	0.04	5.5	0.08	24.843	0.35
11	VH HO1/02 (VGO HDS)	52253	0	34.433	0.00	1.80	18.2	0.95	30.507	1.59
12	NHT CCR - 01	104483	88.7	35.759	9.27	3.74	2.4	0.25	312.039	32.60
13	UB07 (Boiler)	111963	9.6	20.609	1.07	2.31	7.9	0.88	28.973	3.24
14	UB08 (Boiler)	29524	38.7	19.175	1.14	0.57	4.6	0.14	149.960	4.43
15	UB09 (Boiler) (UX200)	30622	8.64	1.378	0.26	0.04	2.4	0.07	3.239	0.10
16	UB 10 (Boiler)	40255	7.25	96.648	0.29	3.89	13.45	0.54	373.989	15.05
17	UB 11 (Boiler)	71246	28.5	139.526	2.03	9.94	9.04	0.64	878.682	62.60
18	HRSG 1 (CPP - 01)	161184	0	35.1	0.00	5.66	2.8	0.45	1.233	0.20
19	GT2/HRSG -02 (CPP - 02)	151867	2.76	66.976	0.42	10.17	12.8	1.94	0.859	0.13
20	SRU III Train A (IS LZ 102)	91703	28.3	73.694	2.60	6.76	14.3	1.31	936.551	85.88
21	SRU III Train B (IS LZ 202)	90130	13.7	28.532	1.23	2.57	2.2	0.20	344.542	31.05
22	CDU-III (ICH 101/102)	252659	0.875	53.241	0.00	13.45	28.5	7.20	24.248	6.13
23	DHDT (IGH 101/102)	58678	1.6	30.512	0.00	1.79	4.3	0.25	7.660	20.22
24	VGO-HDT (IVH 101/201)	54092	0.9	26.373	0.05	1.43	1.8	0.10	14.587	0.79
25	PFCCU-Heater (IFH 002)	21661	0	33.8	0.00	0.73	5.2	0.11	7.361	0.16
26	PFCCU-Regen. (IFLS 001)	170940	30.76	3.468	5.26	0.59	184.7	31.57	7.296	1.25
27	DCU-1 (IDH 101)	77894	1.1	18.171	0.09	1.42	16.1	1.25	7.527	0.59
28	DCU-2 (IDH 102)	77012	0.3	49.969	0.02	3.85	2.5	0.19	12.904	0.99
29	HRSG 3 (IUS HRSG 05LZ554)	161009	3.5	54.049	0.56	8.70	7.2	1.16	3.544	0.57
30	HRSG 4 (IUS HRSG 05LZ554)	142276	3.63	82.878	0.52	11.79	9.1	1.29	1.940	0.28
31	HRSG-5 (IUS HRSG 05LZ554)	143308	58.5	6.259	8.38	0.90	14.8	2.12	6.144	0.88
32	UB 12 (Boiler) (IUS UB12 LZ08)	122932	2.2	99.023	0.27	12.17	6.8	0.84	40.384	4.96
33	UB 13 (Boiler) (IUS UB12 LZ08)	123507	3.3	98.653	0.41	12.18	6.9	0.85	37.037	4.57
34	NHT -Isom. (NH-2/ H H 101)	53005	0.48	46.88	0.03	2.48	2.070	0.11	0.00	0.00
35	PWI LS 110 (PDPP INC - 01)	70957	0.77	6.596	0.05	0.04	1.20	0.09	6.367	0.03
36	LS021A (PDPP INC - 02)	71924	0.18	34.801	0.01	2.50	31.40	2.26	28.346	2.04
37	MSBP_HOH	158034	-0.98	5.149	-0.15	0.81	14.80	2.34	12.190	1.93
38	MRH 01/02/03/04 (MSBP_CCR)	96964	2.20	71.2	0.21	6.90	4.10	0.40	12.318	1.19
					37.59	148.35		86.81		467.26
					PM (kg/hr)	NOx (kg/hr)		CO (kg/hr)		SO2 (kg/hr)

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Stack Emission Monitoring Report for the Month of October 2024

Report No NL/KR/FGM/10/101

Issue Date, 18/10/2024

Issued To

M/s Bharat Petroleum Corporation Limited

Kochi Refinery

Ambalangiugol, Kochi, Pin-682 302

Ref. No.: PO. No. 4601005329 dated 07.03.2024

Sampling done by: Nitya Laboratories

Sl. No:	Stack / Unit	Date of Monitoring / Sampling	Time of Monitoring	Lab Id. Code / No:	Analysis Started on (date)	Analysis completed on (date)
1	VGO-HDT (Vacuum Gas Oil Hydro Treater) (IVH 101/201)	02-10-2024	09:36 : M	S/10/1	11-10-2024	17-10-2024
2	UB 12 (Boiler) (IUS UB12 LZ08)	02-10-2024	11:23 AM	S/10/2	11-10-2024	17-10-2024
3	UB 13 (Boiler) (IUS UB12 LZ08)	02-10-2024	03:45 PM	S/10/3	11-10-2024	17-10-2024
4	HRSG 4 (IUS HRSG 05LZ554)	03-10-2024	08:50 AM	S/10/4	11-10-2024	17-10-2024
5	HRSG-5 (IUS HRSG 05LZ554)	03-10-2024	10:25 AM	S/10/5	11-10-2024	17-10-2024
6	CDU-III (ICH 101/102)	03-10-2024	03:15 PM	S/10/6	11-10-2024	17-10-2024
7	PFCCU-Heater (IFH 002)	04-10-2024	09:20 AM	S/10/7	11-10-2024	17-10-2024
8	PFCCU-Regen. (IFLS 001)	04-10-2024	10:34 AM	S/10/8	11-10-2024	17-10-2024
9	DHDT (Diesel Hydro Treater) (IGH 101/102)	04-10-2024	11:40 AM	S/10/9	11-10-2024	17-10-2024
10	UB 10 (Boiler)	04-10-2024	03:35 PM	S/10/10	11-10-2024	17-10-2024
11	HRSG 2 (IUS HRSG 05LZ554)	05-10-2024	08:40 : M	S/10/11	11-10-2024	17-10-2024
12	SRU III Train A (IS LZ 102)	05-10-2024	10:10 AM	S/10/12	11-10-2024	17-10-2024
13	SRU III Train B (IS LZ 202)	05-10-2024	12:00 PM	S/10/13	11-10-2024	17-10-2024
14	MSBP _ HOH (Hot Oil Heater)	05-10-2024	03:20 PM	S/10/14	11-10-2024	17-10-2024
15	MRH 01/02/03/04 (MSBP _ CCR)	07-10-2024	08:00 AM	S/10/15	11-10-2024	17-10-2024
16	PWILS 110 (PDPP INC - 01)	07-10-2024	09:35 AM	S/10/16	11-10-2024	17-10-2024
17	LS021A (PDPP INC - 02)	07-10-2024	03:38 PM	S/10/17	11-10-2024	17-10-2024

Instruments used for Monitoring

Stack Monitoring kit, with all assembly Make: Enviro instruments	Calibrated on	06-03-2024	Calibration due on	05-03-2025
---	---------------	------------	--------------------	------------

Summary

NO-fee Services: 24. Deduction Limit:

***** End of the Report *****

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

● PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIE VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ 01-179-2241021

■ +91-9011591021, +91-9011552273

■ labsnitya@gmail.com

☎ www.nityalab.com

Stack Emission Monitoring Report for the Month of October 2024

Report No. NIL/KR/FGM/10/101

Issue Date: 18/10/2024

Issued To

M/s Bharat Petroleum Corporation Limited

Kochi Refinery

Ambalamugal, Kochi, Pin-682 302

Ref. No.: PO. No. 4601005329 dated 07.03.2024

Sampling done by: Nitya Laboratories

Sl. No.	Stack / Unit	Date of Sampling	Ambient Air Temp.	Sampling Temp. (°C)	Flow rate Result (Nm ³ /Hr)	PM (mg/Nm ³)	SO ₂ (mg/Nm ³)	NO _x (mg/Nm ³)	H ₂ S (mg/Nm ³)	CO (mg/Nm ³)	Ni + V (mg/Nm ³)
1	VGO-HDT (Vacuum Gas Oil Hydro Treater) (VH 101/201)	02-10-2024	26.0	167.0	167730.2	5.9	7.6	23.8	N.A.	2.9	ND (DL-0.5)
2	UB 12 (Boiler) (IUS UB12 LZ08)	02-10-2024	26.0	102.0	138064.8	21	138	178	N.A.	7.5	ND (DL-0.5)
3	UB 13 (Boiler) (IUS UB12 LZ08)	02-10-2024	26.0	108.0	837685.2	14	18	7.8	N.A.	4.1	ND (DL-0.5)
4	HRSG 4 (IUS HRSG 05LZ554)	03-10-2024	25.0	176.0	94573.0	6	8	24.0	N.A.	5.2	ND (DL-0.5)
5	HRSG-5 (IUS HRSG 05LZ554)	03-10-2024	25.0	166.0	323496.6	13	3	17	N.A.	4.6	ND (DL-0.5)
6	CDU-III (ICH 101/102)	03-10-2024	25.0	92.0	366470.7	7.5	31	48	3.9	1.3	ND (DL-0.5)
7	PFCCU-Heater (IFH 002)	04-10-2024	26.0	105.0	383894.9	6.5	16	19	N.A.	10.2	ND (DL-0.5)
8	PFCCU-Regen. (IFLS 001)	04-10-2024	26.0	98.0	349595.7	7.2	18	23	N.A.	56	ND (DL-0.5)
9	DHDT (Diesel Hydro Treater) (IGH 101/102)	04-10-2024	26.0	189.0	234439.9	5.2	7.1	21.9	N.A.	3.9	ND (DL-0.5)
10	UB 10 (Boiler)	04-10-2024	26.0	134.0	300154.2	10	102	167	N.A.	6.7	ND (DL-0.5)
11	HRSG 2 (IUS HRSG 05LZ554)	05-10-2024	25.0	193.0	312650.6	12	8.1	28	N.A.	4.1	ND (DL-0.5)
12	SRU III Train A (IS LZ 102)	05-10-2024	25.0	124.0	197583.3	13	1037.0	15	4.1	2.9	ND (DL-0.5)
13	SRU III Train B (IS LZ 202)	05-10-2024	25.0	128.0	148542.5	16	1293.0	17.0	2.9	2.1	ND (DL-0.5)
14	MSBP_HOH (Hot Oil Heater)	05-10-2024	25.0	123.0	147493.9	ND (DL-5)	6.0	78	ND (0.1)	31.2	ND (DL-0.5)
15	MRH 01/02/03/04 (MSBP_CCR)	07-10-2024	25.0	89.0	250595.0	7.8	3.2	12	N.A.	6.0	ND (DL-0.5)
16	PWL 1S 110 (PDPP INC - 01)	07-10-2024	25.0	214.0	134329.2	ND (DL-5)	4.2	36	N.A.	2.1	ND (DL-0.5)
17	LS021A (PDPP INC - 02)	07-10-2024	25.0	234.0	64450.8	ND (DL-5)	5.9	78	N.A.	3.3	ND (DL-0.5)

Remark:

ND=Not Detected, DL=Detection Limit

..... End of the Report.....

NITYA LABORATORIES
AUTHORISED
(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results contained in this report related only to the sample tested. The report shall not be reproduced or used in full without written approval of the laboratory. The report is intended only for the purpose and use for which it was issued. This report shall not be reproduced or used in full without the written approval of the organization. Samples are to be tested within 30 days from the date of issue of test certificate unless otherwise specified. Any discrepancy about the report should be communicated in writing within 7 days of issue of this report. Total liability of Nitya Laboratories is limited to the amount of the fee only. If you have any complaint/feedback regarding the sample collection/testing/report, please send an email at info@nityalab.com and call at +91-191-2465597 / +91-9013552273.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013551021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

www.nityalab.com

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Ambient Air Quality Monitoring Report for the Month of October 2024 of AAQM - 01

Report No: NL/KR/AAQ/10/101	Issued To:
Issue Date: 18/10/2024	M/s Bharat Petroleum Corporation Limited
	Kochi Refinery
	Ambalamugal, Kochi, Pin-682 302
Ref. No.: PO. No. 4601005329 dated 07.03.2024	
Sampling done by: Nitya Laboratories	
24 hrs. Ambient Air Sampling Particulars	
Sampling Method:	IS 5182 (P-14)
Sampling Location:	3.5 m above the ground level
Sampling Protocol:	CPCB Guidelines

Sampling Locations	VGO HDT	UB-12,13	HRSG-3,4,5	CDU-III	GT-2/ HRSG-2	DCU	Pet-Coke dome area
Dates of monitoring	02/10/2024	02/10/2024	03/10/2024	03/10/2024	04/10/2024	04/10/2024	07/10/2024
Time of monitoring	9:30 AM	9:50 AM	9:40 AM	10:00 AM	10:00 AM	10:15 AM	10:40 AM
Sample ID	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Sample receipt Ref. No. with date	NL/101/11- 10-24	NL/101/11- 10-24	NL/102/11- 10-24	NL/102/11- 10-24	NL/103/11-10- 24	NL/103/11- 10-24	NL/104/11- 10-24
Sample receiving date	11-10-2024	11-10-2024	11-10-2024	11-10-2024	11-10-2024	11-10-2024	11-10-2024
Analysis starting date	11-10-2024	11-10-2024	11-10-2024	11-10-2024	11-10-2024	11-10-2024	11-10-2024
Analysis completion date	17-10-2024	17-10-2024	17-10-2024	17-10-2024	17-10-2024	17-10-2024	17-10-2024
Ambient condition	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Amb Temp	26	26	25	25	26	26	25
Rel. Humidity %	72	72	71	71	74	74	73

Remark:

ND-No Detected DL-Detection Limit

..... End of the Report.....



(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results obtained in the test report relate only to the sample tested. This report shall not be reproduced except in full without written approval of the laboratory. This report is intended only for your guidance and not for legal purpose or for advertisement. This report shall not be reproduced except in full without the written approval of this organization. Samples can be destroyed after 30 days from the date of issue of test certificate unless otherwise specified. Any complaints about this report should be communicated in writing within 7 days of issue of the report. This facility of Nitya Laboratories is limited medical amount only. If you have any comments/feedback regarding the sample collection/testing/price report, please send an email at info@nityalab.com and call at +91-191-2465597 / 91-997904061.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of October 2024 of AAQM - 01

Report No	NL/KR/AAQ/10/102	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	18/10/2024	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302

Sl. No.	Parameters	Sampling Locations with results					Units	Limit	Test method	LOQ
		VGO HDT	UB-12,13	HRSG-3,4,6	CDU-III	GT-2/HRSG-2				
1	Sulphur dioxide	16.49	15.24	20.13	19.15	17.11	µg/m ³	80	IS:5182(P-2)	DL-6
2	Nitrogen dioxide	21.24	24.10	27.48	25.12	23.10	µg/m ³	80	IS:5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	43.27	48.12	62.10	58.26	42.13	µg/m ³	100	IS:5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	28.16	32.14	35.12	38.32	28.67	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O ₃)	16.28	18.26	20.12	23.12	16.21	µg/m ³	100	IS:5182(P-9)	DL-10
6	Ammonia (NH ₃)	26.24	26.12	30.42	28.30	25.30	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.31	0.43	0.51	0.43	0.54	mg/m ³	2	IS:5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NL/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NL/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NL/SOP/AAQ-12	DL-0.5
11	Benzene (C ₆ H ₆)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS:5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS:5182 (P-12)	DL-0.5

Remark: ND-Not Detected DL-Detection Limit

..... End of the Report.....

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results mentioned in the test report issued only to the sample tested. Test report shall not be reproduced except in full, without written approval of the laboratory. The report is intended only for user guidance and not for legal evidence or for advertisement. This report shall not be reproduced except in full without the written approval of the organization. Samples will be destroyed after 30 days from the date of issue of test certificate unless otherwise specified. Any complaint about this report should be communicated in writing within 7 days of issue of this report. Liability of Nitya Laboratories is limited to the amount only. If you have any complaint/feedback regarding the sample collection/testing/test report, please send an email at info@nityalab.com and call at +91-191-2465597 +91-9673614861

CORPORATE OFFICE & CENTRAL LABORATORIES :-

Plot No. 118, Church Road, Behind Kausik Vatika, Bhagat Singh Colony, Ballabhgarh, Faridabad - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of October 2024 of AAQM - 01

Report No.	NL/KR/AAQ/10/103	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date:	18/10/2024		Kochi Refinery
			Ambalamugal, Kochi. Pin-682 302

Sl. No.	Parameters	Sampling Locations with results		Units	Limit	Test method	LOQ
		DCU	Pet-Coke dome area				
1	Sulphur dioxide	19.18	20.32	µg/m ³	80	IS:5182(P-2)	DL-6
2	Nitrogen dioxide	22.39	24.28	µg/m ³	80	IS:5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	50.17	57.18	µg/m ³	100	IS:5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	30.16	34.14	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O ₃)	16.21	19.24	µg/m ³	100	IS:5182(P-9)	DL-10
6	Ammonia (NH ₃)	24.42	31.28	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.32	0.82	mg/m ³	2	IS 5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NL/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NL/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NL/SOP/AAQ-12	DL-0.5
11	Benzene (C ₆ H ₆)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS:5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS:5182 (P-12)	DL-0.5

ND-Not Detected, DL-Detection Limit

..... End of the Report.....


(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results contained in this report issued only to the customer. This report shall not be reproduced except in full without written permission of the laboratory. The report is intended only for your personal use and not for any other purpose. This report shall not be reproduced except in full without the written permission of the laboratory. Samples must be analyzed within 30 days from the date of issue of test certificate unless otherwise specified. The company shall not be responsible for any delay in the report. Total liability of Nitya Laboratories is limited to the amount paid. If you have any complaint/feedback regarding the sample collection/testing/turnover report, please send an email at info@nityalab.com and call at +91 191 2465597 / +91 9013552273.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Noise Monitoring Report for the Month of October 2024

Report No.	NL/KR/Noise/10/101	Issued To
Issue Date:	18/10/2024	M/s Bharat Petroleum Corporation Limited Kochi Refinery Ambalamugal, Kochi, Pin-682 302
Ref. No.	PO. No. 4601005329 dated 07.03.2024	
Sampling done by:	Nitya Laboratories	

Sr. No.	Location	Test Result dB(A), Day Time	Test Result dB(A), Night Time	Test Method
1	West Side Robotic Drum Filling Plant	62.7	51.8	IS 9989
2	OXO Alcohol unit PDO opposite cabin	64.9	54.2	
3	PDPP-Cooling tower north	66.5	56.5	
4	PDPP-Cooling tower east	74.2	64.8	
5	PDPP-River gate	49.5	38.5	
6	PDPP-Flare gate	71.6	58.9	
7	NHT-CCR AAQ MS area	64.8	55.7	
8	New chemical storage shed	66.5	53.8	
9	South end corner off clmp	51.7	43.9	
10	MSBP Cooling tower east	61.3	52.5	

..... End of the Report.....



(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results mentioned in this report related only to the sample tested. This report shall not be reproduced except in full, without written approval of the laboratory. This report is intended only for your guidance and not for legal purposes or for arbitration. This report shall not be reproduced without a fee without the written approval of the organization. Samples not to be tested after 30 days from the date of issue of test certificate unless otherwise specified. Any complaint about a report should be communicated in writing within 15 days of issue of this report. Total liability of Nitya Laboratories is limited to amount payable only. If you have any complaint/feedback regarding the sample collection/testing/test report, please send an email at info@nityalab.com and call at +91-191-2465597. We are delighted.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Stack Emission Monitoring Report for the Month of December 2024

Report No.	NL/KR/FGM/12/101	Issued To
Issue Date:	13/01/2025	M/s Bharat Petroleum Corporation Limited Kochi Refinery Ambalamugal, Kochi, Pin-682 302
Ref No :PO No 4601005329 dated 07.03.2024		
Sampling done by: Nitya Laboratories		

SL No:	Stack / Unit	Date of Monitoring / Sampling	Time of Monitoring	Lab Id. Code / No:	Analysis Started on (date)	Analysis completed on (date)
1	DCU-1 (Delayed Coker Unit - 01) (IDH 101)	27-12-2024	09:12AM	S/12/1	06-01-2025	11-01-2025
2	DCU-2 (Delayed Coker Unit - 02) (IDH 102)	27-12-2024	11:12 AM	S/12/2	06-01-2025	11-01-2025
3	FFCCU-Heater (IFH 002)	27-12-2024	03:00 PM	S/12/3	06-01-2025	11-01-2025
4	FFCCU-Regen. (IFLS 001)	27-12-2024	04:10PM	S/12/4	06-01-2025	11-01-2025
5	HRSG 3 (IUS HRSG 05LZ554)	28-12-2024	10:25 AM	S/12/5	06-01-2025	11-01-2025
6	HRSG 4 (IUS HRSG 05LZ554)	28-12-2024	11:40AM	S/12/6	06-01-2025	11-01-2025
7	UB 12 (Boiler) (IUS UB12 LZ08)	28-12-2024	02:20 PM	S/12/7	06-01-2025	11-01-2025
8	UB 13 (Boiler) (IUS UB12 LZ08)	28-12-2024	03:20 PM	S/12/8	06-01-2025	11-01-2025
9	GT2/HRSG -02 (CPP - 02)	30-12-2024	09:40 AM	S/12/9	06-01-2025	11-01-2025
10	DHOT (Diesel Hydro Treater) (IGH 101/102)	30-12-2024	11:10 AM	S/12/10	06-01-2025	11-01-2025
11	VGO-HOT (Vacuum Gas Oil Hydro Treater) (IVH 101/201)	30-12-2024	02:40 PM	S/12/11	06-01-2025	11-01-2025
12	CDU-HH (ICH 101/102)	30-12-2024	03:50 PM	S/12/12	06-01-2025	11-01-2025
13	PM LS 110 (PDPP INC - 01)	31-12-2024	09:20 AM	S/12/13	06-01-2025	11-01-2025
14	LS021A (PDPP INC - 02)	31-12-2024	10:50 AM	S/12/14	06-01-2025	11-01-2025
15	CH21 (CDU - I)	31-12-2024	11:40 AM	S/12/15	06-01-2025	11-01-2025
16	CH22 (CDU - II)	31-12-2024	02:50 PM	S/12/16	06-01-2025	11-01-2025
17	CH223 (CDU - II)	31-12-2024	04:05 PM	S/12/17	06-01-2025	11-01-2025

Instruments used for Monitoring

Spox Monitoring kit, with all assembly Make: Enviro Instruments	Calibrated on	06-03-2024	Calibration due on	06-03-2025
--	---------------	------------	--------------------	------------

100

© 2004 Blackwell Publishing Ltd, *Journal of Internal Medicine* 255: 105–112

End of the Report.

(CHECKED BY)

(SANDEEP SAINI)

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-179-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

Stack Emission Monitoring Report for the Month of December 2024

Report No. NUKR/FGM/12/101

Issue Date: 13/01/2025

Issued To

M/s Bharat Petroleum Corporation Limited

Kochi Refinery

Ambalamugal, Kochi, Pin-682 302

Ref. No.: PO. No. 4601005329 dated 07.03.2024

Sampling done by: Nitva Laboratories

Sl. No:	Stack / Unit	Date of Sampling	Ambient Air Temp.	Sampling Temp. (°C)	Flow rate Result (Nm³/Hr)	PM (mg/Nm³)	SO₂ (mg/Nm³)	NOx (mg/Nm³)	H₂S (mg/Nm³)	CO (mg/Nm³)	NI + V (mg/Nm³)
1	DCU-1 (Delayed Coker Unit - 01) (IGH 101)	27-12-2024	25.0	145.0	260059.2	ND (DL-5)	32.2	136.4	ND (0.1)	5.6	ND (DL-0.5)
2	DCU-2 (Delayed Coker Unit - 02) (IGH 102)	27-12-2024	25.0	132.0	244171.0	ND (DL-5)	8.5	125.7	ND (0.1)	2.8	ND (DL-0.5)
3	PFCCU-Heater (IFH 002)	27-12-2024	25.0	104.0	92421.7	4.7	16.4	14.3	N.A.	10.5	ND (DL-0.5)
4	PFCCU-Regen. (IFLS 001)	27-12-2024	25.0	110.0	303469.3	7.6	19.7	28.9	N.A.	60.7	ND (DL-0.5)
5	HRSG 3 (IUS HRSG 05LZ554)	28-12-2024	26.0	178.0	268565.0	9.4	7.6	28.6	N.A.	4.1	ND (DL-0.5)
6	HRSG 4 (IUS HRSG 05LZ554)	28-12-2024	26.0	172.0	253049.5	11.8	6.9	30.4	N.A.	3.6	ND (DL-0.5)
7	UB 12 (Boiler) (IUS UB12 LZ08)	28-12-2024	26.0	112.0	258933.8	23.6	140.6	190.8	N.A.	6.1	ND (DL-0.5)
8	UB 13 (Boiler) (IUS UB12 LZ08)	28-12-2024	26.0	108.0	285616.0	17.9	16.9	10.8	N.A.	4.1	ND (DL-0.5)
9	GT2/HRSG-02 (CPP - 02)	30-12-2024	20.5	136.0	325067.7	5.9	8.6	23.4	N.A.	4.2	ND (DL-0.5)
10	DHDT (Diesel Hydro Treater) (IGH 101/102)	30-12-2024	25.0	178.0	177733.4	6.4	8.2	26.4	N.A.	5.3	ND (DL-0.5)
11	VGO-HDT (Vacuum Gas Oil Hydro Treater) (IVH 101/201)	30-12-2024	25.0	165.0	131601.8	5.6	7.6	23.9	N.A.	2.0	ND (DL-0.5)
12	CDU-III (IGH 101/102)	30-12-2024	25.0	98.0	796610.7	9.5	38.1	48.9	3.9	2.1	ND (DL-0.5)
13	PWLS 110 (PDPP INC - 01)	31-12-2024	26.0	188.0	181577.5	ND (DL-5)	4.6	38.9	N.A.	1.1	ND (DL-0.5)
14	LS021A (PDPP INC - 02)	31-12-2024	26.0	203.0	124523.8	ND (DL-5)	6.6	76.9	N.A.	2.3	ND (DL-0.5)
15	CH21 (CDU - II)	31-12-2024	26.0	89.0	194829.3	6.7	32.9	52.7	3.6	1.6	ND (DL-0.5)
16	CH22 (CDU - II)	31-12-2024	26.0	92.0	78140.7	7.5	36.4	116.7	6.6	4.6	ND (DL-0.5)
17	CH223 (CDU - II)	31-12-2024	26.0	103.0	255359.1	4.8	58.6	46.5	7.5	2.7	ND (DL-0.5)

Abstract

includes: **Controlled**, **On-Device**, **Learn**

..... **End of the Report**

(CHECKED BY)

(SANDEEP SAINI)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

CORPORATE OFFICE & CENTRAL LABORATORIES :-
 9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-129-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of December 2024 of AAQM - 01

Report No: NL/KR/AAQ/12/101	Issued To: M/s Bharat Petroleum Corporation Limited
Issue Date: 13-01-2025	Kochi Refinery
	Ambalamugai, Kochi, Pin-682 302
Ref No: PO. No 4601005329 Dated 07 03 2024	
Sampling done by: Nitya Laboratories	
24 hrs. Ambient Air Sampling Particulars	
Sampling Method: IS 5182 (P-14)	
Sampling Location: 3.5m above the ground level	
Sampling Protocol: CPCB Guidelines	

Sampling Locations	Satellite Fire Station	Pet-Coke dome area	PFCCU Cabin Area	DCU	UB-12,13	HRSG-3,4
Dates of monitoring	23-12-2024	23-12-2024	27-12-2024	27-12-2024	28-12-2024	28-12-2024
Time of monitoring	10:10 AM	11:02 AM	10:30 AM	11:15 AM	10:40 AM	11:20 AM
Sample ID	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6
Sample receipt/Ref. No. with Date	NL/101/23-12-24	NL/102/23-12-24	NL/103/27-12-24	NL/104/27-12-24	NL/105/28-12-24	NL/106/28-12-24
Sample receiving Date	06-01-2025	06-01-2025	06-01-2025	06-01-2025	06-01-2025	06-01-2025
Analysis starting Date	06-01-2025	06-01-2025	06-01-2025	06-01-2025	06-01-2025	06-01-2025
Analysis completion Date	11-01-2025	11-01-2025	11-01-2025	11-01-2025	11-01-2025	11-01-2025
Ambient condition	Normal	Normal	Normal	Normal	Normal	Normal
Amb Temp	24	24	25	25	24	24
Rel Humidity %	71	71	72	72	72	72

Remarks:

NO-No Detected, D-Detected Limit

End of the Report

(CHECKED BY)

(SANDEEP SAINI)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for contents of reports. The results reported in this report are valid only as the sample received. The report shall not be reproduced except in full, without written permission of the laboratory. This report is prepared only for your particular use and not for any other purpose. The report shall not be reproduced or used in any manner without the written approval of the laboratory. The report shall not be used for any other purpose. The report shall not be used for any other purpose. The report shall not be used for any other purpose.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of December 2024 of AAQM – 01

Report No.	NL/KR/AAQ/12/102	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date:	13-01-2025	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302
Ref. No./PO. No. 4601005329 Dated 07.03.2024			
Sampling done by: Nitya Laboratories			
24 hrs. Ambient Air Sampling Particulars			
Sampling Method:	IS 5182 (P-14)		
Sampling Location:	3.5m above the ground level		
Sampling Protocol:	CPCB Guidelines		

Sampling Locations	VGO HDT	CDU-III	CDU-III/ARU	PDPP
Dates of monitoring	30-12-2024	30-12-2024	31-12-2024	31-12-2024
Time of monitoring	11.10 AM	11:40 AM	11.30 AM	11:50 AM
Sample ID	AAQ7	AAQ8	AAQ9	AAQ10
Sample receipt/Ref. No. with Date	NL/107/30-12-24	NL/108/30-12-24	NL/109/31-12-24	NL/110/31-12-24
Sample receiving Date	06-01-2025	06-01-2025	06-01-2025	06-01-2025
Analysis starting Date	06-01-2025	06-01-2025	06-01-2025	06-01-2025
Analysis completion Date	11-01-2025	11-01-2025	11-01-2025	11-01-2025
Ambient condition	Normal	Normal	Normal	Normal
Amb. Temp.	24	24	24	24
Rel. Humidity %	70	70	70	70

Remark: not Not Detected. Cf. Detection Limit

End of the Report.....

(CHECKED BY)

(SANDEEP SAINI)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-129-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of December 2024 of AAQM - 01

Report No: NL/KR/AAQ/12/103	Issued To:
Issue Date: 13-01-2025	M/s Bharat Petroleum Corporation Limited
	Kochi Refinery
	Ambalamugal, Kochi, Pin-682 302

Sl. No:	Parameters	Sampling Locations with results					Units	Limit	Test method	LOQ
		Satellite Fire Station	Pet-Coke dome area	PFCCU Cabin Area	DCU	UB-12,13				
1	Sulphur dioxide	18.40	18.50	22.30	21.50	20.40	µg/m ³	80	IS:5182(P-2)	DL-6
2	Nitrogen dioxide	23.40	26.20	29.50	27.20	26.30	µg/m ³	80	IS:5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	46.80	50.40	64.20	60.30	44.30	µg/m ³	100	IS:5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	30.00	34.20	37.20	40.20	30.70	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O ₃)	18.30	20.60	22.20	26.20	18.30	µg/m ³	100	IS:5182(P-9)	DL-10
6	Ammonia (NH ₃)	28.50	28.20	32.50	30.20	28.20	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.43	0.54	0.61	0.53	0.64	mg/m ³	2	IS:5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NL/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NL/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NL/SOP/AAQ-12	DL-0.5
11	Benzene (C ₆ H ₆)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS:5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS:5182 (P-12)	DL-0.5

Remark: ND-Not Detected, DL-Detection Limit

..... End of the Report.....

(CHECKED BY)
(SANDEEP SAINI)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NITYA: The laboratory is not responsible for tampering of report. The results contained in this report should not be reproduced without the written approval of the laboratory. The report is intended only for your reference and not for any other purpose. The report shall not be reproduced except in full without the written approval of the laboratory. Samples not to be retained after 30 days from the date of issue of the certificate unless otherwise specified. Any tampering with the report shall be immediately reported to the laboratory. The validity of this certificate is limited to the period stated above. If you have any comments/suggestions regarding the sample collection/testing/report, please send us email at info@nityalab.com and call at +91-191-2465597, +91-9973939882.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

43, PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of December 2024 of AAQM - 01

Report No. NL/KR/AAQ/12/104

Issue Date: 13-01-2025

Issued To

M/s Bharat Petroleum Corporation Limited

Kochi Refinery

Ambalamugal, Kochi, Pin-682 302

Sl. No.	Parameters	Sampling Locations with results					Units	Limit	Test method	LOQ
		HRS-3,4	VGO HDT	CDU-III	CDU-III/ARU	PDPP				
1	Sulphur dioxide	21.10	22.40	23.50	21.50	22.60	µg/m ³	80	IS:5182(P-2)	DL-8
2	Nitrogen dioxide	24.40	26.30	27.20	23.40	25.60	µg/m ³	80	IS:5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	53.20	59.20	58.70	57.20	58.50	µg/m ³	100	IS:5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	32.90	36.20	38.50	37.20	36.30	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O3)	18.30	21.25	20.30	22.30	21.50	µg/m ³	100	IS:5182(P-9)	DL-10
6	Ammonia (NH3)	27.40	33.30	32.80	34.50	32.50	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.44	0.92	0.56	0.62	0.78	mg/m ³	2	IS:5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NL/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NL/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NL/SOP/AAQ-12	DL-0.5
11	Benzene (C6H6)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS:5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS:5182 (P-12)	DL-0.5

Remarks: ND=Not Detected, DL=Detection Limit

..... End of the Report.....

(CHECKED BY)
(SANDEEP SAINI)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results mentioned in this report related only to the samples tested. This report shall not be reproduced except in full, without written permission of the laboratory. This report is intended only for your reference and not for legal purposes. The report shall not be reproduced except in full without the written approval of the organization. Samples must be received within 30 days from the date of issue of test certificate unless otherwise specified. The personnel at nityalab.com and call at +91-191-2465597, +91-98770-20000

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Stack Emission Monitoring Report for the Month of January 2026

Report No.	NU/KR/FGM/01/101	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	13/01/2025		Kochi Refinery
			Ambalamugal, Kochi, Pin-682 302
Ref. No.: PO. No. 4601005328 dated 07.03.2024			
Sampling done by: Nitya Laboratories			

Sl. No.	Stack / Unit	Date of Monitoring / Sampling	Time of Monitoring	Lab Id. Code / No.	Analysis Started on (date)	Analysis completed on (date)
1	MSBP _ HOH (Hot Oil Heater)	02-01-2025	09:20 AM	S/O1/1	06-01-2025	11-01-2025
2	MRH 01/02/03/04 (MSBP _ CCR)	02-01-2025	10:50 AM	S/O1/2	06-01-2025	11-01-2025
3	SRU III Train A (IS LZ 102)	02-01-2025	03:10 PM	S/O1/3	06-01-2025	11-01-2025
4	SRU III Train B (IS LZ 202)	02-01-2025	04:20 PM	S/O1/4	06-01-2025	11-01-2025
5	DS-X-002 (SRU - 01)	03-01-2025	10:05 AM	S/O1/5	06-01-2025	11-01-2025
6	NH H01 & CRH 01/02/03/04 (NHT CCR - 01)	03-01-2025	11:10 AM	S/O1/6	06-01-2025	11-01-2025

Instruments used for Monitoring

Sinco Monitoring kit, with all assembly Muko: Enwio Instruments	Calibrated on	08-03-2024	Calibration due on	05-03-2025
--	---------------	------------	--------------------	------------

[illegible]

© 2004 Blackwell Publishing Ltd *Journal of Internal Medicine* 255: 105–112

End of the Report.

(CHECKED BY)

(SANDEEP SAINI)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-129-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

Stack Emission Monitoring Report for the Month of January 2025

Report No.	NL/KR/FGM/01/101	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	13/01/2025		Kochi Refinery
			Ambalamugal, Kochi, Pin-682 302
Ref. No.	PO No. 4601005329 dated 07.03.2024		
Sampling done by:	Nitya Laboratories		

Sl. No:	Stack / Unit	Date of Sampling	Ambient Air Temp.	Sampling Temp. (°C)	Flow rate Result (Nm³/hr)	PM (mg/Nm³)	SO₂ (mg/Nm³)	NOx (mg/Nm³)	H₂S (mg/Nm³)	CO (mg/Nm³)	Ni + V (mg/Nm³)
1	MSBP - HOH (Hot Oil Heater)	02-01-2025	24.0	123.0	363414.8	ND (DL-0.5)	6.8	78.6	ND (DL-0.1)	32.7	ND (DL-0.5)
2	MRH 01/02/03/04 (MSBP - CCR)	02-01-2025	24.0	102.0	176174.7	10.2	3.8	12.8	N.A.	7.3	ND (DL-0.5)
3	SRU III Train A (IS LZ 102)	02-01-2025	24.0	121.0	155408.2	12.6	1250.3	15.2	2.9	1.8	ND (DL-0.5)
4	SRU III Train B (IS LZ 202)	02-01-2025	24.0	126.0	143250.5	10.3	1289	17.6	3.0	3.6	ND (DL-0.5)
5	DS-X-002 (SRU - 01)	03-01-2025	24.0	156.0	64920.5	19.2	16890	45.5	3.3	72.9	ND (DL-0.5)
6	NH H01 & CRH 01/02/03/04 (NHT CCR - 01)	03-01-2025	24.0	131.0	362549.6	ND (DL-0.5)	0.0	119.9	ND (DL-0.1)	47.6	ND (DL-0.5)

000000

[illegible]

End of the Report

(CHECKED BY)

(SANDEEP SAINI)



[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

圖 • 91-129-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nitvalab.com

Treated Effluent Water Analysis Report for the Month of January 2025

Report No:	NL/KR/ETP/01/101	Issued To:	M/s Bharat Petroleum Corporation Limited
Issue Date:	13-01-2025		Kochi Refinery
			Ambalamugal, Kochi, Pin-682 302
Ref. No.:	PO. No. 4601005329 dated 07.03.2024		
Sampling done by:	Nitya Laboratories		

Sl. No:	Parameter	Unit	Value reported	Limits as per notification- GSR 186 (E) dt. 18.03.2008	Test Method
1	pH	--	7.56	6 - 8.5	IS: 3025 (P-11)
2	Oil & Grease	mg/l	2.0	5.0	IS: 3025 (P-39)
3	BOD (3days) 27°C	mg/l	10	15.0	IS: 3025 (P-44)
4	Total Suspended Solids (TSS)	mg/l	18	20.0	IS: 3025 (P-17)
5	Phenols	mg/l	ND	0.4	IS: 3025 (P-43)
6	Sulphides	mg/l	0.20	0.5	IS: 3025 (P-29)
7	Chemical Oxygen Demand (COD)	mg/l	50	125.0	IS: 3025 (P-58)
8	Cyanide (CN)	mg/l	ND	0.2	IS: 3025 (P-27)
9	Ammonia as Nitrogen	mg/l	0.42	15.0	IS: 3025 (P-34)
10	Total Kjeldahl Nitrogen (TKN)	mg/l	0.84	40.0	IS: 3025 (P-34)
11	Phosphate (P)	mg/l	ND	3.0	IS: 3025 (P-31)
12	Chromium (Cr) (Hexavalent)	mg/l	ND	0.1	APHA 23 rd Ed.
13	Chromium (Cr) (Total)	mg/l	ND	2.0	APHA 23 rd Ed.
14	Lead (Pb)	mg/l	ND	0.1	APHA 23 rd Ed.
15	Mercury (Hg)	mg/l	ND	0.0	APHA 23 rd Ed.
16	Zinc (Zn)	mg/l	ND	5.0	APHA 23 rd Ed.
17	Nickel (Ni)	mg/l	ND	1.0	APHA 23 rd Ed.
18	Copper (Cu)	mg/l	ND	1.0	APHA 23 rd Ed.
19	Vanadium (V)	mg/l	ND	0.2	IS: 3025 (P-56)
20	Benzene	mg/l	ND	100.0	USEPA-8270C
21	Benzo (a) - Pyrene	mg/l	ND	200.0	USEPA-8270C

Remark: ND-Not Detected. DL-Detection Limit

..... End of the Report.....

(CHECKED BY)
(SANDEEP SAINI)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory assumes the responsibility for accuracy of report. The results presented in this report related only to the samples tested. Test report shall not be reproduced or used in full without the written approval of the signatory. If any dispute arises from the data of test, the laboratory shall be held responsible. Any complaint or dispute should be submitted within 15 days of issue of the report. Test results of these laboratories are subject to internal control only. If any error is discovered, the laboratory shall be held responsible. The complete laboratory/management system, process must be under ISO 9001:2015 certification and ISO 17025:2017 certification.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of January 2025 of AAQM - 01

Report No	NL/KR/AAQ/01/101	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	13-01-2025	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302
Ref. No. PO. No. 4601005329 Dated 07.03.2024			
Sampling done by: Nitya Laboratories			
24 hrs. Ambient Air Sampling Particulars			
Sampling Method:	IS 5182 (P-14)		
Sampling Location:	3.5m above the ground level		
Sampling Protocol:	CPCB Guidelines		

Sampling Locations	SRU III Op. Cabin	MSBP Op. Cabin
Dates of monitoring	02-01-2025	02-01-2025
Time of monitoring	09.10 AM	09.40 AM
Sample ID	AAQ1	AAQ2
Sample receipt/Ref. No. with Date	NL/101/02-01-2025	NL/102/02-01-2025
Sample receiving Date	06-01-2025	06-01-2025
Analysis starting Date	06-01-2025	06-01-2025
Analysis completion Date	11-01-2025	11-01-2025
Ambient condition	Normal	Normal
Amb. Temp.	24	24
Rel. Humidity %	71	71

Remark:

ND/Not Detected, DL-Detection Limit

End of the Report.....

(CHECKED BY)

(SANDEEP SAINI)



NOTE: The laboratory accepts the responsibility for contents of report. The results mentioned in this report shall not be reproduced without the written approval of the laboratory. This report is intended only for your personal use and not for legal purposes or for advertisement. The report shall not be reproduced without the written approval of the laboratory. Samples will be destroyed after 30 days from the date of issue of this certificate unless otherwise specified. Any statements about this report should be communicated in writing within 7 days of issue of this report. Your liability of these laboratories is limited except amount only 30 days from the date of receipt of sample collection/analysis/report. Please read the terms and conditions at www.nityalab.com and call at +91-191-2465597, +91-9013552273.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of January 2025 of AAQM - 01

Report No.	NL/KR/AAQ/01/102	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	13-01-2025	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302

Sl. No.	Parameters	Sampling Locations with results		Units	Limit	Test method	LOQ
		SRU III Op. Cabin	MSBP Op. Cabin				
1	Sulphur dioxide	18.43	17.30	µg/m ³	80	IS 5182(P-2)	DL-8
2	Nitrogen dioxide	23.50	26.30	µg/m ³	80	IS 5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	48.30	50.20	µg/m ³	100	IS 5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	30.00	34.20	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O ₃)	18.30	20.30	µg/m ³	100	IS 5182(P-9)	DL-10
6	Ammonia (NH ₃)	29.40	28.00	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.42	0.53	mg/m ³	2	IS:5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NL/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NL/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NL/SOP/AAQ-12	DL-0.5
11	Benzene (C ₆ H ₆)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS 5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS 5182 (P-12)	DL-0.5

Remark: ND-Not Detected, DL-Detection Limit

..... End of the Report.....


(CHECKED BY)
(SANDEEP SAINI)


(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for accuracy of reports. The results mentioned in this report should not be reproduced or used in full without written approval of the laboratory. This report is intended only for your guidance and not for legal purposes or for court evidence. The report shall not be reproduced except in full without the written approval of the laboratory. Samples not to be destroyed prior to the date of issue of the certificate unless otherwise specified. Any comments about this report should be communicated to writing within 7 days of issue of the report. Your samples of these laboratories is limited period of time only. If you have any complaints/feedback regarding the sample collection/analysis/test report, please send us email at info@nityalab.com and call at +91-191-2465597, +91-9612910021

CORPORATE OFFICE & CENTRAL LABORATORIES :-

43, PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Stack Emission Monitoring Report for the Month of March 2025

ULR No.	TC148142500001723F-1726F,1730F-1734F 1810F-1814F,1819F-1823F,1825F-1829F	Issued To	M/s Bharat Petroleum Corporation Limited Kochi Refinery Ambalamugal, Kochi, Pin-682 302
Issue Date:	03/04/2025		
Ref. No.: PO. No. 4601005329 dated 07.03.2024			
Sampling done by: Nitya Laboratories			

Sl. No:	Stack / Unit	Date of Sampling	Ambient Air Temp.	Sampling Temp. (°C)	Flow rate Result (Nm ³ /Hr)	PM (mg/Nm ³)	H ₂ S (mg/Nm ³)
1	PW LS 110 (PDPP INC - 01)	21-03-2025	37.2	260.5	174300.0	ND (DL-5)	N.A
2	LS021A (PDPP INC - 02)	21-03-2025	37.2	354.2	111294.5	ND (DL-5)	N.A
3	CH21 (CDU - II)	21-03-2025	35.4	158.0	180856.9	4.7	4.1
4	CH22 (CDU - II)	21-03-2025	35.3	155.1	74071.0	7.9	4.9
5	CH223 (CDU - II)	21-03-2025	35.8	115.8	254292.3	6.6	5.7
6	HRSG 3 (IUS HRSG 05L2554)	22-03-2025	34.5	77.1	311960.9	6	N.A
7	HRSG 5 (IUS HRSG 05L2554)	22-03-2025	35.3	80.0	294770.4	15	N.A
8	UB 12 (Boiler) (IUS UB12 LZ08)	22-03-2025	34.3	49.6	284693.3	21	N.A
9	UB 13 (Boiler) (IUS UB12 LZ08)	22-03-2025	34.0	41.6	321423.4	17	N.A
10	DCU-1 (Delayed Coker Unit - 01)	24-03-2025	32.2	139.9	249397.0	ND (DL-5)	ND (0.1)
11	DCU-2 (Delayed Coker Unit - 02)	24-03-2025	33.0	107.4	262960.1	ND (DL-5)	ND (0.1)
12	BS-101 (Biturox)	24-03-2025	33.9	48.8	31157.0	8.9	ND (0.1)
13	FH-01 (FCCU)	24-03-2025	28.2	80.6	53821.2	ND (DL-5)	N.A
14	FH03/COB (FCCU)	24-03-2025	34.1	76.4	187420.9	ND (DL-5)	N.A
15	PFCCU-Heater (IFH 002)	25-03-2025	37.3	263.1	80169.4	5.4	ND (0.1)
16	PFCCU-Regen. (IFLS 001)	25-03-2025	36.8	215.1	285805.9	7.2	ND (0.1)
17	DHDT (Diesel Hydro Treater) (IGH)	25-03-2025	28.6	178.6	185389.7	4.4	N.A
18	VGO-HDT (Vacuum Gas Oil Hydro Treater) (IVH 101/201)	25-03-2025	35.1	168.4	135883.8	5.7	N.A
19	CDU-III (ICH 101/102)	25-03-2025	31.2	80.0	860582.0	6.8	3.6
20	SRU III Train A (IS LZ 102)	26-03-2025	31.2	273.1	133660.6	12	3.3
21	SRU III Train B (IS LZ 202)	26-03-2025	32.3	301.6	117961.8	14	2.7
22	DS-X-002 (SRU - 01)	26-03-2025	33.8	603.6	48090.5	19	4.0
23	MSBP _ HOH (Hot Oil Heater)	26-03-2025	34.6	194.8	349024.9	ND (DL-5)	ND (0.1)
24	MRH 01/02/03/04 (MSBP _ CCR)	26-03-2025	35.6	197.3	152233.7	9.6	N.A

(CHECKED BY)
(SANDEEP SAINI)



TC-14814

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

Notes: The laboratory accepts no responsibility for errors in reports. The results contained in this report should only be used for the purpose stated. This report shall not be reproduced without the written approval of the laboratory. Samples and/or reference materials shall be kept for a period of 30 days from the date of issue of the report. This report is valid only for the purpose stated. The laboratory is not responsible for any errors in the report. If you have any comments/suggestions regarding this report, please contact the laboratory within 15 days of the date of issue of the report.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Stack Emission Monitoring Report for the Month of March 2025

ULR No.	TC14814250001723F-1726F,1730F-1734F 1810F-1814F,1819F-1823F,1825F-1829F	Issued To	M/s Bharat Petroleum Corporation Limited Kochi Refinery Ambalamugal, Kochi, Pin-682 302
Issue Date:	03/04/2025		
Ref. No.: PO. No. 4601005329 dated 07.03.2024			
Sampling done by: Nitya Laboratories			

Sl. No:	Stack / Unit	Date of Monitoring / Sampling	Time of Monitoring	Lab Id. Code / No:	Analysis Started on (date)	Analysis completed on (date)
1	PW LS 110 (POPP INC - 01)	21-03-2025	10:15AM	S/03/1	27-03-2025	02-04-2025
2	LS021A (POPP INC - 02)	21-03-2025	11:42 AM	S/03/2	27-03-2025	02-04-2025
3	CH21 (CDU - II)	21-03-2025	02:10 PM	S/03/3	27-03-2025	02-04-2025
4	CH22 (CDU - II)	21-03-2025	03:20PM	S/03/4	27-03-2025	02-04-2025
5	CH223 (CDU - II)	21-03-2025	11:55 AM	S/03/5	27-03-2025	02-04-2025
6	HRSG 3 (IUS HRSG 05LZ554)	22-03-2025	10:50AM	S/03/6	27-03-2025	02-04-2025
7	HRSG 5 (IUS HRSG 05LZ554)	22-03-2025	02:10 PM	S/03/7	27-03-2025	02-04-2025
8	UB 12 (Boiler) (IUS UB12 LZ08)	22-03-2025	12:20 PM	S/03/8	27-03-2025	02-04-2025
9	UB 13 (Boiler) (IUS UB12 LZ08)	22-03-2025	11:40 AM	S/03/9	27-03-2025	02-04-2025
10	DCU-1 (Delayed Coker Unit - 01) (IDH 101)	24-03-2025	09:10 AM	S/03/10	27-03-2025	02-04-2025
11	DCU-2 (Delayed Coker Unit - 02) (IDH 102)	24-03-2025	03:40 PM	S/03/11	27-03-2025	02-04-2025
12	BS-101 (Biturox)	24-03-2025	04:20 PM	S/03/12	27-03-2025	02-04-2025
13	FH01 (FCCU)	24-03-2025	10:40 AM	S/03/13	27-03-2025	02-04-2025
14	FH03/COB (FCCU)	24-03-2025	12:20 PM	S/03/14	27-03-2025	02-04-2025
15	PFCCU-Heater (IFH 002)	25-03-2025	10:40 AM	S/03/15	27-03-2025	02-04-2025
16	PFCCU-Regen. (IFLS 001)	25-03-2025	03:30 PM	S/03/16	27-03-2025	02-04-2025
17	DHDT (Diesel Hydro Treater) (IGH 101/102)	25-03-2025	03:50 PM	S/03/17	27-03-2025	02-04-2025
18	VGO-HDT(Vacuum Gas Oil Hydro Treater)	25-03-2025	04:20 PM	S/03/18	27-03-2025	02-04-2025
19	CDU-III (ICH 101/102)	25-03-2025	10:30 AM	S/03/19	27-03-2025	02-04-2025
20	SRU III Train A (IS LZ 102)	26-03-2025	9:50 AM	S/03/20	27-03-2025	02-04-2025
21	SRU III Train B (IS LZ 202)	26-03-2025	10:10 AM	S/03/21	27-03-2025	02-04-2025
22	DS-X-002 (SRU - 01)	26-03-2025	02:10 PM	S/03/22	27-03-2025	02-04-2025
23	MSBP _ HOH (Hot Oil Heater)	26-03-2025	03:45 PM	S/03/23	27-03-2025	02-04-2025
24	MRH 01/02/03/04 (MSBP _ CCR)	26-03-2025	04:35 PM	S/03/24	27-03-2025	02-04-2025

Instruments used for Monitoring

Stack Monitoring kit, with all assembly Make Enviro Instruments	Calibrated on	05-03-2025	Calibration due on	06-03-2026
--	---------------	------------	--------------------	------------

(CHECKED BY)
(SANDEEP SAINI)



TC-14814

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The accuracy is under the responsibility of the client of report. The results contained in this report related only to the sample submitted. This report shall not be reproduced except in full, without written approval of the laboratory. The report is intended only for your reference and not for legal purposes in the advertisement. The report shall not be reproduced except in full, without the written approval of the organization. Samples will be delivered after 15 days from the date of issue of test certificate unless otherwise specified. The company shall not be responsible for any delay in delivery of the report. The validity of the report is limited to the sample submitted only. If you have any complaint/feedback regarding the sample collection/analysis/report, please send an email to info@nityalab.com and call at +91-191-2465597, +91-9673634662.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Stack Emission Monitoring Report for the Month of March 2025

Test Report No. 2025032*0110-134

Issue Date: 03/04/2025

Issued To

M/s Bharat Petroleum Corporation Limited

Koch's Refinery

Ambalamugal, Kochi, Pin-682 302

Ref No : PO. No. 4601005329 dated 07.03.2024

Sampling done by: Nitya Laboratories

Sl. No.	Stack / Unit	Date of Sampling	Ambient Air Temp.	Sampling Temp. (°C)	Flow rate Result (Nm ³ /hr)	SO ₂ (mg/N m ³)	NO _x (mg/N m ³)	CO (mg/N m ³)	H ₂ + V (mg/Nm ³)	OF %
1	PW LS 110 (POPP INC - 01)	21-03-2025	37.2	260.5	174300.0	3.0	41	16	ND (DL-0.5)	4.6
2	LS021A (POPP INC - 02)	21-03-2025	37.2	354.2	111294.5	3.0	78	9	ND (DL-0.5)	4.3
3	O-21 (COU - F)	21-03-2025	35.4	158.0	180895.9	26.4	49	4.0	ND (DL-0.5)	7.8
4	O-22 (COU - F)	21-03-2025	35.3	155.1	74071.0	35.9	109	1	ND (DL-0.5)	7.6
5	O-223 (COU - F)	21-03-2025	35.6	115.8	254292.3	65.9	49	2	ND (DL-0.5)	8.5
6	HRSG 3 (US HRSG 05L2554)	22-03-2025	34.5	77.1	311960.9	7.5	27.9	ND (DL-1)	ND (DL-0.5)	16.5
7	HRSG 5 (US HRSG 05L2554)	22-03-2025	35.3	80.0	294770.4	ND (DL-1)	14	ND (DL-1)	ND (DL-0.5)	14.5
8	UB 12 (Boiler) (US UB12 L206)	22-03-2025	34.3	49.6	264593.3	135	184	ND (DL-1)	ND (DL-0.5)	13.6
9	UB 13 (Boiler) (US UB12 L206)	22-03-2025	34.0	41.6	321423.4	12	7.2	ND (DL-1)	ND (DL-0.5)	13.7
10	DCU-1 (Delayed Cooler Unit - 01) (DH 101)	24-03-2025	32.2	135.9	249397.0	28	129	ND (DL-1)	ND (DL-0.5)	7.8
11	DCU-2 (Delayed Cooler Unit - 02) (DH 102)	24-03-2025	33.0	167.4	262960.1	7.9	124	ND (DL-1)	ND (DL-0.5)	13.3
12	BS-101 (Burner)	24-03-2025	33.9	48.6	31157.0	32.6	90.9	ND (DL-1)	ND (DL-0.5)	16
13	FW-01 (FOCU)	24-03-2025	28.2	80.6	53821.2	12	56.9	10	ND (DL-0.5)	12.4
14	FW-03COB (FOCU)	24-03-2025	34.1	76.4	187420.9	118	106	12	ND (DL-0.5)	14.2
15	PFCCU-Heater (FW 002)	25-03-2025	37.3	263.1	80199.4	15.9	12.7	19	ND (DL-0.5)	4.6
16	PFCCU-Regen (FW 001)	25-03-2025	36.8	215.1	285805.9	20.8	24.9	1	ND (DL-0.5)	5.8
17	D-HOT (Diesel Hydro Treater) (GH 101/102)	25-03-2025	28.6	178.6	185389.7	5	30	36	ND (DL-0.5)	6.9
18	VFO-HOT (Vacuum Gas Oil Hydro Treater) (VH 101-201)	25-03-2025	35.1	166.4	135883.8	6.1	27	1	ND (DL-0.5)	8.6

(CHECKED BY)
(SANDEEP SAINI)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-129-2241021

☎ +91-9011591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

Stack Emission Monitoring Report for the Month of March 2025

Test Report No. 202503210110-134
Issue Date: 03/04/2025

Issued To
M/s Bharat Petroleum Corporation Limited
Kochi Refinery
Ambalamugal, Kochi, Pin-682 302

Ref. No.: PO. No. 4601005329 dated 07.03.2024
Sampling done by: Nitya Laboratories

19	CDU-III (ICH 101/102)	25-03-2025	31.2	80.0	860582.0	32	40	1	ND (DL-0.5)	6.5
20	SRU III Train A (IS LZ 102)	26-03-2025	31.2	273.1	133660.6	1247	14	16	ND (DL-0.5)	7.5
21	SRU III Train B (IS LZ 202)	26-03-2025	32.3	301.6	117961.8	1288	23	159	ND (DL-0.5)	7.4
22	DS-X-002 (SRU - 01)	26-03-2025	33.8	603.6	48090.5	16258	56	1698	ND (DL-0.5)	5.2
23	MSBP_HOH (Hot Oil Heater)	26-03-2025	34.6	194.6	349024.8	5.8	80	1	ND (DL-0.5)	7.6
24	MRH 01/02/03/04 (MSBP CCR)	26-03-2025	35.6	197.3	152233.7	3.8	16.8	ND (DL-1)	ND (DL-0.5)	7.4

(CHECKED BY)
(SANDEEP SAINI)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory is not responsible for content of report. The results reported in this report related only to the sample tested. This report must not be reproduced except in full, without written approval of the laboratory. This report is intended only for your information and not for legal purposes or for advertisement. The report shall not be reproduced in whole or in part without the written approval of the laboratory. Sample and its analysis shall be done within 30 days from the date of issue of this certificate unless otherwise specified. Any delay in receipt of sample at laboratory shall be at client's risk. For more information, please visit our website at www.nityalab.com and call at +91-191-2465597, +91-9872816592.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Treated Effluent Water Analysis Report for the Month of March 2025

ULR No	TC148142500001824F	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	03/04/2025		Kochi Refinery
			Ambalemugal, Kochi, Pin-682 302
Ref No : PO No. 4601005329 dated 07.03.2024			
Sampling done by Nitya Laboratories			

Sl. No:	Parameter	Unit	Value reported	Limits as per notification- GSR 186 (E) dt. 18.03.2008	Test Method
1	pH	**	7.58	6 - 8.5	IS 3025 (P-11)
2	Oil & Grease	mg/l	2.0	5.0	IS 3025 (P-39)
3	BOD (3days) 27°C	mg/l	12	15.0	IS 3025 (P-44)
4	Total Suspended Solids (TSS)	mg/l	14	20.0	IS 3025 (P-17)
5	Phenols	mg/l	ND	0.4	IS 3025 (P-43)
6	Sulfides	mg/l	0.20	0.5	IS 3025 (P-29)
7	Chemical Oxygen Demand (COD)	mg/l	60	125.0	IS 3025 (P-58)
8	Cyanide (CN)	mg/l	ND	0.2	IS 3025 (P-27)
9	Ammonia as Nitrogen	mg/l	0.20	15.0	IS 3025 (P-34)
10	Total Kjeldahl Nitrogen (TKN)	mg/l	0.84	40.0	IS 3025 (P-34)
11	Phosphate (P)	mg/l	ND	3.0	IS 3025 (P-31)
12	Chromium (Cr) (Hexavalent)	mg/l	ND	0.1	APHA 23 rd Ed
13	Chromium (Cr) (Total)	mg/l	ND	2.0	APHA 23 rd Ed
14	Lead (Pb)	mg/l	ND	0.1	APHA 23 rd Ed
15	Mercury (Hg)	mg/l	ND	0.0	APHA 23 rd Ed
16	Zinc (Zn)	mg/l	ND	5.0	APHA 23 rd Ed
17	Nickel (Ni)	mg/l	ND	1.0	APHA 23 rd Ed
18	Copper (Cu)	mg/l	ND	1.0	APHA 23 rd Ed
19	Vanadium (V)	mg/l	ND	0.2	IS 3025 (P-56)
20	Benzene	mg/l	ND	100.0	USEPA-8270C
21	Benzo (a) - Pyrene	mg/l	ND	200.0	USEPA-8270C

MSD (not identified) (N. Janssens) (not)

End of the Report



MPF The advertiser accepts the responsibility for content of report. The results contained in the test about stated only to the customer named. This report shall not be reproduced except in full without written approval of the laboratory. The report is intended only for your personal and not to be used or copied in advertisement. The report shall not be reproduced except in full without the written approval of the representative laboratory and to be approved only. It may then be the form of sales or other publicity unless otherwise stated. Any comments about the report should be communicated in writing within 1 week of date of the report. The liability of injury, damages is limited to actual amount only. If you have any comments/suggestions regarding the service, please send an email at info@alltest.com and call at 01-71-7030007, 01-71-7030000.

CORPORATE OFFICE & CENTRAL LABORATORIES :-

📍 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

圖 -91.179-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Ambient Air Quality Monitoring Report for the Month of March 2025 of AAQM – 01

ULR No.	TC148142500001628F-1629F,1727F-1728F 1799F-1800F	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date:	03-04-2025	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302
Ref. No.: PO. No. 4601005329 Dated 07.03.2024			
Sampling done by: Nitya Laboratories			
24 hrs. Ambient Air Sampling Particulars			
Sampling Method:	IS 5182 (P-14)		
Sampling Location:	3.5m above the ground level		
Sampling Protocol:	CPCB Guidelines		

Sampling Locations	PDY	CDU-III	UB-12,13	HRS-3,4	PFCCU Cabin Area	DCU
Dates of monitoring	21-03-2025	21-03-2025	22-03-2025	22-03-2025	24-03-2025	24-03-2025
Time of monitoring	11:20 AM	11:40 AM	10:50 AM	11:40 AM	11:10 AM	10:25 AM
Sample ID	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6
Sample receipt Ref. No. with Date	NL/101/21-03-25	NL/108/30-12-24	NL/105/22-03-25	NL/106/22-03-25	NL/103/24-03-25	NL/104/24-03-25
Sample receiving Date	27-03-2025	27-03-2025	27-03-2025	27-03-2025	27-03-2025	27-03-2025
Analysis starting Date	27-03-2025	27-03-2025	27-03-2025	27-03-2025	27-03-2025	27-03-2025
Analysis completion Date	02-04-2025	02-04-2025	02-04-2025	02-04-2025	02-04-2025	02-04-2025
Ambient condition	Normal	Normal	Normal	Normal	Normal	Normal
Amb. Temp.	26	26	24	24	23	23
Rel. Humidity %	69	69	74	74	71	71

Remarks:

NO-Paid Delivered, Dr.-Dependent Agent

***** End of the Report*****

(CHECKED BY)
(SANDEEP SAINI)



(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of reports. The results described in the test report should only be the sample tested. This report shall not be reproduced without the written approval of the laboratory. The report is intended only for your customer and not for third parties or for advertisement. This report shall not be reproduced except in full without the written approval of the organization. Samples not in duplicate after 48 days from the date of receipt of sample will not be returned unless otherwise specified. Any sample not in duplicate will be destroyed within 7 days of receipt of the report. Total liability of labor collection is limited to the amount of the fee. If you have any comments, feedback regarding the sample collection/analysis/test result, please send any comments to info@india.com or call at +91-173-2406077, +91-9810034953

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 11B, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-129-2241021

☎ +91-9013591021, +91-9013552273

■ labsnitya@gmail.com

© www.nityalab.com

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Ambient Air Quality Monitoring Report for the Month of March 2025 of AAQM - 01

ULR No.	TC14814250001815F-1816F	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date:	03-04-2025	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302
Ref. No./PO No. 4601005329 Dated 07.03.2024			
Sampling done by: Nitya Laboratories			
24 hrs. Ambient Air Sampling Particulars			
Sampling Method:	IS 5182 (P-14)		
Sampling Location:	3.5m above the ground level		
Sampling Protocol:	CPCB Guidelines		

Sampling Locations	VGO HDT	Pat-Coke dome area
Dates of monitoring	25-03-2025	25-03-2025
Time of monitoring	11:10 AM	12:15 PM
Sample ID	AAQ7	AAQ8
Sample receipt Ref. No. with Date	NL/107/30-12-24	NL/102/25-03-25
Sample receiving Date	27-03-2025	27-03-2025
Analysis starting Date	27-03-2025	27-03-2025
Analysis completion Date	02-04-2025	02-04-2025
Ambient condition	Normal	Normal
Amb. Temp.	27	25
Rel. Humidity %	71	72

Remarks:

MS-Word Document 25-00000001.docx

***** End of the Report *****

(CHECKED BY)
(BANDEEP SAINI)



(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

[illegible]

CORPORATE OFFICE & CENTRAL LABORATORIES :-

© PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

☎ +91-179-2241021

☎ +91-9013591021, +91-9013552273

✉ labnitya@gmail.com

www.citystate.lk

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Ambient Air Quality Monitoring Report for the Month of March 2025 of AAQM - 01

ULR No	TC148142500001628F-1629F,1727F-1728F	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date	03-04-2025	Kochi Refinery	Ambalamugal, Kochi, Pin-682 302

Sl. No.	Parameters	Sampling Locations with Results					Units	Limit	Test method	LOQ
		PDY	CDU-III	UB-12,13	HRSG-3,4	PFCCU Cabin Area				
1	Sulphur dioxide	16.60	21.10	18.20	19.20	20.40	µg/m ³	80	IS:5182(P-2)	DL-6
2	Nitrogen dioxide	21.20	24.90	24.20	22.30	27.60	µg/m ³	80	IS:5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	43.20	55.10	42.10	50.80	61.10	µg/m ³	100	IS:5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	28.50	35.20	27.80	30.60	35.50	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O ₃)	16.20	18.40	16.50	16.20	20.50	µg/m ³	100	IS:5182(P-9)	DL-10
6	Ammonia (NH ₃)	26.20	30.60	26.10	24.50	30.40	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.52	0.46	0.52	0.52	0.52	mg/m ³	2	IS:5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NL/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NL/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NL/SOP/AAQ-12	DL-0.5
11	Benzene (C ₆ H ₆)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS:5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS:5182 (P-12)	DL-0.5

Remark: ND-Not Detected, DL-Detection Limit

..... End of the Report.....

(CHECKED BY)
(SANDEEP SAINI)



(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: This document contains the responsibility for content of report. The results mentioned in this report shall not be reproduced except in full without written approval of the laboratory. This report is intended only for the customer and not for legal purposes in the absence of the report. The report shall not be reproduced except in full without the written approval of the organization. Customer shall be notified after 10 days from the date of issue of the certificate unless otherwise specified. Any complaint or dissatisfaction should be notified within 7 days of receipt of the report. Free supply of test certificates or printed results should only be if the test is not completed. Feedback regarding this report collection (printing/test report) should be sent to info@nityalab.com and call at +91-191-2465597, +91-9013552273

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

Ambient Air Quality Monitoring Report for the Month of March 2025 of AAQM - 01

ULR No.	TC148142500001800F, 1815F-1816F	Issued To	M/s Bharat Petroleum Corporation Limited
Issue Date:	03-04-2025	Kochi Refinery	
		Ambalamugal, Kochi, Pin-682 302	

Sl. No.	Parameters	Sampling Locations with Results			Unit	Limit	Test Method	LOQ
		DCU	VGO HDT	Pet-Coke dome area				
1	Sulphur dioxide	19.30	20.60	17.10	µg/m ³	80	IS 5182(P-2)	DL-6
2	Nitrogen dioxide	25.10	23.40	24.10	µg/m ³	80	IS 5182(P-6)	DL-5
3	Respirable Particulate Matter (Size less than 10µm) or PM10	58.10	26.40	48.20	µg/m ³	100	IS 5182(P-23)	DL-10
4	Respirable Particulate Matter (Size less than 2.5µm) or PM 2.5	38.10	34.60	32.10	µg/m ³	60	40CFR Appendix L Part 53 CPCB Guidelines	DL-10
5	Ozone(O ₃)	24.00	19.20	18.90	µg/m ³	100	IS 5182(P-9)	DL-10
6	Ammonia (NH ₃)	28.10	31.20	26.00	µg/m ³	400	Method of Air Sampling & Analysis CPCB Guidelines	DL-5
7	Carbon Monoxide (CO)	0.46	0.74	0.46	mg/m ³	2	IS:5182 (P-10)	DL-0.1
8	Lead (Pb)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	1	NI/SOP/AAQ-11	DL-0.5
9	Nickel (Ni)	ND (DL-1.0)	ND (DL-1.0)	ND (DL-1.0)	ng/m ³	20	NI/SOP/AAQ-13	DL-1.0
10	Arsenic (As)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	6	NI/SOP/AAQ-12	DL-0.5
11	Benzene (C ₆ H ₆)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	µg/m ³	5	IS 5182 (P-11)	DL-0.5
12	Benzo (a) Pyrene (Particulate phase)	ND (DL-0.5)	ND (DL-0.5)	ND (DL-0.5)	ng/m ³	1	IS 5182 (P-12)	DL-0.5

Remarks: ND-Not Detected, DL-Detection Limit

End of the Report.....

(CHECKED BY)
(SANDEEP SAINI)



(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

NOTE: The laboratory accepts the responsibility for content of report. The results obtained in this test report related only to the sample tested. Test report shall not be reproduced except in full, without written approval of the laboratory. This report is intended only for your personal use and not for resale purposes or for advertisement. The report shall not be reproduced except in full without the written approval of this organization. Samples will be destroyed after 30 days from the date of issue of test certificate unless otherwise specified. Any complaints about this report should be communicated in writing within 7 days of date of this report. Your liability of Nitya Laboratories is limited to the amount paid only. If you have any complaint/feedback regarding this sample collection/testing/test report, please send us email at info@nityalab.com and call at +91-191-2465597, +91-9879934893

CORPORATE OFFICE & CENTRAL LABORATORIES :-

9 PLOT NO. 118, CHURCH ROAD, BEHIND KAUSIK VATIKA, BHAGAT SINGH COLONY, BALLABHGARH, FARIDABAD - 121004, HARYANA, INDIA

+91-129-2241021

+91-9013591021, +91-9013552273

labsnitya@gmail.com

www.nityalab.com

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

DRINKING WATER TEST REPORT

Date of Sample: 09.10.2024

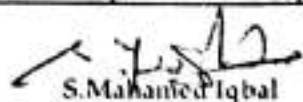
Source: Canteen

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable
1	Colour	Color units	IS 3025 (P:4)	2	5 (Max)
2	Odour	-	IS 3025 (P:5)	Agreeable	Agreeable
3	Taste	-	IS 3025 (P:7 & 8)	Agreeable	Agreeable
4	Turbidity	NTU	IS 3025 (P:10)	BDL (MDL- 1.0)	1 (Max)
5	pH	-	IS 3025 (P:11)	7.6	6.5 – 8.5
6	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (P:21)	26	200 (Max)
7	Total Dissolved Solids	mg/L	IS 3025 (P:16)	20	500 (Max)
8	Chloride (as Cl)	mg/L	IS 3025 (P:32)	21	250 (Max)
9	Free Residual Chlorine	mg/L	IS 3025 (P:26)	0.25	0.2 (Min)
10	Nitrate (as NO ₃)	mg/L	IS 3025 (P:34)	BDL (MDL- 0.1)	45 (Max)
11	Sulphate (as SO ₄)	mg/L	IS 3025 (P:24)	22	200 (Max)
12	Phenolic compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (P:43)	BDL(MDL-0.001)	0.001(Max)
13	Ammonia (as Total NH ₃ -N)	mg/L	IS 3025 (P:34)	BDL (MDL-0.5)	0.5 (Max)
14	Sulphide (as H ₂ S)	mg/L	IS 3025 (P:29)	BDL (MDL-0.05)	0.05 (Max)
15	Cyanide (as CN)	mg/L	IS 3025 (P:27)	BDL (MDL-0.01)	0.05 (Max)
16	Silver (as Ag)	mg/L	IS13428 Annexe J	0.005	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	0.01	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	0.005	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	0.05	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	5	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	0.0001	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	0.001	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	0.001	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.06	(0.3max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	0.6	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	0.005	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	0.001	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	0.001	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	0.001	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.04	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.0001)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	0.001	0.01 (Max)
34	Antimony (as Sb)	mg/L	APHA-3113B	0.001	

BDL: Below Detection Limit

MDL: Minimum Detection Limit


S. Mahanfed Iqbal
Sr. Manager (Quality Control)

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

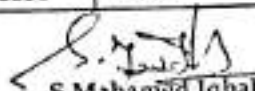
DRINKING WATER TEST REPORT

Date of Sample: 27.1.2025 Source: Canteen

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable
1	Colour	Color units	IS 3025 (P:4)	3	5 (Max)
2	Odour	-	IS 3025 (P:5)	Agreeable	Agreeable
3	Taste	-	IS 3025 (P:7 & 8)	Agreeable	Agreeable
4	Turbidity	NTU	IS 3025 (P:10)	BDL (MDL- 1.0)	1 (Max)
5	pH	-	IS 3025 (P:11)	7.4	6.5 - 8.5
6	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (P:21)	29	200 (Max)
7	Total Dissolved Solids	mg/L	IS 3025 (P:16)	28	500 (Max)
8	Chloride (as Cl)	mg/L	IS 3025 (P:32)	24	250 (Max)
9	Free Residual Chlorine	mg/L	IS 3025 (P:26)	0.28	0.2 (Min)
10	Nitrate (as NO ₃)	mg/L	IS 3025 (P:34)	BDL (MDL- 0.1)	45 (Max)
11	Sulphate (as SO ₄)	mg/L	IS 3025 (P:24)	20	200 (Max)
12	Phenolic compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (P:43)	BDL (MDL-0.001)	0.001 (Max)
13	Ammonia (as Total NH ₃ -N)	mg/L	IS 3025 (P:34)	BDL (MDL-0.5)	0.5 (Max)
14	Sulphide (as H ₂ S)	mg/L	IS 3025 (P:29)	BDL (MDL-0.05)	0.05 (Max)
15	Cyanide (as CN)	mg/L	IS 3025 (P:27)	BDL (MDL-0.01)	0.05 (Max)
16	Silver (as Ag)	mg/L	IS 13428 Annexe J	0.005	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	0.01	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	0.005	0.5 (Max)
19	Barium (as Ba)	mg/L	IS 13428 Annexe F	0.05	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	5	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	0.0001	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	0.001	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	0.001	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.06	0.3 (Max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	0.6	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	0.005	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	0.001	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	0.001	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	0.001	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.04	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL (MDL-0.0001)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL (MDL-0.0001)	0.001 (Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	0.001	0.01 (Max)
34	Antimony (as Sb)	mg/L	APHA:31138	0.001	

BDL: Below Detection Limit
MDL: Minimum Detection Limit


S. Mahamed Iqbal
Sr. Manager (Quality Control)



QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

DRINKING WATER TEST REPORT

Date of Sample: 18.2.2025 Source: Canteen

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable
1	Colour	Color units	IS 3025 (P:4)	3	5 (Max)
2	Odour	-	IS 3025 (P:5)	Agreeable	Agreeable
3	Taste	-	IS 3025 (P:7 & 8)	Agreeable	Agreeable
4	Turbidity	NTU	IS 3025 (P:10)	BDL (MDL- 1.0)	1 (Max)
5	pH	-	IS 3025 (P:11)	7.6	6.5 – 8.5
6	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (P:21)	32	200 (Max)
7	Total Dissolved Solids	mg/L	IS 3025 (P:16)	26	500 (Max)
8	Chloride (as Cl)	mg/L	IS 3025 (P:32)	22	250 (Max)
9	Free Residual Chlorine	mg/L	IS 3025 (P:26)	0.23	0.2 (Min)
10	Nitrate (as NO ₃)	mg/L	IS 3025 (P:34)	BDL (MDL- 0.1)	45 (Max)
11	Sulphate (as SO ₄)	mg/L	IS 3025 (P:24)	17	200 (Max)
	Phenolic compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (P:43)	BDL(MDL-0.001)	0.001(Max)
13	Ammonia (as Total NH ₃ -N)	mg/L	IS 3025 (P:34)	BDL (MDL-0.5)	0.5 (Max)
14	Sulphide (as H ₂ S)	mg/L	IS 3025 (P:29)	BDL (MDL-0.05)	0.05 (Max)
15	Cyanide (as CN)	mg/L	IS 3025 (P:27)	BDL (MDL-0.01)	0.05 (Max)
16	Silver (as Ag)	mg/L	IS13428 Annexe J	0.005	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	0.01	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	0.005	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	0.05	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	5	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	0.0001	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	0.001	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	0.001	0.05 (Max)
	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.06	(0.3max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	0.5	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	0.005	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	0.001	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	0.001	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	0.001	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.04	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.0001)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	0.001	0.01 (Max)
34	Antimony (as Sb)	mg/L	APHA:3113B	0.001	

BDL: Below Detection Limit

MDL: Minimum Detection Limit

S.Mahamed Iqbal
Sr.Manager (Quality Control)

QUALITY CONTROL DEPARTMENT
BPCL-KOCHI REFINERY, AMBALAMUGAL

DRINKING WATER TEST REPORT

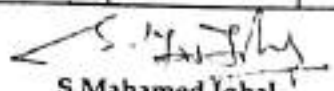
Date of Sample: 19.3.2025 Source: Canteen

KR.TECH.QC.26.DRINK.WATR

Sl No:	Test Parameters	Unit	Method	Result	Acceptable
1	Colour	Color units	IS 3025 (P:4)	4	5 (Max)
2	Odour	-	IS 3025 (P:5)	Agreeable	Agreeable
3	Taste	-	IS 3025 (P:7 & 8)	Agreeable	Agreeable
4	Turbidity	NTU	IS 3025 (P:10)	BDL (MDL- 1.0)	1 (Max)
5	pH	-	IS 3025 (P:11)	7.7	6.5 – 8.5
6	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (P:21)	30	200 (Max)
7	Total Dissolved Solids	mg/L	IS 3025 (P:16)	29	500 (Max)
8	Chloride (as Cl)	mg/L	IS 3025 (P:32)	27	250 (Max)
9	Free Residual Chlorine	mg/L	IS 3025 (P:26)	0.25	0.2 (Min)
10	Nitrate (as NO ₃)	mg/L	IS 3025 (P:34)	BDL (MDL- 0.1)	45 (Max)
11	Sulphate (as SO ₄)	mg/L	IS 3025 (P:24)	19	200 (Max)
12	Phenolic compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (P:43)	BDL(MDL-0.001)	0.001(Max)
13	Ammonia (as Total NH ₃ -N)	mg/L	IS 3025 (P:34)	BDL (MDL-0.5)	0.5 (Max)
14	Sulphide (as H ₂ S)	mg/L	IS 3025 (P:29)	BDL (MDL-0.05)	0.05 (Max)
15	Cyanide (as CN)	mg/L	IS 3025 (P:27)	BDL (MDL-0.01)	0.05 (Max)
16	Silver (as Ag)	mg/L	IS13428 Annexe J	0.005	0.1 (Max)
17	Aluminium (as Al)	mg/L	IS 3025 (P:55)	0.01	0.03 (Max)
18	Boron (as B)	mg/L	IS 3025 (P:57)	0.005	0.5 (Max)
19	Barium (as Ba)	mg/L	IS13428 Annexe F	0.05	0.7 (Max)
20	Calcium (as Ca)	mg/L	IS 3025 (P:40)	5	75 (Max)
21	Cadmium (as Cd)	mg/L	IS 3025 (P:41)	0.0001	0.003 (Max)
22	Chromium (as Cr)	mg/L	IS 3025 (P:52)	0.001	0.05 (Max)
23	Copper (as Cu)	mg/L	IS 3025 (P:42)	0.001	0.05 (Max)
24	Iron (as Fe)	mg/L	IS 3025 (P:53)	0.06	(0.3max)
25	Magnesium (as Mg)	mg/L	IS 3025 (P:46)	0.5	30 (Max)
26	Manganese (as Mn)	mg/L	IS 3025 (P:59)	0.005	0.1 (Max)
27	Nickel (as Ni)	mg/L	IS 3025 (P:54)	0.001	0.02 (Max)
28	Molybdenum (as Mo)	mg/L	IS 3025 (P:02)	0.001	0.07 (Max)
29	Lead (as Pb)	mg/L	IS 3025 (P:47)	0.001	0.01 (Max)
30	Zinc (as Zn)	mg/L	IS 3025 (P:49)	0.04	5 (Max)
31	Arsenic (as As)	mg/L	IS 3025 (P:37)	BDL(MDL0.0001)	0.01 (Max)
32	Mercury (as Hg)	mg/L	IS 3025 (P:48)	BDL(MDL0.0001)	0.001(Max)
33	Selenium (as Se)	mg/L	IS 3025 (P:56)	0.001	0.01 (Max)
34	Antimony (as Sb)	mg/L	APHA-3113B	0.001	

BDL: Below Detection Limit

MDL: Minimum Detection Limit


S.Mahamed Iqbal
Sr.Manager (Quality Control)

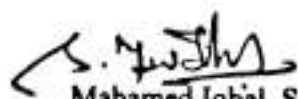
	QUALITY CONTROL DEPARTMENT
	BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY

QC/51/18

Date 08/11/24.

Please find below the Analysis report of Bore well water samples collected in the month of Oct. 2024.

Date	Bore well Nos.	Oil %	Remarks				
19.10.2024	BW 46,25,54,48,24,26,27,44,23,28,45,,30,49 <table border="1"><tr><td>Bore well No.</td><td>COD in mg/l</td></tr><tr><td>24</td><td>13</td></tr></table>	Bore well No.	COD in mg/l	24	13	NIL	OK
Bore well No.	COD in mg/l						
24	13						
25.10.2024	BW 70,30,4,28,29,45,34,4,44,3,48,48,2 <table border="1"><tr><td>Bore Well No.</td><td>COD in mg/l</td></tr><tr><td>45</td><td>13</td></tr></table>	Bore Well No.	COD in mg/l	45	13	NIL	OK
Bore Well No.	COD in mg/l						
45	13						


 Mahamed Iqbal. S
 Senior Manager (QC)

To: DGM (QC) (r) GM (OM&S) (r) GM I/C (I/C HSE)

Cc: CGM (Tech)

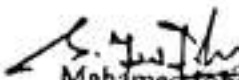
	QUALITY CONTROL DEPARTMENT
	BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY

QC/51/18

Date 09/12/24.

Please find below the Analysis report of Bore well water samples collected in the month of Nov. 2024.

Date	Bore well Nos.	Oil %	Remarks				
16.11.2024	BW 45,21,49,44,19,20,334,18,4,70,39,8,16,54,17,57 <table><tr><td>Bore well No.</td><td>COD in mg/l</td></tr><tr><td>19</td><td>14</td></tr></table>	Bore well No.	COD in mg/l	19	14	NIL	OK
Bore well No.	COD in mg/l						
19	14						
28.11.2024	BW 33,70,39,8,26,48,54,50,48,45,25,24 <table><tr><td>Bore Well No.</td><td>COD in mg/l</td></tr><tr><td>26</td><td>13</td></tr></table>	Bore Well No.	COD in mg/l	26	13	NIL	OK
Bore Well No.	COD in mg/l						
26	13						


 Mahamed Iqbal S
 Senior Manager (QC)

To: DGM (QC) (r) GM (OM&S) (r) GM I/C (I/C HSE)

Cc: CGM (Tech)

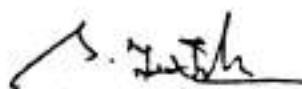
	QUALITY CONTROL DEPARTMENT
	BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY

QC/51/18

Date 12/2/25.

Please find below the Analysis report of Bore well water samples collected in the month of JAN. 2025.

Date	Bore well Nos.	Oil %	Remarks				
15.1.2025	BW16,39,57,33,48,17,54,18,8,13,19,70,44,45,4 <table><tr><td>Bore well No.</td><td>COD in mg/l</td></tr><tr><td>18</td><td>14</td></tr></table>	Bore well No.	COD in mg/l	18	14	NIL	OK
Bore well No.	COD in mg/l						
18	14						
23.1.2025	BW 7,12,39,15,54,14,2,34,8,70,4,11,3,43,49,7,13 <table><tr><td>Bore Well No.</td><td>COD in mg/l</td></tr><tr><td>39</td><td>12</td></tr></table>	Bore Well No.	COD in mg/l	39	12	NIL	OK
Bore Well No.	COD in mg/l						
39	12						


 Mahamed Iqbal. S
 Senior Manager (QC)

To: DGM (QC) (r) GM (OM&S) (r) GM I/C (I/C HSE)

Cc: CGM (Tech)

	QUALITY CONTROL DEPARTMENT
	BHARAT PETROLEUM CORPORATION LIMITED - KOCHI REFINERY

QC/51/18

Date 10/4/25.

Please find below the Analysis report of Bore well water samples collected in the month of MARCH. 2025.

Date	Bore well Nos.	Oil %	Remarks				
7.3.2025	BW:43,49,7,70,11,15,8,33,54,14,12,39,13 <table><tr><td>Bore well No.</td><td>COD in mg/l</td></tr><tr><td>43</td><td>15</td></tr></table>	Bore well No.	COD in mg/l	43	15	NIL	OK
Bore well No.	COD in mg/l						
43	15						
14.3.2025	BW:18,16,54,39,33,46,17,8,50,7,48,70,45,4,2 <table><tr><td>Bore Well No.</td><td>COD in mg/l</td></tr><tr><td>46</td><td>14</td></tr></table>	Bore Well No.	COD in mg/l	46	14	NIL	OK
Bore Well No.	COD in mg/l						
46	14						


 Mahamed Iqbal. S
 Senior Manager (QC)

To: DGM (QC) (r) GM (OM&S) (r) GM I/C (I/C HSE)

Cc: CGM (Tech)

Health surveillance data for the period 01/10/2024 to 31/03/2025

Health Surveillance Data (01/10/2024 to 31/03/2025)		
1	No of persons undergone comprehensive health check up	Total: 628 Completed: 628
2	No of Audiometry Test Conducted (%)	Total: 388 Completed: 388 Percentage: 100 %
3	No of people undergone comprehensive blood testing	Total: 511 Completed: 511 Percentage: 100 %
4	No of employees undergone statutory eye check-up (%)	Total: 66 Completed: 66 Percentage: 100%
5	No of employees who have done statutory urine phenol test.	No. of samples tested : 122
6	Number of Contract Employees covered under Statutory Health check-up Plan.	Total: 626 Completed: 626 Percentage: 100%
7	Number of Health Talks Conducted(Cumulative)	18
8	Injury on Duty Employees	Total: 3 Minor: 1 First Aid: 2
9	Injury on Duty Contract Workers	Total: 18 Minor: 7 First Aid: 11
10	Diabetic Clinic	Not yet started
11	Cardiac Clinic	3