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पारादीप रिफाइनरी
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रिफाइनरीज प्रभाग
Refineries Division

Ref: PDR/HSE/HC/MOEFCC/2024-25/002

Date: 18-06-2025

To,
The Member Secretary,
State Pollution Control Board, Odisha
Paribesh Bhawan, A/118, Nilakantha Nagar,
Unit-VIII, Bhubaneswar, Odisha - 751012

Subject: Half Yearly Compliance Report of ECs issued to IOCL, Paradip Refinery

Dear Sir,

Please find enclosed the Half Yearly Compliance Report of the following ECs for period **Oct'24 – Mar'25**.

1. Compliance Status for Environment Clearance for Grass Root Refinery-cum Petrochemical Complex of 15 MMTPA at Paradip (Letter F.No.J-11011/70/2007-1A II (I) dated 06th Jul, 2007) is enclosed as **Annexure-A**.

2. Compliance Status for CRZ Clearance for laying of Storm Water Outfall Pipelines to sea for Paradip Refinery Project. (Letter F. No.11-86/2011-IA III dated 21st Feb'2012) is enclosed as **Annexure-B.**

3. Compliance Status for CRZ Clearance for laying of pipeline from Paradip Refinery to South Oil Jetty at Paradip Port, Odisha (Letter F. No. 11-33/2013-IA III, Government of India, Ministry of Environment & Forests (IA Division), Dated 19th Sep'2013) is enclosed as **Annexure-C**.

4. Compliance Status for CRZ Clearance for 'Pet Coke Evacuation Project' for Paradip Refinery in District Jagatsinghpur (Odisha) by Indian Oil Corporation Ltd – CRZ Clearance - reg. issued by Ministry of Environment and Forest (MoEF) (Letter no. F. No. 11-30/2015-IA.III dated 11th Feb'2016) enclosed as **Annexure-D.**

5. Compliance Status for EC and CRZ Clearance for "Installation Ethylene Recovery Unit, Mono Ethylene Glycol Unit and BS-VI facility by M/s Indian Oil Corporation Ltd (IOCL) at Paradip Refinery cum Petrochemical Complex, village Abhayachandrapur, Tehsil Kujang, District Jagatsinghpur (Odisha) – Environmental and CRZ Clearance - reg. issued by Ministry of Environment and Forest (MoEF) (Letter no. F. No. J-11011-344/2016-IA-II (I) dated 11th Oct' 2018) enclosed as **Annexure-E.**

6. Compliance Status for EC and CRZ Clearance for "Integrated Para-Xylene & Purified Terephthalic Acid (PTA) Project within existing Refinery complex by M/s. Indian Oil Corporation Limited, Paradip Refinery located at S.F. No-218, Abhayachandrapur Village, Jagatsinghpur District, Odisha State" reg. issued by Ministry of Environment and Forest (MoEF) (Letter no. F. No. J-11011/395/2012-IA-II (I) dated 9th Aug 2021) enclosed as **Annexure-F.**

Thanking you,

With regards

(S Vijay Kumar)
Deputy General Manager (H,S&E)
IOCL Paradip Refinery

Enclosures: As above

Copy to: **Deputy Director General of Forests,**
Ministry of Environment, Forest and Climate Change, Integrated Regional Office, A/3, Chandrasekhar,
Bhubaneswar – 751023, Odisha

ANNEXURES

Annexures	Description
Annexure-1	Compliance report of EC OM No.J-11011/26/1997-IA-II dated 24th December, 1997.
Annexure- A to F	Compliance report of CRZ & ECs issued to Paradip Refinery from 2007 onward
Annexure-2	Stack Emission Report
Annexure-3	NHMC & Benzene monitoring Report
Annexure-4	VOC monitoring report
Annexure-5	Ambient Air quality report
Annexure-6	Sulphur Balance
Annexure-7	LDAR Report
Annexure-8	Treated effluent water quality report
Annexure-9	Ground water quality report
Annexure-10	Occupational Health report
Annexure-11	Marine water quality report
Annexure-12	Noise survey report
Annexure-13	Soil analysis report
Annexure-14	Forest clearance

Annexure-1

Compliance report of EC OM No. J-11011/26/1997-IA-II dt. 24th Dec'1997

Annexure-1

Sub: Compliance Status for Environment Clearance of Grass Root Petroleum Refinery for processing 9.0 MMTPA crude including LPG dispatch facility and associated marine facilities, namely SPM, jetty and crude product pipeline at Abhayachandrapur, District Jagatsinghpur, Orissa of M/s Indian oil Corporation Ltd (Letter F.No.J-11011/26/97-1A II (I) dated 24th Dec, 1997) for Oct'24 to Mar'25

Note: The project was deferred as withdrawal of tax incentives from Govt. of Orissa and viability of the project affected. Later, the capacity is revised to 15 MMTPA for improving economic viability after agreement with Govt. of Orissa on tax incentives. Accordingly, DFR prepared with revised project details and EC obtained in 2007 (F.No. J-11011/70/2007-IA. II (I)).

S. NO.	CONDITION	STATUS
A.	**SPECIFIC CONDITIONS:**	
i.	The total land earmarked for refinery involves around 70 acres of forest land. Diversion of forest land and any construction work in forest area shall not be taken up till forestry clearance is obtained under Forest (Conservation) Act, 1980.	Complied. Forest clearance attached as **Annexure-14.**
ii.	The total SO_2 emission from the refinery shall not exceed 1000 kg/hr (max.). The gaseous emission from various process units including IGCC unit should conform to the standards prescribed under Environment (Protection) Rules, 86 or norms stipulated by the SPCB whichever is more stringent. At no time, the emission level should go beyond the stipulated standards. In the event of failure of pollution control system (s) adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.	Complied with. SO2 emission in kg/hr being calculated on monthly basis. Stack Report attached as **Annexure-2**. Sulphur Balance attached as **Annexure-6.**
iii.	Sulphur Recovery Units with more than 99% efficiency shall be provided.	Sulphur Recovery Units with overall efficiency of >99% has been commissioned.
iv.	A minimum of 7 ambient air quality monitoring stations (SO_2, NO_x and HC) should be set up in the refinery area in consultation with SPCB, based on occurrence of maximum ground level concentration and down wind direction of wind as well as in the direction of Betelvine plantations. The monitoring network must be decided based on modelling exercise to represent short term GLCs. In addition, a mobile van with adequate facilities to monitor ambient air quality outside the refinery premises should be provided.	7 nos. of Ambient Air Quality Monitoring (AAQM) stations were set up based on the modelling exercise conducted under the Comprehensive EIA Study Continuous monitoring in all the 7 monitoring stations already implemented. On-line data transmission to OSPCB/CPCB server is already done. A dedicated mobile ambient air quality monitoring van is in place for monitoring of ambient air quality. Ambient Air quality monitoring report attached as **Annexure-5**
v.	Data on ambient air quality and stack emissions as well as fugitive emissions of HC from product storage tank yard, crude oil tanks etc. must be regularly monitored and submitted to CPCB/SPCB regularly once in 3 months and to Ministry (Regional Office, Bhubaneswar) once in 6 months.	Being Complied. Ambient Air quality attached as **Annexure-5** Stack Report attached as **Annexure-2** Fugitive emission in tankage area is enclosed as **Annexure-4.**

S. NO.	CONDITION	STATUS
vi.	Liquid effluents generated from the refinery should be treated comprehensively to conform to the load-based standards and concentration limits prescribed under EPA rules.	State-of-the-art effluent treatment plant has been commissioned to treat industrial effluent as well as domestic sewage with maximum recycle facility. Balance treated effluent confirming to prescribed limits is being discharged to the sea through a pipeline of about 3 km from low tide line. Treated effluent quality report attached as **Annexure-8.**
vii.	In consultation with SPCB, adequate number of influent and effluent quality monitoring stations have to be planned. As recommended by NIO and approved by SPCB, the treated effluent shall be discharged at a distance of 3 km from the low tide line into the sea. The process effluent generated and discharged shall not exceed 8400 m3/day by incorporating maximum recycling and water conservation measures as per EMP. Regular monitoring of the effluent (Industrial/domestic and others) quality should be carried out and monitored data submitted quarterly to CPCB/SPCB and half yearly to Ministry (Regional Office, Bhubaneswar).	ETP Treated effluent after recycling is being discharged to the sea through a pipeline of about 3 km from low tide line. Treated effluent quality and flow are regularly monitored. On-line data transmission to OSPCB/CPCB server is already being done. Treated effluent quality report attached as **Annexure-8.** Treated Effluent Flow data attached as **Annexure-8.**
viii.	Guard ponds of sufficient holding capacity should be provided to contain the effluent during process disturbances and or ETP failure. The concerned units must be shut down in cases of effluent quality exceeding prescribed limits.	Complied. ETP Treated water is stored in separate ponds and in case of any upset, the same can be reprocessed again in ETP till the quality complies with prescribed limits.
ix.	Detailed Risk Analysis of the Refinery and associated facilities must be done once the engg. design and layout is frozen. Based on this, on-site and off-site emergency preparedness plan must be prepared. Approval from the nodal agency must be obtained before commissioning the project.	Complied. Paradip Refinery fully implemented all the conditions stipulated in EIA and Risk Assessment reports. Complied. On-site and off-site preparedness plans of Paradip Refinery is in place. Emergency Response and Disaster management Plan (ERDMP) has been approved by MoP&G On-site emergency plan is approved by Director of Factories and Boiler. Off-site plan is incorporated in District Emergency Plan.
x.	The project involves displacement of around 584 people. The R&R of project affected population shall be carried out as per the State Govt. guidelines prepared in consultation with the affected people. It is the responsibility of the State Govt. and Project Authority to see that adequate compensation and relief are provided to the affected population in a time bound fashion as per	Complied.

S. NO.	CONDITION	STATUS
	agreed norms. IOC also must consider adopting certain villages in the area and contribute to peripheral developments. A progress report on the R&R must be submitted to Ministry (Regional office), Bhubaneswar every 6 months.	
xi.	The dredging of Jatadhar Mohan River mouth for meeting the requirement of fill material (for raising the level of project site) as recommended by NIO and State Govt. must be conducted with no disturbance to the sand bars ad it must be ensured that the dredging is done within the LTLs from either side of river bank. For this IOC must firm up the scheme of dredging in consultation with NIO. Also, NIO must monitor the river/creek ecology including quality of water on a continuous/regular basis.	Complied.
xii.	IOC and State Govt. must strictly ensure that the guidelines and regulations contained in the approved CZMP of Orissa are adhered to w.r.t. Santra Creek, Jatadhar Mohan River, sea front and other surface water streams, if any, while taking up project related activities including Refinery, LPG storage, marine facilities laying of crude/product pipelines etc. All the conditions stipulated by the Odisha Coastal Zone Management Authority (OCZMA) shall be complied with.	Complied.
xiii.	A drainage pattern study of the region has to be carried out in view of large scale land-filling involved. As informed by IOC, the study has already been initiated by Water Resources Department, Government of Orissa. The study report must be submitted to the Ministry for its review. IOC must implement the action plans and recommendations in order to mitigate adverse impacts on the drainage aspects of the region.	Complied.
xiv.	The laying of submarine pipelines to the SPM should avoid the season when Ridley turtles frequent the coast.	Complied. Point was taken care. No construction work was done during the breeding season of olive Ridely turtles.
xv.	An oil spill contingency plan must be drawn up by IOC in consultation with Coast Guard to combat any oil spills around SPM, before commencement of operations. A copy of the plan must be submitted to the Ministry.	Complied. Oil spill contingency plan for SPM facility is in place.
xvi.	The marine facilities including SPM, jetty etc. must be provided with full-fledged firefighting set up etc. as prescribed by the competent authority dealing with such port establishments.	Complied.

S. NO.	CONDITION	STATUS
B.	**GENERAL CONDITIONS:**	
i.	The Ministry reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the Ministry.	Noted
ii.	The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991, the Coastal zone regulation Notification of February 1991 and amendments thereof.	Noted
C.	**ANNEXURE-I Conditions**	
1.	The project authorities must strictly adhere to the stipulations made by the State Government and the State Pollution Control Board.	Noted for compliance.
2.	No expansion or modification of the project can be undertaken without prior approval of the Ministry.	Noted for compliance.
3.	In case of deviations or alterations in the project proposed from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any	Noted for Compliance.
4.	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended on 3rd October 1994. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained.	Complied. All required licenses obtained from Competent Authorities.
5.	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 1989. Authorization from the State Pollution Control Board must be obtained for collections/ treatment/ storage/ disposal of hazardous wastes.	Complied. HW authorization obtained from OSPCB vide Ref no. IND-IV-HW-930/4014 dated 21-03-2024 with a validity till 31-03-2025. Further before expiry of HWA has been obtained on 27.03.2025 with a validity up to 31.03.2026
6.	Occupational Health Surveillance programme should be undertaken as regular exercise for all employees, specifically for those engaged in handling hazardous substances.	Complied with. OHC Report attached as **Annexure-10.**
7.	The green belt of adequate width and density should be developed using native plant species, within and around plant premises in consultation with State Forest	Complied with Greenbelt has been developed in an area of 580 acres with the help of Orissa Forest Development Corporation Ltd. (OFDCL).

S. NO.	CONDITION	STATUS
	Department. A norm of 2000-2500 plants per ha. may be followed. As indicated in the EMPs supplementary data, a minimum of 580 acres shall be brought under green belt.	5,95,000 trees have been planted around the refinery area and approx. Approx. 1,20,000 trees have been planted in the township. Every year, Paradip Refinery is doing plantation in and around Refinery. Till date approximately 9,51,280 trees have been planted.
8.	A separate environmental management cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	Complied. Dedicated Environment Management Cell headed by Chief General Manager-HSE exists in the Refinery to take care of all the environmental issues along with a dedicated Environmental monitoring laboratory to take care of all the environmental monitoring functions.
9.	Adequate financial provision should be made for time bound implementation of environment management plan and other measures. The funds earmarked for the environmental management and safeguard measures should not be diverted for other purposes and details giving year wise and itemise expenditure must be reported to the Ministry.	Being complied.
10.	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional Office at Bhubaneswar / State Pollution Control Board / Central pollution Control Board. A six-monthly compliance status report should be submitted to monitoring agencies.	Being complied.

1. **Annexure-A**: Compliance Status for Environment Clearance for Grass Root Refinery-cum Petrochemical Complex of 15 MMTPA at Paradip (Letter F.No.J-11011/70/2007-1A II (I) dated 06thJul, 2007).

2. **Annexure-B:** Compliance Status for CRZ Clearance for laying of Storm Water Outfall Pipelines to sea for Paradip Refinery Project. (Letter F. No.11-86/2011-IA III dated 21st Feb'2012).

3. **Annexure-C:** Compliance Status for CRZ Clearance for laying of pipeline from Paradip Refinery to South Oil Jetty at Paradip Port, Odisha (Letter F. No. 11-33/2013-IA III, Government of India, Ministry of Environment & Forests (IA Division), Dated 19th Sep'2013) is enclosed as.

4. **Annexure-D:** Compliance Status for CRZ Clearance for 'Pet Coke Evacuation Project' for Paradip Refinery in District Jagatsinghpur (Odisha) by Indian Oil Corporation Ltd – CRZ Clearance - reg. issued by Ministry of Environment and Forest (MoEF) (Letter no. F. No. 11-30/2015-IA.III dated 11th Feb'2016).

5. **Annexure-E:** Compliance Status for EC and CRZ Clearance for "Installation Ethylene Recovery Unit, Mono Ethylene Glycol Unit and BS-VI facility by M/s Indian Oil Corporation Ltd (IOCL) at Paradip Refinery cum Petrochemical Complex, village Abhayachandrapur, Tehsil Kujang, District Jagatsinghpur (Odisha) – Environmental and CRZ Clearance - reg. issued by Ministry of Environment and Forest (MoEF) (Letter no. F. No. J-11011-344/2016-IA-II (I) dated 11th Oct' 2018).

6. **Annexure-F:** Compliance Status for EC and CRZ Clearance for "Integrated Para-Xylene & Purified Terephthalic Acid (PTA) Project within existing Refinery complex by M/s. Indian Oil Corporation Limited, Paradip Refinery located at S.F. No-218, Abhayachandrapur Village, Jagatsinghpur District, Odisha State" reg. issued by Ministry of Environment and Forest (MoEF) (Letter no. F. No. J-11011/395/2012-IA-II (I) dated 9th Aug 2021).

IOCL, Paradip Refinery cum Petrochemicals Complex

Subject: EC CRZ - Compliance Status Report

Annexure-A

Name of Project	:	Grass Root Refinery-cum-Petrochemical Complex of 15 MMTPA at Paradip, Odisha
Clearance Letter(s) No. & Date	:	F.No.J-11011/70/2007-1A II (I) dated 06th July, 2007
Period of Compliance Report	:	Oct'24 to Mar'25

S. No.	CONDITION	STATUS	REMARKS
A.	**SPECIFIC CONDITIONS:**		
i.	The company shall ensure strict implementation/ compliance to the stipulations made by MOEF vide OM No. J-11011/26/1997-IA-II dated 24th December 1997.	Complied	All stipulations are complied. Compliance report attached as **Annexure-1**
ii.	The gaseous emissions (SO_2, NO_x, CO, NMHC & Benzene) from the various process units shall conform to the standards prescribed under the Environment (Protection) Rules, 1986 or norms stipulated by the SPCB whichever is more stringent. At no time, the emission level shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.	Complied	Stack emission being monitored for adherence to the MoEF notification dated 18th March'2008. Stack Report attached as **Annexure-2** NHMC and Benzene monitoring Report attached as **Annexure-3**

S. No.	CONDITION	STATUS	REMARKS
iii.	Ambient air monitoring stations, [SPM, SO_2, NO_x and NMHC, Benzene] shall be set up in the refinery complex in consultation with SPCB, 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. Continuous on-line stack monitoring equipment shall be installed for measurement of SO_2 and NO_x. Data on VOC shall be monitored and submitted to the SPCB/ Ministry.	Complied	7 nos. of Ambient Air Quality Monitoring (AAQM) stations were set up based on the modelling exercise conducted under the Comprehensive EIA Study Continuous monitoring in all the 7 monitoring stations already implemented. On-line data transmission to OSPCB/CPCB server is already done. Continuous monitoring in all stacks already implemented. On-line data transmission to OSPCB/CPCB server is already done. VOC monitoring being done at various locations of the Refinery. VOC Reports attached as **Annexure-4.** Ambient Air quality attached as **Annexure-5.** Stack report attached as **Annexure-2.**
iv.	The total SO_2 emission from the refinery complex shall not exceed 1000 kg/hr after fully stabilizing of the expansion and modernization of the refinery complex and upgrading the existing facilities.SO_2 emission report may be made on daily basis for all the stacks (fuel burning and process emissions through the computerized mechanism). Further, regular monitoring of stacks every fortnight must also be carried out to cross check the data obtained from computerized monitoring by engaging a reputed organization. In addition, a monthly sulphur balance statement indicating type of fluid, its S – content, product S - content, SO2 emission etc. may be made. Daily, fortnightly and monthly reports generated as above shall be sent to the SPCB and MOEF.	Complied	SO_2 emission in kg/hr being calculated monthly basis. Stack Report attached as **Annexure-2**. Sulphur Balance attached as **Annexure-6.**

S. No.	CONDITION	STATUS	REMARKS
v.	All the Sulphur Recovery Units shall have overall efficiency of 99.9%.	Complied	Sulphur Recovery Units with overall efficiency of 99.9% has been commissioned.
vi.	Ultra Low – NO_x burners shall be provided in the new furnaces to avoid excessive formation of NO_x.	Complied	Ultra Low NOx burners installed in major fired heaters.
vii.	Company shall install online SO_2 and NO_x analysers in all the stacks of the refinery.	Complied	On-line SO_2 and NO_x analysers installed in all the stacks of the refinery. Data being reflected in OSPCB/CPCB RTDAS.
viii.	Fugitive emissions of HC from product storage tank farms etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations. Necessary measures shall be adopted so as to ensure that the NMHC levels outside the refinery complex premises do not exceed prescribed limits. Monitored data shall be submitted to OPCB / CPCB every three months and to Ministry of Environment & Forests every six months.	Complied	HC detectors installed in strategic locations of the tankage area. Fugitive emission in tankage area is attached as **Annexure-7.**
ix.	For control of fugitive emissions, the company shall augment route all unsaturated hydrocarbons to the flare system in addition to the existing flare system. All the pumps and other equipment where there is a likelihood of HC leakages shall be provided with LEL indicators and also provide for immediate isolation of such equipment, in case of a leakage. The company shall adopt Leak Detection and Repair (LDAR) programme for quantification and control of fugitive emissions.	Complied	To safeguard process units during emergency, flare system is installed for complete combustion of hydrocarbon before releasing to atmosphere. HC detectors are installed in strategic locations throughout the Refinery complex. LDAR programme is carried out and reports attached as **Annexure-7**.
x.	All the stacks shall be of appropriate design and height shall be attached to pollution control systems, wherever necessary. All stacks in the complex must meet the minimum stack height criteria as prescribed in the Environment Protection emissions.	Complied	The minimum stack height designed as per the following: $H = 14\ Qg^{0.3}$ H = Height of stack in meters Qg = Quantity of SO_2 emission in kg/hr All the major stacks are of height more than 60 m and tallest height is that of flare, around 131 m.

S. No.	CONDITION	STATUS	REMARKS
xi.	All new standards/ norms which are being proposed by CPCB for refinery projects/ petrochemical units shall be applicable for the proposed expansion and modernization of the petrochemical refinery complex. These standards shall be incorporated into the detail designs for the proposed expansion and modernization. The existing refinery complex shall also be upgraded to the new above mentioned emission standards.	Complied	The Refinery in its design has incorporated the updated environment standard issued on 18th March'2008 for emission & discharge and 18th November'2009 for Ambient Air Quality.
xii.	Ground water shall not be tapped for construction, industrial or domestic uses including the township.	Complied	No ground water tapping done during construction work
xiii.	Liquid effluents shall be treated to conform to the standards stipulated by CPCB / Ministry of Environment & Forests under EPA 1986 and also the new norms being specified. Treated effluent will be recycled and reused. The treated effluent shall be discharged into the sea through a pipeline of about 3 km from low tide line. The domestic effluent after treatment and conforming to the prescribed standards shall be used for greenbelt development.	Complied	State-of-the-art effluent treatment plant has been commissioned to treat industrial effluent as well as domestic sewage with maximum recycle facility. Balanced treated effluent after recycle being discharged to the sea through a pipeline of about 3 km from low tide line. Treated effluent water quality report attached as **Annexure-8.**
xiv.	The company shall undertake monitoring of the groundwater quality at the locations as suggested by the Central Ground Water Board. Monitoring results of the same shall be submitted to the OPCB/CPCB and MOEF.	Complied	Ground water monitoring being carried out in the Refinery. Ground water quality monitoring report attached as **Annexure-9**.
xv.	M/s IOCL shall undertake rainwater harvesting measures to recharge the ground water in the area in consultation with Central Ground Water Board and Orissa Pollution Control Board.	Complied	Two storm water reservoirs (Capacities: 2,96,000 KL and 3,13,000 KL) have been developed to store rainwater in monsoon in the Refinery premises. Also, storm water collection pond of capacity @ 470000 KL has been developed in Ecological Park.
xvi.	Green belt shall be raised in 580 acre area as per CPCB guidelines.	Complied	Greenbelt has been developed in an area of 580 acres with the help of Orissa Forest Development Corporation Ltd. (OFDCL). 5,95,000 trees have been planted around the refinery area and approx. 1,20,000 trees have been planted in the township.

S. No.	CONDITION	STATUS	REMARKS
			Every year, Paradip Refinery is doing plantation in and around Refinery. Till date approximately 9,51,280 trees have been planted
xvii.	Occupational Health Surveillance of the employees and workers shall be done on a regular basis and records maintained as per the Factories Act.	Complied	Occupational Health Report attached as **Annexure-10.**
xviii.	The marine water quality shall be regularly monitored for the water quality (temperature, petroleum hydrocarbons, phenols, sulphides, total organic carbon), sediment quality (trace elements, petroleum hydrocarbons, TOC and sediment size) and biological parameters (primary productivity, benthos, fish quality and growth, biomass, phytoplankton and zooplankton).	Complied	Marine water quality monitoring job is being carried out by third party lab recognized by MoEFCC. Marine water quality monitoring Report attached as **Annexure-11.**
xix.	The design, material of construction, assembly, inspection, testing and safety aspects of operation and maintenance of pipeline and transporting the oil shall be governed by ASME/ANSI B31.8/B31.4 and OISD standard 141.	Complied	The Refinery complies to the relevant standards
xx.	The project authorities should install SCADA system with dedicated optical fibre-based telecommunication link for safe operation of pipeline and Leak Detection System. Intelligent pigging facility should be provided for the entire pipeline system for internal corrosion monitoring. Coating and impressed current cathodic protection system should be provided to prevent external corrosion.	Complied	Online detection of leak in the pipeline is through Optical fibre cable and is installed in South Oil jetty pipelines. Intelligent pigging is done for the facility pipeline system for internal corrosion monitoring. Cathodic protection system is provided for all underground pipelines to prevent external corrosion.
xxi.	The project authorities shall patrol and inspect the pipeline regularly for detection of faults as per OISD guidelines and continuous monitoring of pipeline operation by adopting non-destructive method(s) of testing as envisaged in the EMP. Pearson survey and continuous potential survey should be carried out at regular intervals to ensure the adequacy of cathodic protection system.	Complied	Regular patrolling is being done for the SOJ and Marketing pipelines. CAT & DCVG survey has been carried out within 05 years of commissioning of the lines (i.e., in 2021) as per OISD-138 guidelines.

S. No.	CONDITION	STATUS	REMARKS
xxii.	The solid waste shall be disposed of in secured landfill facility within the refinery. The spent catalyst and incinerated sludge will be stored in segregated manner in the secured landfill area. Tank bottom sludge from refinery operation shall be put to oil recovery system and the residual sludge will be incinerated. The incinerated sludge ash shall be stored in secured landfill inside refinery. Bio sludge shall be stored in drying pit for natural weathering and then used as manure inside refinery premises.	Complied	Melting pit has been constructed to recover oil from tank bottom sludge and Incinerator has been installed to burn the residual sludge. SLF has been constructed to dispose the incinerated ash. In ETP, sludge drying bed is constructed for drying of bio sludge and is used as Manure in refinery plants
xxiii.	The company shall also comply with all the conditions and safeguards prescribed in the EIA & Risk Assessment Reports.	Complied	Paradip Refinery fully implemented all the conditions stipulated in EIA and Risk Assessment reports.
xxiv.	The On-site and Off-site Emergency Preparedness Plans, Oil Spill Contingency Plans, Marine Disaster Management Plan shall be prepared for the enhanced refinery throughput and submitted to the Ministry before commissioning at the enhanced capacity.	Complied	On-site and off-site preparedness plan, Oil Spill response plan of Paradip Refinery is in place. Emergency Response and Disaster management Plan (ERDMP) approved by PNGRB empaneled Third Party Auditor is in place. On-site emergency plan is approved by Director of Factories and Boiler. Off-site plan is incorporated in District Emergency Plan.
xxv.	The Environment Management Cell and laboratory facilities for the collection of the samples shall be augmented with suitable facilities and qualified personnel and directly report to the chief executive of the refinery complex.	Complied	Dedicated Environment Management Cell headed by a HOD exists in the Refinery to take care of all the environmental issues.
xxvi.	The company shall prepare comprehensive EIA/EMP report and submit to the Ministry within one year.	Complied	Comprehensive EIA Report was prepared and submitted to SPCB on 12.09.2008 and MOEF on 22.09.2008.

S. No.	CONDITION	STATUS	REMARKS
B.	**GENERAL CONDITIONS:**		
i.	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	Complied	Noted for compliance.
ii.	No further expansion or modernization in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Complied	Noted for compliance.
iii.	At no time, the emissions shall go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	Complied	Noted for compliance.
iv.	The overall noise levels in and around the plant area should be kept well within the standards (75 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).	Complied	Noise survey is regularly carried out by Industrial Hygienist and the Noise levels are maintained as per standards.
v.	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the project.	Complied	All the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc are fully complied. All required licenses obtained from CCE.
vi.	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.	Complied	HW authorization obtained from OSPCB vide Ref no. IND-IV-HW-930/4014 dated 21-03-2024 with a validity till 31-03-2025. Further before expiry of HWA has been obtained on 27.03.2025 with a validity up to 31.03.2026
vii.	The project authorities will provide requisite funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation	Being Complied	Paradip Refinery has installed all the pollution control units at an approximate cost of 10% of the capital expenditure of Refinery. In 2024-25, total expenditure on account of environment related job was approximately of Rs. 13.83 Cr.

S. No.	CONDITION	STATUS	REMARKS
	schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.		Yearly budget provision is made for env. related activities.
viii.	The stipulated conditions will be monitored by the Regional of this Ministry at Bhubaneshwar / Central Pollution Control Board / State Pollution Control Board. A six-monthly compliance report and the monitored data should be submitted to them regularly.	Being Complied	Six monthly compliance report is being sent to MoEF and zonal office of SPCB. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.
ix.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http:// www.envfor.nic.in. This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional Office.	Complied	The information has been published in the two daily local newspapers i.e. 'The Samaj' in Oriya and 'The Indian Express' in English dated 18.07.2007.
x.	The Project Authorities should 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.	Complied	The Board of Directors of IOCL accorded investment approval on 28.02.2009 for the project. EC-No. J-11011/70/2007-1A-II (I) dt. 06.07.2007. Consent to Establish (CTE) was granted by SPCB, Odisha on 14.07.2008. The land development work for the project commenced from 16.03.2009.

Annexure-B

Name of Project	:	**CRZ Clearance for laying of Storm Water Outfall Pipelines to sea for Paradip Refinery Project**
Clearance Letter(s) No. & Date	:	F. No.11-86/2011-IA III dated 21st February 2012
Period of Compliance Report	:	Oct'24 to Mar'25

S.N.	SPECIFIC CONDITIONS:	STATUS	REMARKS
4(i)	"Consent for Establishment" shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted' to the Ministry before start of any construction work at the site.	Complied	"Consent for Establishment" obtained vide letter no. 12048 Ind-II-NOC- 4600 dated 25-06-2012
(ii)	The proposed storm water line shall be laid along the Crude Oil pipeline corridor which was accorded CRZ clearance for transportation of crude oil after the recommendation of the SCZMA. However, the proponent shall submit the CRZ map showing the proposed pipeline route to SCZMA with a copy to the Ministry before commencement of the work.	Being Complied	Complied with CRZ map has already been submitted (Ref. No. IOCL/PDRP/LSTK-11/1/014)
(iii)	The unit shall provide separate drains and collection system at the process area so as to prevent any possible mixing of process spillage in to storm water as proposed.	Being Complied	Separate drains for storm water and process drains have been provided in the process area of the Refinery.
(iv)	The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	Being Complied	Dedicated Environment Management Cell headed by a HOD exists in the Refinery to take care of all the environmental issues.
(v)	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	Being Complied	Paradip Refinery has installed all the pollution control units at an approximate cost of 10% of the capital expenditure of Refinery. In 2024-25, total expenditure on account of environment related job was approximately of Rs. 13.83 Cr. Year wise budget provision is made for environment related activities.

S.N.	SPECIFIC CONDITIONS:	STATUS	REMARKS
	GENERAL CONDITIONS:		
5(i)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Complied	Taken care during construction activities. Now lines are already commissioned.
(ii)'	Full support shall be extended to the officers of this Ministry/ Regional Office at Bhubaneswar by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental' protection activities.	Complied	Being Complied
(iii)	A six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bhubaneswar regarding the implementation of the stipulated conditions.	Complied	Six monthly compliance report is being sent to MoEF. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.
(iv)	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary, in the interest of environment and the same shall be complied with.	Complied	Noted
(v)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	Complied	Noted
(vi)	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	Complied	Noted
(vii)	The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date' of start of land development work.	Complied	This is the part of the entire Refinery Project. The Board of Directors of IOCL accorded investment approval for the entire project at Paradip on 28.02.2009 for the project.
(viii)	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days.	Complied	For compliance by OSPCB office.

S.N.	SPECIFIC CONDITIONS:	STATUS	REMARKS
6	These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991and EIA Notification 1994, including the amendments and rules made thereafter	Complied	Noted
7	All other statutory clearances such as the approvals for storage of diesel from Chief Controller. of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Complied	Paradip Refinery has already obtained all necessary statutory approvals
8	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the- project has been accorded Environmental Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http:J/www.envfor.nic_in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bhubaneswar.	Complied	Advertisement placed in two newspapers (One is "The Samaja" and other is "The Times of India"), dated 1st March'12).
9	Environmental clearance is subject to final order of the Hon'ble-Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Complied	Noted
10	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website	Complied	Complied
11.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were	Complied	Complied

S.N.	SPECIFIC CONDITIONS:	STATUS	REMARKS
	received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.		
12	The proponent shall upload the status of compliance of the stipulated EC 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 MoEF, the respective Zonal Office of CPCB and the SPCB.	Complied	Six monthly compliance report is being sent to MoEF and zonal office of SPCB. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.
13	The environmental statement for each financial year ending 31st 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 EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Complied	Paradip Refinery will submit the Environment Statement for FY 2024-25 by 30th Sep'25 as per target. Environment Statement for FY 2023-24 has been submitted on 15.09.2024 vide ref no. PDR/HSE/Env-Statement/2023-24. Also, it is uploaded in the OSPCB portal.

Annexure-C

Name of Project	:	**CRZ Clearance for laying of pipeline from Paradip Refinery to South Oil Jetty at Paradip Port, Odisha**
Clearance Letter(s) No. & Date	:	F. No. 11-33/2013-IA III dated 19th September, 2013
Period of Compliance Report	:	Oct'24 to Mar'25

S.N.	SPECIFIC CONDITIONS :	STATUS	REMARKS
5(i)	"Consent for Establishment" shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.	Complied	"Consent for Establishment" obtained vide letter no 12048 Ind-ll-NOC- 4600 dated 25-06-2012. Copy has been submitted to the ministry vide letter no. PDRP/HSE/CRZ/MoEF/2013-1 dated 03.10.2013.
(ii)	All the conditions of Forest Clearance dated 06/02/2013 shall be complied with.	Complied	Compliance status already submitted and based on the status, Forest and Environment Dept. Govt. of Odisha has been issued a letter (Letter No. 10F(Cons)510/2012 23891/F&E. Dtd 20/11/13) to accord the final clearance.
(iii)	The laying of pipeline at creek shall be carried out in such a way that it shall not obstruct tidal flow of the creek.	Complied	Due care was taken during laying of the pipeline.
(iv)	All the conditions stipulated by the Odisha Coastal Zone Management Authority (OCZMA) shall be complied with.	Complied	Complied.
(v)	Laying pipe line shall not be carried out during the breeding of olive Ridely turtle as committed vide undertaking dated 25.06.2013.	Complied	No construction work was done during the breeding season of olive Ridely turtle.
(vi)	Soil and water samples shall be regularly monitored along the pipeline route to check the leakage/contamination, if any and shall examine if any strengthening is required.	Complied	Soil quality monitoring job is being carried out by third party lab recognized by MoEFCC. Soil quality monitoring Report attached as **Annexure-13**.

S.N.	SPECIFIC CONDITIONS :	STATUS	REMARKS
(vii)	Proper oil spillage contingency plan shall be put in place.	Complied	Approved Oil Spill Contingency is in place for tackling any eventuality.
(viii)	It shall be ensured that there is no disturbance to people, houses or fishing activity as a result of the project.	Complied	Complied.
(ix)	The smooth and safe operation of the system shall be ensured by incorporating a computerized SCADA (Supervisory Control And Data Automation) system. Any leakage in the pipeline shall be immediately detected by the Computer system and product pumping shall be immediately cut off.	Complied	Leak detection by optical fibre cable installed for south oil jetty pipelines.
(x)	All the recommendation of the EMP shall be complied with letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF along with half yearly compliance report to MoEF-RO.	Complied	Complied
(xi)	The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	Complied	Dedicated Environment Management Cell headed by a HOD exists in the Refinery to take care of all the environmental issues.
(xii)	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	Being Complied	Paradip Refinery has installed all the pollution control units at an approximate cost of 10% of the capital expenditure of Refinery. In 2024-25, total expenditure on account of environment related job was approximately of Rs. 13.83 Cr. Year wise budget provision is made for environment related activities.
	GENERAL CONDITIONS :		
6(i)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Complied	Due care was taken during construction. Now the lines are already commissioned.

S.N.	SPECIFIC CONDITIONS :	STATUS	REMARKS
(ii)	Full support shall be extended to the officers of this Ministry/Regional Office at Bhubaneswar by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	Agreed to Compliance	Noted for compliance
(iii)	A six-monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bhubaneswar regarding the implementation of the stipulated conditions.	Being Complied	Six monthly compliance report is being sent to MoEF. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.
(iv)	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	Agreed to Compliance	Noted
(v)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	Agreed to Compliance	Noted
(vi)	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment arid Forests.	Agreed to Compliance	Noted
(vii)	The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	Complied	This is the part of the entire Refinery Project. The Board of Directors of IOCL accorded investment approval for the entire project at Paradip on 28.02.2009 for the project.
(viii)	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's Office/Tehsildar's office for 30 days.	Agreed to Compliance	Compliance by OSPCB
9	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded CRZ Clearance and copies of	Complied	Advertisement placed in two newspapers (One is "The Samaj" and other is "The New Indian Express", dated 29th Sept'13)

S.N.	SPECIFIC CONDITIONS :	STATUS	REMARKS
	clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bhubaneswar.		
11	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	Complied	Complied
12	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad /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 website of the company by the proponent.	Complied	Complied
14	The proponent shall upload the status of compliance of the stipulated 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 MoEF, the respective Zonal Office of CPCB and the SPCB.	Being Complied	Six monthly compliance report is being sent to MoEF and zonal office of SPCB. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.
15	The environmental statement for each financial year ending 31st 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 Clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Complied	Complied

Annexure-D

Name of Project	:	**CRZ Clearance for 'Pet Coke Evacuation Project' for Paradip Refinery in District Jagatsinghpur (Odisha)**
Clearance Letter(s) No. & Date	:	F. No. 11-30/2015-IA.III dated 11th February, 2016
Period of Compliance Report	:	Oct24 to Mar'25

S.N.	CONDITIONS:	STATUS	REMARKS
A	**SPECIFIC CONDITIONS:**		
i)	The project proponent shall undertake periodic inspection and maintenance to avoid spillages, wear and tear of the proposed conveying system.	Complied	Complied
ii)	Adequate safe guards including alarm and emergency shutdown system shall be provided for the proposed conveying system.	Complied	Complied
iii)	Proper fire hydrant and file extinguisher shall be provided at appropriate locations conforming to prevailing norms or fire safety.	Complied	Complied
iv)	There shall no destruction of the mangrove during construction as well as the operation phase.	Complied	Complied
v)	The top soil of excavated area during the construction shall be kept separately and to be used for vegetation.	Complied	Excavated soil used in Ecological Park and roadside land filling which used for vegetation.
vi)	The labour camps, storage of material and machinery during construction phase shall be located outside the CRZ.	Complied	Yes, located outside the CRZ.
vii)	Crossing of creek shall be on trestles with adequate clearance thereby having negligible impact on the flow.	Complied	The RRLS facility is laid on the existing bridge for which sufficient clearance already exist.
viii)	During construction, solid waste generated will include packaging and wrapping material, stubs of spent welding electrodes, used rags and housekeeping etc. The project proponent shall ensure disposal of such wastes at approved sites. There shall be no disposal in CRZs.	Complied	Complied
ix)	There shall be no ground water withdrawal within CRZ limits.	Complied	Complied

S.N.	CONDITIONS:	STATUS	REMARKS
x)	All the recommendations and conditions specified by Odisha Coastal Zone Management Authority (OCZMA) vide letter No. 56/0CZMA dated 25.08.2015, shall be complied with.	Complied	Complied
xi)	Project proponent shall implement all the recommendations stipulated in the EIA, EMP and Risk Assessment reports pertaining to the project.	Complied	Complied
xii)	The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	Complied	Dedicated Environment Management Cell headed by a HOD exists in the Refinery to take care of all the environmental issues.
xiii)	The project proponent shall take up mangrove plantation/ green belt in the project area, wherever possible. Adequate budget shall be provided in the Environment Management Plan for such mangrove development.	Complied	Complied
B	**General Conditions**		
i)	'Consent to Establish' shall be obtained from the State Pollution Control Board under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.	Complied	Complied
ii)	A copy of the clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industries centre and Collector's Office/ Tehsildar's office for 30 days.	Agreed for Compliance	Compliance at OSPCB site
iii)	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.	Complied	Year wise budget provision being made for environment related activities. In 2024-25, total expenditure on account of environment related job was approximately of Rs. 13.83 Cr.
5	The above stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and control of Pollution) act 1981, the Environment (Protection) Act, 1986, the	Agreed for Compliance	Noted

S.N.	CONDITIONS:	STATUS	REMARKS
	Public Liability (Insurance) Act, 1991, EIA Notification, 2006 and CRZ Notification, 2011.		
6	Officials from the Regional Office of MoEF&CC, Bhubaneswar who would be monitoring the implementation of environmental safeguards should be given full cooperation, facilities and documents/ data by the project proponents during their inspection. A complete set of all the documents submitted to MoEF&CC should be forwarded to the CCF, Regional Office of MoEF&CC Bhubaneswar.	Agreed for Compliance	Noted
7	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry.	Agreed for Compliance	Noted for Compliance
8	The Ministry reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the CRZ Clearance under the provisions of the Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Agreed for Compliance	Noted
9	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Complied	Complied
10	The project proponent should advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest & Climate Change at http://www.envfor.nic.in. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the	Complied	Complied

S.N.	CONDITIONS:	STATUS	REMARKS
	same should be forwarded to the Regional Office of this Ministry at Bhubaneswar.		
11	This Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Agreed for Compliance	Noted
12	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Agreed for Compliance	Noted
13	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad/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 website of the company by the proponent.	Complied	Complied

Annexure-E

Name of Project	:	**EC and CRZ Clearance for "Installation Ethylene Recovery Unit, Mono Ethylene Glycol Unit and BS-VI facility at Paradip Refinery cum Petrochemical Complex, village Abhayachandrapur, Tehsil Kujanga, District Jagatsinghpur (Odisha)**
Clearance Letter(s) No. & Date	:	F. No. J-11011-344/2016-IA-II (I) dated 11th October, 2018
Period of Compliance Report	:	Oct'24 to Mar'25

S.N.	CONDITIONS :	STATUS	REMARKS
11.0	**EC CONDITIONS:**		
i)	Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.	Complied	Consent to Establish for the said project obtained from OSPCB vide letter ref: 9365/IND-II-NOC-6193 dated 06-08-2018.
ii)	Necessary authorization required under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and Solid Waste Management Rule, 2016 shall be obtained and provisions contained in the Rules shall be strictly adhered to.	Complied	MEG&ERU and BS-VI project is part of the existing Refinery which is having valid HW Authorization vide ref no. IND-IV-HW-930/6449 dated 27.03.2025 with a validity till 31-03-2026
iii)	National Emission standards for Organic Chemicals Manufacturing Industry issued by the Ministry vide G.S.R 608 € dated 21st July, 2010 and amended from time to time shall be followed.	Complied	G.S.R 186 (E) dated 18th March 2008 is applicable to Oil Refinery and IOCL Paradip Refinery is complying the same.
iv)	To control source and the fugitive emissions, suitable pollution control devices shall be installed with different stacks to meet the prescribed norms and/or the NAAQMS. The gaseous emissions shall be dispersed through stacks of adequate height as per the CPCB/SPCB guideline.	Complied	Stack height is as per statutory requirement i.e. $H = 14\ Qg^{0.3}$ H = Height of stack in meters Qg = Quantity of SO_2 emission in kg/hr
v)	The project proponent shall take necessary steps to prevent any liquid hydrocarbon falling on the water body of the creek from the pipelines passing	Complied	Providing tray barrier or enclosure around the pipelines crossing over the creek require humongous structures erection at the extant

S.N.	CONDITIONS :	STATUS	REMARKS
	over the bridge of Santra creek by creating a tray like barrier below the pipelines which can hold any leakage materials.		pipelines bridge, so as to maintain integrity & stability of structures against high wind pressure load considering super cyclones prone location of Paradip Refinery. While reviewing pipe racks adequacy for new projects, it was found that the structures cannot accommodate additional load. Hence the arrangement to provide trays below the pipelines is not feasible. Accordingly, IOCL has put in the following mitigation measures for oil spill containment: • The refinery location is compatible with Design standards; O&M & Inspection practices ensure integrity of pipelines and structure stability. • Illumination at pipeline bridge area has been enhanced. • The bridge area is under patrolling by CISF personnel placed at site round-the-clock. • All the pipelines crossing the creek are subject to health checks like monthly walk thru inspection, quarterly thickness sampling for corrosion detection and periodical LRUT survey as per standards (once in two years) and records maintained. View the above actions, hydrocarbon pipelines leakage probability is almost negligent. Also, adequate numbers of Oil spill containment Booms, Boats, oil adsorbent, oil dispersant and

S.N.	CONDITIONS :	STATUS	REMARKS
			cleaning kit are kept as emergency standby near Santra creek for tackling any Leak scenario. Oil Spill Response plan of Paradip Refinery duly approved by competent authorities is in place to tackle any leak scenario.
vi)	Total water requirement shall not exceed 4685 cum/hr to be met from Mahanadi River. Necessary permission in this regard shall be obtained from the concerned regulatory authority.	Complied	Being complied
vii)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arrestors shall be provided on tank farm, and solvent transfer to be done through pumps.	Complied	Being complied
viii)	Process effluent/any waste water shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.	Complied	Being complied
ix)	Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic and evaporation salt shall be disposed off to the TSDF. The ash from boiler shall be sold to brick manufacturer/cement industry.	Complied	MEG-ERU and BS-VI facility is integral part of the existing Refinery. All the wastes are disposed-off in line with the HW approval issued by OSPCB.
x)	The company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	Complied	Being complied
xi)	Regular VOC monitoring to be done at vulnerable points	Complied	Being complied
xii)	The oily sludge shall be subjected to melting pit for oil recovery and the residue shall be bio-remediated. The sludge shall be stored in HDPE lined pit with proper leachate collection system	Complied	Complied

S.N.	CONDITIONS :	STATUS	REMARKS
xiii)	Comprehensive water audit to be conducted on annual basis and report to the concerned Regional Office of MoEF&CC. Outcome from the report to be implemented for conservation scheme	Complied	Water Audit by M/s EIL has been carried out for entire Refinery in 2019-20. Periodic monitoring and audit of water management is done in house, and all leaks/maintenances are done time to time. In the FY 2024-25, Water conservation scheme to re-use Storm water in Cooling towers has been implemented to re-use rainwater from storm water pond.
xiv)	Oil catchers/oil traps shall be provided at all possible locations in rain/ storm water drainage system inside the factory premises	Complied	Oil catchers are provided at all possible locations in rain/ storm water drainage system.
xv)	The company shall undertake waste minimization measures as below:- (a) Metering and control of quantities of active ingredients to minimize waste. (b) Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. (c) Use of automated filling to minimize spillage. (d) Use of Close Feed system into batch reactors. (e) Venting equipment through vapour recovery system. (f) Use of high pressure hoses for equipment clearing to reduce wastewater generation.	Complied	IOCL PDR has installed facilities like Vapor recovery system, Closed feed system etc. to minimize spillage or vent.
xvi)	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	Being complied	Noted for compliance. Green belt with an area of 31.57 % has already been developed for the existing Refinery as per the previous EC requirement based on the availability of land. Balance green belt development is being explored with the support of local community to fulfil the requirement of 33%.

S.N.	CONDITIONS :	STATUS	REMARKS
xvii)	At least 0.25% of the total project cost shall be allocated for Corporate Environment Responsibility (GER) and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	Being complied	Complied
xviii)	For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution	Complied	Complied. DG sets is available at P&U for handling any black out emergency. Stack heights, emissions and acoustic enclosure are as per CPCB guidelines.
xix)	The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Firefighting system shall be as per the norms	Complied	The entire unit is protected by Fixed and portable firefighting facilities confirming to OISD-116.
xx)	Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises. In case of the treated effluent to be utilized for irrigation/gardening, real time monitoring system shall be installed at the ETP outlet		Continuous online (24x7) monitoring of stack for measurement of flue gas discharge and the pollutants concentration along with data transmission to CPCB and SPCB server is available. Treated effluent water meeting MINAS parameters limits is discharged from the Refinery through a closed system into deep Sea at 3 km from LTL through diffuser. Online analysers have been provided in the effluent discharge line for continuous monitoring of the treated effluent discharge water quality and quantity and real time data sent online to CPCB, SPCB. CCTV camera is installed for monitoring of effluent discharge line area.
xxi)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act	Complied	Occupational Health Report attached as **Annexure-10.**

S.N.	CONDITIONS :	STATUS	REMARKS
xxii)	All terms and conditions stipulated by the State Coastal Zone Management Authority in their recommendation/NOC letter dated 11th January, 2018 shall be strictly adhered to	Complied	Complied
xxiii)	The National Emission Standards for Petroleum Oil Refinery issued by the Ministry vide G.S.R. 186(E) dated 181h March, 2008 and G.S.R. 595(E) dated 2P1 August, 2009 as amended from time to time shall be followed	Complied	Paradip Refinery is strictly following the Standards vide G.S.R. 186(E) dated 18th March 2008 and G.S.R. 595(E) dated 21 August, 2009
xxiv)	The National Emission Standards for Petrochemical (Basic & Intermediates) issued by the Ministry vide G.S.R. 820 (E) dated 9th November, 2012 as amended time to time shall be followed.	Complied	Shall be complied.
11.1	**Compliance of other general conditions:**		
i)	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board, Central Pollution Control Board, State Government and any other statutory authority	Complied	Complied
ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. 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	Complied	Complied
iii)	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Complied	Complied
iv)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 161h November, 2009 shall be followed.	Complied	Complied

S.N.	CONDITIONS :	STATUS	REMARKS
v)	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 Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Complied	Complied
vi)	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water	Complied	Ground water recharging is not suitable in Paradip region as water table is very high. However, Refinery has constructed two storm water reservoirs (Capacities: 2,96,000 KL and 3,13,000 KL) to store monsoon rainwater in Refinery premises for re-use. Further, Refinery has developed an Ecological Park integrated with rainwater harvesting pond which can store approximately 470000 KL water during rain.
vii)	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Complied	Complied
viii)	The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	Complied	EIA/EMP recommendations are compiled.
ix)	The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. ESC activities shall be undertaken by involving local villages and administration	Complied	IOCL PDR is implementing projects under CSR and CER extensively for improving the socio-economic conditions of the surrounding area

S.N.	CONDITIONS :	STATUS	REMARKS
x)	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment	Complied	Paradip Refinery has recently developed an ecological park to create an ambience for ecology and sustainability.
xi)	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose	Complied	In 2024-25, total expenditure on account of environment related job was approximately of Rs. 13.83 Cr. Year wise budget provision is made for environment related activities.
xii)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal	Complied	Complied
xiii)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company	Complied	Being complied Six monthly compliance report is being sent to MoEF and zonal office of SPCB. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.

S.N.	CONDITIONS :	STATUS	REMARKS
xiv)	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted 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 clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail	Complied	Paradip Refinery will submit the Environment Statement for FY 2024-25 by 30th Sep'25 as per target. Environment Statement for FY 2023-24 has been submitted on 15.09.2024 vide ref no. PDR/HSE/Env-Statement/2023-24.
xv)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.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 a copy of the same shall be forwarded to the concerned Regional Office of the Ministry	Complied	Advertisement placed in two newspapers (One is "The Samaja" and other is "The Times of India")  
xvi)	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project	Complied	Being complied

Annexure-F

Name of Project	:	**EC and CRZ Clearance for "Integrated Para-Xylene & Purified Terephthalic Acid (PTA) Project within existing Refinery complex by M/s. Indian Oil Corporation Limited, Paradip Refinery located at S.F. No-218, Abhayachandrapur Village, Jagatsinghpur District, Odisha State**
Clearance Letter(s) No. & Date	:	F. No. J-11011/395/2012-IA-II (I) dated 9th Aug 2021
Period of Compliance Report	:	Oct'24 to Mar'25

S.N.	CONDITIONS:	STATUS	REMARKS
A	**SPECIFIC CONDITIONS:**		
i)	Construction in CRZ area shall be in accordance with the provision of CRZ Notification, 2011 and as amended from time to time. The project proponent shall comply with all the conditions stipulated in OCZMA/CRZ recommendations and NOC issued for the same.	Complied	Complied
(ii)	No groundwater shall be extracted to meet the water requirements during the construction phase of the project, within CRZ area.	Complied	No ground water is extracted at Paradip Refinery.
(iii)	The PESO clearance shall be obtained, if related by M/s IOCL before commencing the project activities.	Complied	Noted for compliance.
(iv)	No excavated material during the construction shall be dumped in water bodies adjacent to CRZ areas. CRZ site shall be restored to near original condition after completion of construction.	Complied	Complied
(v)	The company shall submit detailed study report on odour pollutants from the industry, their control and mitigation within petrochemical refinery after carrying out continuous monitoring for one month and the report shall be submitted within three (03) months to the Ministry.	Complied	Odour Pollutant Study has been done by M/s Chola MS and report submitted on 31.05.2022. No significant findings from Paradip refinery were observed by the agency.
(vi)	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental	Complied	Complied

S.N.	CONDITIONS:	STATUS	REMARKS
	management, and risk mitigation measures relating to the project shall be implemented.		
(vii)	Total freshwater requirement shall not exceed 89832 m3/day, proposed to be met from River Mahanadi. Necessary permission in this regard shall be obtained from the concerned regulatory authority. The freshwater requirement shall be reduced after installation of rainwater harvesting system in the unit/project area.	Complied	Complied
(viii)	Comprehensive water audit to be conducted on annual basis and report to the concerned Regional Office of MEF&CC. Outcome from the report to be implemented for conservation scheme.	Complied	Water Audit by M/s EIL has been carried out for entire Refinery in 2019-20. Periodic monitoring and audit of water management is done in house, and all leaks/maintenances are done time to time. In the FY 2024-25, Water conservation scheme to re-use Storm water in Cooling towers has been implemented to re-use rainwater from storm water pond.
(ix)	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.	Complied	Complied
(x)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm, and solvent transfer to be done through pumps.	Complied	Being Complied for existing Refinery complex and shall be complied with in PX-PTA unit as well.
(xi)	Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF. The ash from boiler shall be sold to brick manufacturers/cement industry.	Complied	Noted for compliance. Refinery ETP sludge is processed in Delayed Coker unit in Refinery itself as per HW authorization. Ash generation from boilers is very less ~ 20MT/ Annum as cleaner fuel is fired in boilers and ash being a small quantity is disposed in captive SLF.
(xii)	Regular VOC monitoring shall be done at vulnerable points.	Complied	Being Complied for existing Refinery complex and shall be complied with in PX-PTA unit as well.

S.N.	CONDITIONS:	STATUS	REMARKS
(xiii)	The oily sludge shall be subjected to melting pit for oil recovery and the residue shall be bio-remediated. The sludge shall be stored in HDPE lined pit with proper leachate collection system.	Agreed for Compliance	Noted for compliance.
xiv)	Oil catchers/oil traps shall be provided at all possible locations in rain/ storm water drainage system inside the factory premises.	Complied	PX-PTA facility is integral part of the existing Refinery. Oil catchers are already provided in the existing facility.
xv)	The company shall undertake waste minimization measures as below: a) Metering and control of quantities of active ingredients to minimize waste. b) Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. c) Use of automated filling to minimize spillage. d) Use of Close Feed system into batch reactors. e) Venting equipment through vapour recovery system. f) Use of high pressure hoses for equipment cleaning etc. to reduce wastewater generation.	Complied	IOCL PDR has installed facilities like Vapor recovery system, Closed feed system etc. to minimize spillage or vent.
xvi)	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	Agreed for Compliance	Noted for compliance. • Green belt with an area of 31.57 % has already been developed for the existing Refinery as per the previous EC requirement based on the availability of land. • Balance green belt development is being explored with the support of local community to fulfil the requirement of 33%. • IOCL Paradip Refinery explored plantation in forest lands. However, same could not be done due to non-availability of forest lands in Jagatsinghpur district as confirmed by Forest Office, Jagatsinghpur.

S.N.	CONDITIONS:	STATUS	REMARKS
			• Parallelly, IOCL has also approached Odisha government to allocate suitable land parcels for plantation requirements for Paradip Refinery. • IOCL has also registered in" Green credit Portal" of the govt of india for allocation of land parcels for plantation. However, no land parcels are available in Odisha as on date for plantation.
xvii)	As per the Ministry's OM dated 30.09.2020 superseding the OM dated 01.05.2018 regarding the Corporate Environmental Responsibility, and as per the action plan proposed by the project proponent to address the socio-economic and environmental issues in the study area, the project proponent, as committed, shall provide education funds in technical training centers/ support in nearby village's schools, support in health care facilities, drinking water supply and funds for miscellaneous activities like solar street lights, battery, solar panel etc., in the nearby villages. The action plan shall to be completed within time as proposed.	Agreed for Compliance	Noted for compliance IOCL PDR is implementing projects under CER extensively for improving the socio-economic conditions of the surrounding area.
xviii)	The project proponent shall ensure 70% of the employment to the local people, as per the applicable law. The project proponent shall set up a skill development center/provide skill development training to village people.	Being Complied	The employment of local people is being carried out as per the applicable law. Various developmental activities e.g. promoting education, skill development trainings etc. in nearby Gram Panchayats under CSR are being finalized by CSR team of Paradip Refinery in consultation with District Administration. Skill development in association with NSDC & CIPET is being carried out periodically. Skill development Institute has been set up at Bhubaneswar with an aim to provide opportunities to the unemployed and underprivileged youth of Odisha and to provide skilled manpower to the industry.

S.N.	CONDITIONS:	STATUS	REMARKS
xix)	A separate Environmental Management Cell (having qualified person with Environmental Science/ Environmental Engineering/ specialization in the project area) equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Being complied	Dedicated Environment Management Cell headed by a HOD exists in the Refinery to take care of all the environmental issues
xx)	The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Firefighting system shall be as per the norms.	Being complied	Being Complied for existing Refinery complex and shall be complied with in PX-PTA unit as well.
xxi)	Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. In case of the treated effluent to be utilized for irrigation/gardening, real time monitoring system shall be installed at the ETP outlet.	Agreed for Compliance	Noted for compliance. Continuous online (24x7) monitoring system for stack emissions is already in place at Paradip Refinery and same shall be complied for PX-PTA unit stacks. Real time monitoring system shall be installed at the ETP outlet.
xxii)	PP to set up occupational health Centre for surveillance of the worker's health within and outside the plant on a regular basis. The health data shall be used in deploying the duties of the workers. All workers & employees shall be provided with required safety kits/mask for personal protection.	Being Complied	Occupational health Centre is already available for the Refinery. Same facility shall be used for PX-PTA unit as well. OHC report for Refinery employees is enclosed as **Annexure- 10**.
xxiii)	The National Emission Standards for Petrochemical (Basic & Intermediates) issued by the Ministry vide G.S.R. 820 (E) dated 9th November 2012 as amended time to time shall be followed.	Agreed for Compliance	Noted for compliance.
xxiv)	Recommendations of mitigation measures from possible accident shall be implemented based on Risk Assessment studies conducted for worst case scenarios using latest techniques.	Agreed for Compliance	Noted for compliance.
xxv)	The project proponent shall develop R&D facilities to develop their own technologies for propylene and polypropylene processing.	Complied	IOCL has a fully established R&D facility located at Faridabad, Haryana.
B	**GENERAL CONDITIONS**		
(i)	No further expansion or modifications in the plant, other than mentioned in the EIA Notification, 2006 and its amendments, shall be carried out without prior	Agreed for Compliance	Noted for compliance.

S.N.	CONDITIONS:	STATUS	REMARKS
	approval of the Ministry of Environment, Forest and Climate Change/SEIAA, as applicable. 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/SEIAA, as applicable, to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.		
(ii)	The energy source for lighting purpose shall be preferably LED based, or advanced having preference in energy conservation and environment betterment.	Agreed for Compliance	Noted for compliance.
(iii)	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 the Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Agreed for Compliance	Noted for compliance.
(iv)	The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villages and administration and shall be implemented. The company shall undertake eco developmental measures including community welfare measures in the project area for the overall improvement of the environment	Being complied	IOCL PDR is implementing projects under CSR and CER extensively for improving the socio-economic conditions of the surrounding area.
(v)	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.	Being complied	In 2024-25, total expenditure on account of environment related job was approximately of Rs. 13.83 Cr. Year wise budget provision is made for environment related activities.
(vi)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, ZillaParishad/Municipal Corporation, Urban local Body	Complied	Complied

S.N.	CONDITIONS:	STATUS	REMARKS
	and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.		
(vii)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six-monthly compliance status report shall be posted on the website of the company.	Complied	Six monthly compliance report is being sent to MoEF / Zonal Office of SPCB. Last report was submitted vide letter no. PDR/HSE/HC/MOEFCC/2024-25/001 dated 30.12.2024 for Apr'24 to Sep'24.
(viii)	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted 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 clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	Being Complied	Paradip Refinery will submit the Environment Statement for FY 2024-25 by 30th Sep'25 as per target. Environment Statement for FY 2023-24 has been submitted on 15.09.2024 vide ref no. PDR/HSE/Env-Statement/2023-24.
(ix)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry and at https://parivesh.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 a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	Complied	Advertisement placed in two newspapers (One is "The Samaja" and other is "The Times of India")  Indian Oil Corporation Ltd. Paradip Refinery PUBLIC NOTICE 
(x)	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	Agreed for Compliance	Noted for compliance
(xi)	This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project.	Agreed for Compliance	Noted

S.N.	CONDITIONS:	STATUS	REMARKS
23	The ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent shall implement all the said conditions in a time bound manner. The ministry may revoke or suspend the environmental clearance, if implementation of any of the condition is not found satisfactory.	Agreed for Compliance	Noted
24	Concealing factual data or submission of false/ fabricated data and failure to comply with any conditions mentioned above may result in withdrawal of this clearance and attract action under the provision of Environment (Protection) Act , 1986.	Agreed for Compliance	Noted

Annexure-2

Stack Emission Report

Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Ref : Envlab/24-25/TR-01328 **Date : 05.11.2024**

STATIONARY EMISSION MONITORING REPORT FOR OCTOBER-2024

1. **Name of Industry : M/s. INDIAN OIL CORPORATION LIMITED**
2. **Sample Collected By : VCSPL Representative**
3. **Date of Analysis : 01.10.2024 TO 05.11.2024**

Parameter				SO_2	NOx	PM	CO
UOM				mg/Nm^3	mg/Nm^3	mg/Nm^3	mg/Nm^3
Method				IS 11255 [P-2]	IS 11255 [P-7]	IS 11255 [P-1]	IS 11255 [P-3]
SL No.	Location	Sampling Date	Time				
01	HRSG-3 STACK	01-Oct-24	09:40	67.2	227.5	3.78	20
02	HRSG-2 STACK	01-Oct-24	14:00	70.5	120.6	8.16	12.5
03	CPP (UB1) STACK	03-Oct-24	11:00	144.2	69.4	9.12	2.5
04	CPP (UB2) STACK	03-Oct-24	14:30	84.1	72.4	8.15	2.5
05	CPP (UB4) STACK	04-Oct-24	09:50	91.2	118.6	8.76	2.5
06	DCU Heater-1 Stack	04-Oct-24	14:00	63.4	85.2	3.26	1.25
07	DCU Heater-1 Stack	05-Oct-24	09:50	45.2	39.8	6.48	1.25
08	SRU/TGTU Stack	05-Oct-24	14:10	1944.7	206	13.46	68.75
09	AVU VDU Stack	09-Oct-24	10:00	133.4	90.5	10.17	2.5
10	AVU CDU Stack	09-Oct-24	14:20	102.3	49.6	6.74	3.75
11	FCC RR Stack	10-Oct-24	10:00	90.1	54.2	24.56	202.5
12	FCC Heater Stack	10-Oct-24	14:00	259.4	120.3	4.79	7.5
13	CCRU-P Stack	11-Oct-24	09:40	42.8	60.5	4.74	12.5
14	NHDT Stack	11-Oct-24	14:00	73.1	54.8	4.75	1.25
15	VGOHT MHC-1 Stack	14-Oct-24	09:40	46.2	38.4	4.54	2.5
16	VGOHT MHC-2 Stack	14-Oct-24	12:20	49.4	58.3	4.42	3.75
17	DHDT Stack	14-Oct-24	15:00	41.2	53.4	4.05	6.25
18	HRSG-3 STACK	16-Oct-24	10:00	68.5	234.2	11.5	31.25
19	HRSG-2 STACK	16-Oct-24	14:10	72.8	121.6	12.19	17.5
20	CPP (UB1) STACK	17-Oct-24	14:30	142.6	70.2	13.82	1.25
21	CPP (UB3) STACK	17-Oct-24	09:40	62.8	88.6	4.16	1.25
22	CPP (UB4) STACK	17-Oct-24	11:50	89.7	118.6	9.32	1.25
23	DCU Heater-1 Stack	18-Oct-24	09:50	64.5	84.2	4.64	1.25
24	DCU Heater-2 Stack	18-Oct-24	14:00	44.6	40.2	3.09	1.25
25	AVU VDU Stack	19-Oct-24	10:00	401.7	49.6	5.43	2.5
26	AVU CDU Stack	19-Oct-24	14:20	129.6	88.4	9.33	5
27	FCC RR Stack	21-Oct-24	10:00	88.6	52.3	30.26	240.6

28	FCC Heater Stack	21-Oct-24	14:00	280.5	118.7	4.73	5
29	CCRU-P Stack	22-Oct-24	09:50	41.3	59.8	4.12	13.75
30	NHDT Stack	22-Oct-24	13:50	72.9	55.3	4.53	3.75
31	DHDT Stack	28-Oct-24	10:00	42.5	54.2	4.34	3.75
32	VGOHT MHC-2 Stack	28-Oct-24	14:00	37.6	55.9	3.8	2.5
33	VGOHT MHC-1 Stack	29-Oct-24	09:50	45.7	39.5	3.73	1.25
34	SRU/TGTU Stack	30-Oct-24	09:40	2145.2	201	19.15	76.25

Note:

1. Test Values are reported based on the materials received.
2. Sample(s) will be destroyed after 15 days from date of issues of the test report subject to nature of preservation.
3. Sample will be preserved according to standard method.
4. The test report shall not be reproduced except in full, without the written approval of laboratory.

Accreditations: OHSAS-45001:2018, MoEF & CC, NABET,
SPCB Empanelled Consultant-A Category.

Prepared By VISIONTEK CONSULTANCY SERVICES PVT. LTD.

VISIONTEK CONSULTANCY SERVICES PVT. LTD. **Verified By**

Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Ref : Envlab/24-25/TR-01504 **Date : 05.12.2024**

STATIONARY EMISSION MONITORING REPORT FOR NOVEMBER-2024

1. **Name of Industry : M/s. INDIAN OIL CORPORATION LIMITED**
2. **Sample Collected By : VCSPL Representative**
3. **Date of Analysis : 01.11.2024 TO 05.12.2024**

Parameter				SO_2	NOx	PM	CO
UOM				mg/Nm^3	mg/Nm^3	mg/Nm^3	mg/Nm^3
Method				IS 11255 [P-2]	IS 11255 [P-7]	IS 11255 [P-1]	IS 11255 [P-3]
SL No.	Location	Sampling Date	Time				
01	HRSG-3 STACK	01-Nov-24	14:00	70.4	233.4	9.02	22.5
02	HRSG-2 STACK	02-Nov-24	09:40	67.5	110.6	7.23	16.25
03	CPP (UB4) STACK	02-Nov-24	14:20	84.6	115.2	5.86	2.5
04	CPP (UB1) STACK	04-Nov-24	09:50	142.2	68.6	9.34	2.5
05	CPP (UB2) STACK	04-Nov-24	14:30	85.4	70.2	10.33	2.5
06	DCU Heater-1 Stack	05-Nov-24	09:40	65.3	82.2	4.17	1.25
07	DCU Heater-2 Stack	05-Nov-24	14:00	45.2	40.6	5.58	2.5
08	AVU VDU Stack	06-Nov-24	09:40	146.5	50.2	10.04	2.5
09	AVU CDU Stack	06-Nov-24	14:10	127.6	83.1	2.4	27.5
10	FCC RR Stack	07-Nov-24	09:40	57.4	51.6	31.55	227.5
11	FCC Heater Stack	07-Nov-24	14:20	256.1	117.5	8.48	8.75
12	VGOHT MHC-1 Stack	08-Nov-24	09:40	42.7	38.4	4.74	2.5
13	VGOHT MHC-2 Stack	08-Nov-24	14:10	46.8	54.2	4.43	2.5
14	CCRU-P Stack	09-Nov-24	09:30	40.6	54.8	4.08	8.75
15	NHDT Stack	09-Nov-24	14:00	71.5	56.3	7.2	2.5
16	DHDT Stack	12-Nov-24	10:00	40.8	55.2	4.27	2.5
17	SRU/TGTU Stack	13-Nov-24	14:00	2286.5	184.6	11.13	86.25
18	CPP (UB1) STACK	16-Nov-24	10:30	141.8	65.2	5.55	2.5
19	CPP (UB2) STACK	16-Nov-24	12:30	86.4	72.3	10.14	3.75
20	HRSG-3 STACK	18-Nov-24	14:10	72.6	245.2	15.18	27.5
21	HRSG-2 STACK	19-Nov-24	09:50	68.4	109.6	11.69	15
22	AVU CDU Stack	21-Nov-24	09:50	126.4	90.5	8.96	2.5
23	FCC Heater Stack	21-Nov-24	14:10	216.8	112.5	4.91	10
24	DCU Heater-2 Stack	20-Nov-24	09:50	44.8	40.1	6.62	1.25
25	AVU VDU Stack	20-Nov-24	14:10	102.4	53.2	11.13	2.5
26	CPP (UB4) STACK	18-Nov-24	10:00	85.4	116.4	10.63	1.25
27	FCC RR Stack	22-Nov-24	09:50	56.4	50.6	24.18	263.75

28	VGOHT MHC-1 Stack	22-Nov-24	15:30	41.2	38.6	4.06	2.5
29	VGOHT MHC-2 Stack	23-Nov-24	10:00	45.4	53.8	4.67	2.5
30	DHDT Stack	23-Nov-24	14:00	41.2	54.5	4.75	6.25
31	NHDT Stack	26-Nov-24	09:40	72.4	55.2	5.48	1.25
32	CCRU-P Stack	26-Nov-24	14:00	42.3	54.8	4.23	1.25
33	SRU/TGTU Stack	27-Nov-24	14:10	2265.2	186.4	26.08	93.75

Note:

1. Test Values are reported based on the materials received.
2. Sample(s) will be destroyed after 15 days from date of issues of the test report subject to nature of preservation.
3. Sample will be preserved according to standard method.
4. The test report shall not be reproduced except in full, without the written approval of laboratory.

Accreditations: OHSAS-45001:2018, MoEF & CC, NABET,

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Visiontek Consultancy Services Pvt. Ltd.

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Ref : Envlab/24-25/TR-01854 **Date : 05.01.2025**

STATIONARY EMISSION MONITORING REPORT FOR DECEMBER-2024

1. **Name of Industry : M/s. INDIAN OIL CORPORATION LIMITED**
2. **Sample Collected By : VCSPL Representative**
3. **Date of Analysis : 02.12.2024 TO 05.01.2025**

Parameter				SO_2	NOx	PM	CO
UOM				mg/Nm^3	mg/Nm^3	mg/Nm^3	mg/Nm^3
Method				IS 11255 [P-2]	IS 11255 [P-7]	IS 11255 [P-1]	IS 11255 [P-3]
SL No.	Location	Sampling Date	Time				
01	CPP (UB3) STACK	02-Dec-24	09:50	63.4	87.6	3.05	2.5
02	CPP (UB4) STACK	02-Dec-24	14:40	87.4	116.8	8.03	2.5
03	CPP (UB2) STACK	03-Dec-24	09:40	84.6	72.4	7.58	2.5
04	HRSG-3 STACK	03-Dec-24	14:00	70.4	318.5	7.37	22.5
05	HRSG-2 STACK	04-Dec-24	09:50	68.2	108.4	5.89	12.5
06	DCU Heater-1 Stack	04-Dec-24	14:10	65.2	80.4	6.94	1.25
07	DCU Heater-2 Stack	05-Dec-24	09:50	42.4	38.9	5.19	1.25
08	AVU VDU Stack	05-Dec-24	14:20	101.5	52.6	7.16	2.5
09	AVU CDU Stack	06-Dec-24	09:50	124.8	88.6	3.31	52.5
10	VGOHT MHC-2 Stack	06-Dec-24	14:00	55.4	53.4	4.72	1.25
11	VGOHT MHC-1 Stack	07-Dec-24	09:40	42.2	36.8	4.26	1.25
12	DHDT Stack	07-Dec-24	14:50	60.4	52.3	2.3	2.5
13	FCC RR Stack	09-Dec-24	10:30	56.9	52.6	23.6	240
14	FCC Heater Stack	09-Dec-24	14:00	226.5	115.2	4.17	5
15	CCRU-P Stack	11-Dec-24	09:50	68.4	55.4	1.98	2.5
16	NHDT Stack	11-Dec-24	14:00	70.6	55.8	5.28	1.25
17	SRU/TGTU Stack	12-Dec-24	14:00	1814.6	202.8	32.31	43.75
18	HRSG-3 STACK	16-Dec-24	10:00	77.2	308.4	13.04	15
19	HRSG-2 STACK	16-Dec-24	14:00	70.2	104.6	10.85	10
20	CPP (UB3) STACK	17-Dec-24	10:00	64.8	88.2	3.2	6.25
21	CPP (UB4) STACK	17-Dec-24	14:20	88.6	113.6	5.11	2.5
22	DCU Heater-1 Stack	18-Dec-24	14:00	66.4	78.6	2.44	1.25
23	CPP (UB2) STACK	18-Dec-24	09:50	82.4	70.6	8.23	2.5
24	DCU Heater-2 Stack	19-Dec-24	09:50	43.2	39.6	3.43	1.25
25	AVU VDU Stack	19-Dec-24	14:10	102.8	55.4	9.34	2.5
26	AVU CDU Stack	20-Dec-24	09:50	122.8	89.6	9.29	5
27	FCC RR Stack	23-Dec-24	10:20	57.8	55.4	21.98	231.25

28	FCC Heater Stack	23-Dec-24	14:00	228.2	114.6	4.66	2.5
29	DHDT Stack	24-Dec-24	10:00	60.4	53.6	4.28	1.25
30	SRU/TGTU Stack	24-Dec-24	15:00	2148.6	216.8	35.18	66.25
31	NHDT Stack	27-Dec-24	14:00	71.4	53.6	5.55	1.25
32	CCRU-P Stack	27-Dec-24	09:40	66.8	54.5	4.68	3.75
33	VGOHT MHC-1 Stack	28-Dec-24	09:40	40.6	38.4	4.1	1.25
34	VGOHT MHC-2 Stack	28-Dec-24	14:00	56.8	54.4	4.82	1.25

Note:

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2. Sample(s) will be destroyed after 15 days from date of issues of the test report subject to nature of preservation.
3. Sample will be preserved according to standard method.
4. The test report shall not be reproduced except in full, without the written approval of laboratory.

Accreditations: OHSAS-45001:2018, MoEF & CC, NABET,
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Visiontek Consultancy Services Pvt. Ltd.

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ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Ref : Envlab/24-25/TR-01955 **Date : 05.02.2025**

STATIONARY EMISSION MONITORING REPORT FOR JANUARY-2025

1. **Name of Industry : M/s. INDIAN OIL CORPORATION LIMITED**
2. **Sample Collected By : VCSPL Representative**
3. **Date of Analysis : 01.01.2025 TO 05.02.2025**

Parameter				SO_2	NOx	PM	CO
UOM				mg/Nm^3	mg/Nm^3	mg/Nm^3	mg/Nm^3
Method				IS 11255 [P-2]	IS 11255 [P-7]	IS 11255 [P-1]	IS 11255 [P-3]
SL No.	Location	Sampling Date	Time				
01	CPP (UB3) STACK	01-Jan-25	11:00	65.8	87.4	3.96	6.25
02	CPP (UB4) STACK	01-Jan-25	14:20	84.2	112.8	6.77	2.5
03	CPP (UB2) STACK	02-Jan-25	10:00	76.8	68.3	7.05	1.25
04	HRSG-3 STACK	02-Jan-25	14:00	72.4	269.2	11.37	20
05	HRSG-2 STACK	03-Jan-25	09:40	68.4	98.3	9.52	15
06	DCU Heater-1 Stack	03-Jan-25	14:20	72.6	86.2	5.97	1.25
07	DCU Heater-2 Stack	04-Jan-25	09:50	50.3	46.7	5.29	1.25
08	AVU VDU Stack	04-Jan-25	14:00	98.4	52.5	7.72	2.5
09	AVU CDU Stack	06-Jan-25	10:00	112.5	77.3	5.03	1.25
10	VGOHT MHC-1 Stack	06-Jan-25	14:00	35.2	33.8	4.74	1.25
11	VGOHT MHC-2 Stack	07-Jan-25	09:50	49.4	55.3	4.46	1.25
12	FCC Heater Stack	07-Jan-25	14:10	453.2	116.7	5.8	6.25
13	DHDT Stack	10-Jan-25	10:00	43.4	55.7	4.4	1.25
14	SRU/TGTU Stack	10-Jan-25	14:00	1804.3	198.7	29.48	47.5
15	NHDT Stack	11-Jan-25	09:40	67.3	52.5	5.04	2.5
16	CCRU-P Stack	11-Jan-25	14:00	63.5	52.7	4.19	1.25
17	FCC RR Stack	13-Jan-25	10:30	63.5	58.9	30.48	205
18	HRSG-1 STACK	17-Jan-25	09:40	83.9	72.4	16.47	10
19	DCU Heater-1 Stack	17-Jan-25	14:10	65.3	72.8	1.1	1.25
20	DCU Heater-2 Stack	18-Jan-25	09:50	56.9	51.2	5.54	1.25
21	AVU VDU Stack	18-Jan-25	14:00	95.7	50.6	7.73	2.5
22	CPP (UB4) STACK	15-Jan-25	10:20	86.7	110.8	4.81	1.25
23	CPP (UB2) STACK	15-Jan-25	14:10	68.4	53.9	2.88	1.25
24	HRSG-3 STACK	16-Jan-25	09:50	70.4	257.2	8.1	25
25	HRSG-2 STACK	16-Jan-25	14:00	81.4	105.2	23.06	17.5
26	NHDT Stack	20-Jan-25	14:00	65.4	50.8	4.24	5
27	CCRU-P Stack	20-Jan-25	09:50	68.9	54.3	4.61	1.25

28	AVU CDU Stack	21-Jan-25	10:30	115.9	79.4	7.37	1.25
29	FCC RR Stack	21-Jan-25	14:00	62.7	56.3	29.45	268.75
30	FCC Heater Stack	22-Jan-25	10:00	136.8	118.4	4.46	3.25
31	DHDT Stack	22-Jan-25	14:10	46.5	54.8	3.71	1.25
32	VGOHT MHC-1 Stack	23-Jan-25	09:30	36.8	32.4	3.15	1.25
33	SRU/TGTU Stack	27-Jan-25	09:50	2188.4	186.8	26.1	65

Note:

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Accreditations: OHSAS-45001:2018, MoEF & CC, NABET,
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VISIONTEK CONSULTANCY SERVICES PVT. LTD. **Verified By**

Ref : Envlab/24-25/TR-02116 **Date : 05.03.2025**

STATIONARY EMISSION MONITORING REPORT FOR FEBRUARY-2025

1. **Name of Industry : M/s. INDIAN OIL CORPORATION LIMITED**
2. **Sample Collected By : VCSPL Representative**
3. **Date of Analysis : 01.02.2025 TO 05.03.2025**

Parameter				SO_2	NOx	PM	CO
UOM				mg/Nm^3	mg/Nm^3	mg/Nm^3	mg/Nm^3
Method				IS 11255 [P-2]	IS 11255 [P-7]	IS 11255 [P-1]	IS 11255 [P-3]
SL No.	Location	Sampling Date	Time				
01	CPP (UB3) STACK	01-Feb-25	10:00	64.2	88.5	6.54	1.25
02	CPP (UB4) STACK	01-Feb-25	14:20	86.4	120.3	11.41	1.25
03	HRSG-2 STACK	03-Feb-25	09:50	78.6	104.8	8.44	12.5
04	HRSG-3 STACK	03-Feb-25	14:00	72.5	244.8	7.55	20
05	AVU CDU Stack	04-Feb-25	14:00	112.6	74.6	4.42	22.5
06	AVU VDU Stack	05-Feb-25	09:40	94.8	49.6	6.75	6.25
07	DCU Heater-1 Stack	05-Feb-25	14:00	58.7	49.6	6.6	1.25
08	VGOHT MHC-2 Stack	23-Jan-25	14:00	40.6	54.2	4.63	1.25
09	HRSG-1 STACK	06-Feb-25	09:30	84.2	75.7	5.2	12.5
10	DCU Heater-2 Stack	06-Feb-25	14:00	57.3	50.8	3.75	1.25
11	FCC RR Stack	07-Feb-25	09:40	60.8	55.3	27.5	222.5
12	FCC Heater Stack	07-Feb-25	14:00	142.9	116.5	6.4	2.5
13	VGOHT MHC-1 Stack	08-Feb-25	09:40	37.2	33.5	3.49	1.25
14	VGOHT MHC-2 Stack	08-Feb-25	14:00	41.3	55.4	3.98	1.25
15	SRU/TGTU Stack	11-Feb-25	09:40	2064.2	187.6	27.83	75
16	NHDT Stack	15-Feb-25	09:50	64.8	51.2	3.96	1.25
17	CCRU-P Stack	15-Feb-25	14:00	46.4	52.8	4.33	1.25
18	HRSG-3 STACK	17-Feb-25	10:00	74.2	234.8	10.47	22.5
19	HRSG-1 STACK	17-Feb-25	14:10	88.4	72.8	6.84	15
20	HRSG-2 STACK	18-Feb-25	10:00	80.4	101.6	7.66	7.5
21	CPP (UB3) STACK	18-Feb-25	14:00	65.8	87.4	7.56	1.25
22	CPP (UB4) STACK	18-Feb-25	16:10	88.2	118.2	7.18	1.25
23	DCU Heater-1 Stack	19-Feb-25	10:10	58.7	49.6	3.86	1.25
24	DCU Heater-2 Stack	19-Feb-25	14:00	57.3	50.8	3.67	1.25
25	FCC RR Stack	20-Feb-25	10:00	61.2	54.6	24.57	246.25
26	FCC Heater Stack	20-Feb-25	14:00	450.6	118.2	2.33	1.25
27	VGOHT MHC-1 Stack	21-Feb-25	10:00	37.5	32.6	4.24	1.25

28	VGOHT MHC-2 Stack	21-Feb-25	14:00	40.4	54.8	3.05	1.25
29	AVU CDU Stack	22-Feb-25	10:00	112.6	76.4	5.2	1.25
30	AVU VDU Stack	22-Feb-25	16:40	92.8	50.6	5.66	2.5
31	AVU CDU Stack	24-Feb-25	10:00	113.6	75.4	5.51	5
32	AVU VDU Stack	24-Feb-25	14:00	92.6	48.7	6.16	6.25
33	SRU/TGTU Stack	25-Feb-25	10:00	2186.4	158.6	19.73	67.5
34	FCC RR Stack	26-Feb-25	10:10	62.8	56.2	16.51	243.75
35	FCC Heater Stack	26-Feb-25	14:00	146.4	120.5	4.51	1.25
36	CPP (UB3) STACK	27-Feb-25	10:00	66.2	84.6	4.33	1.25
37	CPP (UB4) STACK	27-Feb-25	14:00	88.6	118.2	6.16	1.25
38	CCRU-P Stack	28-Feb-25	09:50	48.6	55.2	4.16	1.25
39	NHDT Stack	28-Feb-25	14:00	62.4	50.8	3.59	1.25

Note:

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Accreditations: OHSAS-45001:2018, MoEF & CC, NABET,
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Ref : Envlab/24-25/TR-02465 **Date : 05.04.2025**

STATIONARY EMISSION MONITORING REPORT FOR MARCH-2025

1. **Name of Industry** : **M/s. INDIAN OIL CORPORATION LIMITED**
2. **Sample Collected By** : **VCSPL Representative**
3. **Date of Analysis** : **01.03.2025 TO 05.04.2025**

Parameter				SO_2	NOx	PM	CO
UOM				mg/Nm^3	mg/Nm^3	mg/Nm^3	mg/Nm^3
Method				IS 11255 [P-2]	IS 11255 [P-7]	IS 11255 [P-1]	IS 11255 [P-3]
SL No.	Location	Sampling Date	Time				
01	SRU/TGTU Stack	01-Mar-25	13:30	2146.8	242.6	29.97	91
02	AVU CDU Stack	03-Mar-25	10:00	112.2	76.8	6.1	1.25
03	AVU VDU Stack	03-Mar-25	14:00	94.6	50.4	6.52	3.75
04	DCU Heater-1 Stack	04-Mar-25	09:40	56.8	50.2	2.61	12.5
05	DCU Heater-2 Stack	04-Mar-25	14:00	56.8	51.6	2.89	7.5
06	CPP (UB3) STACK	05-Mar-25	10:00	68.4	88.6	3.62	1.25
07	CPP (UB4) STACK	05-Mar-25	14:30	84.5	112.4	3.75	1.25
08	CCRU-P Stack	06-Mar-25	09:40	47.8	54.6	4.8	1.25
09	NHDT Stack	06-Mar-25	14:10	64.8	52.2	4.86	2.5
10	VGOHT MHC-1 Stack	07-Mar-25	10:20	36.4	32.8	4.61	1.25
11	VGOHT MHC-2 Stack	07-Mar-25	14:00	41.4	55.6	4.59	1.25
12	DHDT Stack	08-Mar-25	14:00	44.8	55.6	3.16	6.25
13	FCC RR Stack	11-Mar-25	10:20	62.8	56.2	22.06	251.25
14	FCC Heater Stack	11-Mar-25	14:20	444.8	118.4	5.71	2.5
15	DCU Heater-1 Stack	17-Mar-25	13:00	55.8	52.6	3.57	7.5
16	DCU Heater-2 Stack	17-Mar-25	14:00	55.8	51.6	3.93	2.5
17	AVU CDU Stack	19-Mar-25	10:00	114.2	74.8	5.12	2.5
18	AVU VDU Stack	19-Mar-25	16:00	96.8	51.2	5.47	1.25
19	VGOHT MHC-1 Stack	20-Mar-25	10:00	35.4	30.6	3.62	1.25
20	VGOHT MHC-2 Stack	20-Mar-25	14:00	40.8	54.2	3.58	1.25
21	CPP (UB1) STACK	22-Mar-25	09:40	141.8	70.2	16.64	10
22	CPP (UB3) STACK	21-Mar-25	09:50	71.4	90.2	3.37	1.25
23	CPP (UB4) STACK	21-Mar-25	14:20	85.4	111.6	3.42	2.5

24	DHDT Stack	24-Mar-25	09:50	45.3	54.8	4.3	5
25	NHDT Stack	24-Mar-25	14:20	64.8	54.5	2.5	2.5
26	FCC RR Stack	25-Mar-25	10:30	63.8	55.6	26.12	268.75
27	FCC Heater Stack	25-Mar-25	14:20	140.6	120.4	4.07	2.5
28	SRU/TGTU Stack	27-Mar-25	14:00	2095.4	244.6	18.68	66.25

Note:

1. Test Values are reported based on the materials received.
2. Sample(s) will be destroyed after 15 days from date of issues of the test report subject to nature of preservation.
3. Sample will be preserved according to standard method.
4. The test report shall not be reproduced except in full, without the written approval of laboratory.

Accreditations: OHSAS-45001:2018, MoEF & CC, NABET,
SPCB Empanelled Consultant-A Category.

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VISIONTEK CONSULTANCY SERVICES PVT. LTD. **Verified By**

Annexure-3

NHMC & Benzene Monitoring Report

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

VOC/FUGITIVE EMISSION SUMMARY: 2024-25 Report

Source of sample: Inside the Plant

Reason for testing: VOC/Fugitive Emission (Non Methane Hydrocarbons-NMHC) study

Sample drawn by: QC Lab/ HSE representative

Test report No: PDR/QC/FE-NMHC/2024-25/Q3-Q4

Date of sample		**Dt: 15.12.2024**	**Dt: 16.03.2025**
Sl No	**Test Method**	**NMHC (ppm)**	**NMHC (ppm)**
1	UOP 539	<100	<100

Dr. RC Sahu
QCM
IOCL, Paradip Refinery
20.03.2025

Annexure-4

VOC Monitoring Report

IndianOil

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

VOC (FUGITIVE EMISSION) SUMMARY: 2024-25, Test Report

Source of sample: Inside the Plant

Reason for testing: VOC (Fugitive Emission) Study

Sample drawn by: QC Lab Representative

Test report No: PDR/QC/FE/2024-25/04 **Date: 15.04.2025**

Sl. No.	UNIT	Number of equipments taken for measurement	Date of Measurement	Test Results of VOC (kg/hr)
1	AVU	141	14.03.2025 – 19.03.2025	0.04236
2	CCR	29	26.03.2025	0.00757
3	NHT	48	26.03.2025	0.01855
4	DHDT	39	26.03.2025	0.03710
5	VGOHDT	90	21.03.2025 - 26.03.2025	0.01398
6	DCU	36	11.03.2025	0.03153
7	SARU	20	14.03.2025	0.00000
8	ALK & BUTAMER	32	18.03.2025	0.00337
9	KTU	17	29.03.2025	0.02099
10	FCC - INDMAX	27	29.03.2025	0.01846
11	KHDS	12	27.03.2025	0.01107
TOTAL		491	11.03.2025 - 29.03.2025	**0.20498**

15.04.2025

Dr. RC Sahu
QCM
Indian Oil Corporation Ltd
Paradip Refinery

IndianOil

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

VOC (FUGITIVE EMISSION) SUMMARY: 2024-25, Test Report

Source of sample: Inside the Plant

Reason for testing: VOC (Fugitive Emission) Study

Sample drawn by: QC Lab Representative

Test report No: PDR/QC/FE/2024-25/03 **Date: 07.01.2025**

Sl. No.	UNIT	Number of equipments taken for measurement	Date of Measurement	Test Results of VOC (kg/hr)
1	AVU	141	14.12.2024 – 18.12.2024	0.04494
2	CCR	29	20.12.2024	0.00701
3	NHT	48	20.12.2024	0.02225
4	DHDT	39	10.12.2024	0.04450
5	VGOHDT	90	11.12.2024 - 14.12.2024	0.01775
6	DCU	36	20.12.2024	0.03588
7	SARU	20	26.12.2024	0.00000
8	ALK & BUTAMER	32	31.12.2024	0.00282
9	KTU	17	31.12.2024	0.02351
10	FCC - INDMAX	27	03.01.2025	0.02236
11	KHDS	12	24.12.2024	0.01282
TOTAL		491	10.12.2024 - 03.12.2024	**0.23384**

07.01.2025

Dr. RC Sahu
QCM
Indian Oil Corporation Ltd
Paradip Refinery

Annexure-5

Ambient Air Quality Report

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

AAQMS TEST REPORT OCTOBER-2024

Source of sample: AAQMS-1, 2, 3, 4, 5, 6 & 7 (All Ambient Air Monitoring Stations)

Date of Sample: 03,10, 14, 17, 21, 28, 31.10.2024

Test report No: PDR/QC/AAQM/2024-2025/07

Date: 05.11.2024

S. No.	Parameter	UoM	Limit	AAQMS-1: Main Gate			AAQMS-2: IOTL Tech Bld			AAQMS-3: LT Flare			AAQMS-4: IOT Loading Area			AAQMS-5: ETP area			AAQMS-6: S-Fire Station/QCLab.			AAQMS-7: Incinerator		
				Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max
1	PM2.5	µg/m^3	60 Max	40.8	37.0	45.1	35.2	32.0	38.0	29.1	27.0	32.0	30.2	26.0	34.0	38.3	32.0	43.0	35.8	33.0	40.0	29.3	27.0	34.0
2	PM10	µg/m^3	100 Max	82.1	76.0	92.0	72.6	68.2	79.0	60.8	57.2	65.4	64.1	56.0	71.0	77.0	62.0	88.2	72.6	66.0	83.1	62.0	59.0	68.0
3	Ozone	µg/m^3	100 Max	23.80	21.32	26.42	31.65	30.26	34.58	25.1	22.6	27.6	30.97	27.70	34.08	31.22	28.46	33.45	23.41	21.32	26.42	27.41	25.43	29.49
4	Ammonia	µg/m^3	400 Max	33.58	32.57	34.68	39.64	37.64	41.10	34.9	32.7	36.8	41.70	40.58	42.33	40.09	38.63	42.54	33.59	30.99	36.11	36.67	34.89	38.58
5	NO_X	µg/m^3	80 Max	73.1	70.0	75.0	71.0	67.2	72.0	71.7	68.0	73.0	62.3	60.0	66.0	62.2	59.3	66.0	63.7	62.0	66.0	65.5	63.2	68.0
6	Benzene	µg/m3	5 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	BenzoPyrene	ng/m3	1 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	SO_X	µg/m^3	80 Max	35.0	33.0	37.0	40.4	39.0	41.2	34.9	32.4	37.0	42.7	41.0	44.0	41.3	39.0	43.0	33.2	31.0	36.0	37.6	35.0	39.4
9	Pb	µg/m^3	1 Max	0.013	0.008	0.018	0.014	0.009	0.018	0.0	0.0	0.0	0.012	0.008	0.019	0.012	0.008	0.015	0.012	0.009	0.016	0.011	0.009	0.014
10	As	ng/m^3	6 Max	0.27	0.20	0.37	0.30	0.25	0.35	0.3	0.2	0.3	0.21	0.16	0.29	0.25	0.20	0.34	0.21	0.13	0.29	0.20	0.18	0.23
11	Ni	ng/m^3	20 Max	9.25	6.68	11.58	8.57	7.92	9.08	6.5	5.3	7.2	6.27	5.07	7.12	8.41	6.25	10.21	7.29	5.85	9.28	6.30	5.23	7.08
12	CO	mg/m^3	2 Max																0.23	0.13	0.29			

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, HSE Department.
2. Sample details: Sample collected by QC personnel and received as such.
3. The results relate only to the samples collected.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu
Quality Control Manager
Indian Oil Corporation Ltd
Paradip Refinery

IndianOil

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

AAQMS TEST REPORT NOVEMBER-2024

Source of sample: AAQMS-1, 2, 3, 4, 5, 6 & 7 (All Ambient Air Monitoring Stations)

Date of Sample: 04, 07, 11, 14, 18, 21, 25, 28.11.2024

Test report No: PDR/QC/AAQM/2024-2025/08

Date: 06.12.2024

S. No.	Parameter	UoM	Limit	AAQMS-1: Main Gate			AAQMS-2: IOTL Tech Bld			AAQMS-3: LT Flare			AAQMS-4: IOT Loading Area			AAQMS-5: ETP area			AAQMS-6: S-Fire Station/QCLab.			AAQMS-7: Incinerator		
				Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max
1	PM2.5	$\mu g/m^3$	60 Max	42.0	32.0	51.0	39.5	35.0	43.0	28.6	25.0	34.0	36.7	30.0	47.0	42.0	35.0	47.0	38.1	28.0	46.0	32.3	28.0	37.0
2	PM10	$\mu g/m^3$	100 Max	87.0	68.0	97.0	83.4	74.0	92.0	63.5	56.0	72.0	76.3	60.0	91.0	88.3	74.0	97.0	79.6	63.4	91.0	68.4	60.0	79.0
3	Ozone	$\mu g/m^3$	100 Max	27.21	22.17	32.69	33.49	29.24	37.62	26.9	22.6	36.1	36.31	31.53	40.26	32.05	22.95	36.68	25.27	21.40	29.46	28.05	24.89	31.91
4	Ammonia	$\mu g/m^3$	400 Max	34.76	31.49	43.00	39.89	35.00	43.12	37.0	31.0	40.3	41.26	37.19	44.00	41.91	39.00	45.07	34.76	29.00	36.62	37.82	33.00	41.31
5	NO_X	$\mu g/m^3$	80 Max	73.4	71.0	76.0	69.0	59.0	75.0	70.6	58.0	75.0	61.7	58.0	65.0	61.5	58.0	71.0	62.9	61.0	68.0	65.4	63.0	68.0
6	Benzene	µg/m3	5 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	BenzoPyrene	ng/m3	1 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	SO_X	$\mu g/m^3$	80 Max	35.5	31.0	41.0	42.5	39.0	45.0	34.6	30.0	38.0	44.3	41.0	47.0	40.9	34.0	45.0	34.2	31.5	39.0	37.5	28.0	42.0
9	Pb	$\mu g/m^3$	1 Max	0.016	0.008	0.024	0.014	0.008	0.019	0.0	0.0	0.0	0.013	0.009	0.019	0.015	0.009	0.023	0.013	0.010	0.021	0.014	0.009	0.018
10	As	ng/m^3	6 Max	0.28	0.16	0.36	0.30	0.22	0.38	0.3	0.2	0.3	0.24	0.19	0.31	0.30	0.24	0.37	0.27	0.19	0.34	0.26	0.18	0.35
11	Ni	ng/m^3	20 Max	9.02	6.25	9.98	9.21	7.81	10.30	6.5	6.0	7.2	8.29	6.35	12.03	9.55	7.12	11.59	8.23	5.92	10.07	7.65	6.73	8.68
12	CO	mg/m^3	2 Max																0.21	0.10	0.28			

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, HSE Department.
2. Sample details: Sample collected by QC personnel and received as such.
3. The results relate only to the samples collected.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu
Quality Control Manager
Indian Oil Corporation Ltd
Paradip Refinery

IndianOil

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

AAQMS TEST REPORT DECEMBER-2024

Source of sample: AAQMS-1, 2, 3, 4, 5, 6 & 7 (All Ambient Air Monitoring Stations)

Date of Sample: 02, 05, 09, 12, 16, 19, 23, 26, 30.12.2024

Test report No: PDR/QC/AAQM/2024-2025/09

Date: 04.01.2025

S. No.	Parameter	UoM	Limit	AAQMS-1: Main Gate			AAQMS-2: IOTL Tech Bld			AAQMS-3: LT Flare			AAQMS-4: IOT Loading Area			AAQMS-5: ETP area			AAQMS-6: S-Fire Station/QCLab.			AAQMS-7: Incinerator		
				Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max
1	PM2.5	$\mu g/m^3$	60 Max	46.7	40.0	51.0	36.8	34.0	41.0	29.4	26.0	34.0	36.1	31.0	44.0	42.9	40.0	48.0	40.2	32.0	47.0	29.9	27.0	37.0
2	PM10	$\mu g/m^3$	100 Max	94.8	82.0	99.0	79.7	71.0	91.0	63.1	58.0	69.0	80.0	69.0	93.0	92.4	88.0	96.0	83.2	62.0	94.0	65.3	60.0	75.0
3	Ozone	$\mu g/m^3$	100 Max	27.60	25.77	29.83	35.50	33.54	37.69	29.3	27.1	31.8	36.54	30.42	39.75	36.20	32.76	39.58	31.54	25.93	39.97	32.28	28.27	37.40
4	Ammonia	$\mu g/m^3$	400 Max	33.88	31.99	37.53	41.01	37.73	46.97	34.0	32.3	36.1	42.07	39.35	44.20	41.71	40.09	43.46	34.41	32.33	37.25	37.34	35.38	39.45
5	NO_X	$\mu g/m^3$	80 Max	73.0	71.0	75.0	71.0	68.0	73.0	69.1	61.0	73.0	61.9	56.0	69.0	62.0	60.0	69.0	64.4	62.0	66.0	67.7	65.0	70.0
6	Benzene	µg/m3	5 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	BenzoPyrene	ng/m3	1 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	SO_X	$\mu g/m^3$	80 Max	34.8	31.0	40.0	40.9	38.0	44.0	32.7	30.0	36.0	42.9	36.0	45.0	41.6	40.0	44.0	33.2	30.0	37.0	36.4	34.0	40.0
9	Pb	$\mu g/m^3$	1 Max	0.016	0.010	0.024	0.016	0.010	0.026	0.0	0.0	0.0	0.015	0.010	0.021	0.014	0.009	0.019	0.013	0.009	0.023	0.012	0.009	0.018
10	As	ng/m^3	6 Max	0.30	0.19	0.36	0.29	0.21	0.36	0.3	0.2	0.3	0.28	0.20	0.32	0.30	0.24	0.36	0.26	0.18	0.35	0.23	0.16	0.30
11	Ni	ng/m^3	20 Max	10.57	8.35	12.09	8.12	6.52	8.98	6.9	6.2	8.0	8.73	7.35	9.57	9.92	8.52	12.05	8.83	6.58	12.43	6.93	6.11	7.82
12	CO	mg/m^3	2 Max																0.23	0.17	0.25			

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, HSE Department.
2. Sample details: Sample collected by QC personnel and received as such.
3. The results relate only to the samples collected.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu
Quality Control Manager
Indian Oil Corporation Ltd
Paradip Refinery

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

AAQMS TEST REPORT JANUARY-2025

Source of sample: AAQMS-1, 2, 3, 4, 5, 6 & 7 (All Ambient Air Monitoring Stations)

Date of Sample: 02, 06, 09, 13, 16, 20, 23, 27, 30.01.2025

Test report No: PDR/QC/AAQM/2024-2025/10 **Date: 05.02.2025**

S. No.	Parameter	UoM	Limit	AAQMS-1: Main Gate			AAQMS-2: IOTL Tech Bld			AAQMS-3: LT Flare			AAQMS-4: IOT Loading Area			AAQMS-5: ETP area			AAQMS-6: S-Fire Station/QCLab.			AAQMS-7: Incinerator		
				Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max
1	PM2.5	$\mu g/m^3$	60 Max	48.9	43.0	55.0	44.2	36.0	52.0	28.8	26.0	33.0	41.4	34.0	50.0	43.2	38.0	48.0	36.3	29.0	44.0	31.7	29.0	37.0
2	PM10	$\mu g/m^3$	100 Max	96.2	91.0	99.0	90.8	85.0	98.0	62.9	59.0	66.0	86.4	78.0	94.0	92.7	80.0	98.0	80.4	72.0	94.0	69.3	62.0	80.0
3	Ozone	$\mu g/m^3$	100 Max	32.89	27.09	41.16	33.86	26.13	40.77	31.3	28.7	35.5	37.12	32.37	42.81	37.80	32.17	41.40	31.48	27.49	34.78	34.33	27.69	39.73
4	Ammonia	$\mu g/m^3$	400 Max	34.63	31.80	38.46	39.19	32.67	43.30	33.0	29.7	36.1	39.69	30.51	43.60	37.70	30.48	41.67	33.37	31.90	35.15	34.95	31.78	39.82
5	NO_X	$\mu g/m^3$	80 Max	72.1	63.0	77.0	70.8	65.0	75.0	67.2	58.0	73.0	68.6	63.0	74.0	65.2	60.0	77.0	66.3	62.0	69.0	68.0	61.0	72.0
6	Benzene	µg/m3	5 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	BenzoPyrene	ng/m3	1 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	SO_X	$\mu g/m^3$	80 Max	37.3	33.0	40.0	42.0	41.0	44.0	34.4	30.0	41.0	43.3	42.0	45.0	38.9	34.0	42.0	33.7	30.0	38.0	37.0	33.0	41.0
9	Pb	$\mu g/m^3$	1 Max	0.016	0.010	0.034	0.014	0.009	0.028	0.0	0.0	0.0	0.017	0.010	0.041	0.017	0.010	0.042	0.014	0.008	0.039	0.014	0.008	0.025
10	As	ng/m^3	6 Max	0.35	0.28	0.38	0.28	0.20	0.39	0.3	0.2	0.4	0.32	0.21	0.38	0.30	0.19	0.39	0.30	0.21	0.40	0.31	0.21	0.43
11	Ni	ng/m^3	20 Max	12.10	9.72	14.02	10.48	7.69	12.03	8.2	7.1	10.0	10.81	8.58	13.65	11.86	9.74	12.96	10.69	7.97	13.20	9.06	7.64	10.53
12	CO	mg/m^3	2 Max																0.25	0.18	0.31			

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, HSE Department.
2. Sample details: Sample collected by QC personnel and received as such.
3. The results relate only to the samples collected.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu
Quality Control Manager
Indian Oil Corporation Ltd
Paradip Refinery

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

AAQMS TEST REPORT FEBRUARY-2025

Source of sample: AAQMS-1, 2, 3, 4, 5, 6 & 7 (All Ambient Air Monitoring Stations)

Date of Sample: 03, 06, 10, 13, 17, 20, 24, 27.02.2025

Test report No: PDR/QC/AAQM/2024-2025/11 **Date:** 06.03.2025

S. No.	Parameter	UoM	Limit	AAQMS-1: Main Gate			AAQMS-2: IOTL Tech Bld			AAQMS-3: LT Flare			AAQMS-4: IOT Loading Area			AAQMS-5: ETP area			AAQMS-6: S-Fire Station/QCLab.			AAQMS-7: Incinerator		
				Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max
1	PM2.5	µg/m^3	60 Max	46.6	32.0	55.0	45.5	39.0	53.0	35.4	27.0	43.0	36.8	28.0	51.0	40.1	34.0	48.0	34.0	28.0	41.0	32.0	28.0	36.0
2	PM10	µg/m^3	100 Max	91.5	70.0	98.0	90.1	82.0	99.0	74.1	62.0	86.0	73.8	58.0	92.0	81.9	73.0	98.0	73.5	63.0	86.0	65.0	60.0	69.0
3	Ozone	µg/m^3	100 Max	29.93	26.05	34.92	33.96	27.88	39.08	28.5	25.0	32.0	32.83	28.00	37.44	33.00	27.75	39.58	30.57	25.53	36.85	34.23	30.61	37.40
4	Ammonia	µg/m^3	400 Max	35.30	31.96	40.72	37.20	32.76	43.14	32.1	29.4	33.4	39.24	34.62	46.36	37.45	31.70	40.80	34.02	31.58	39.42	33.62	30.57	36.66
5	NO_X	µg/m^3	80 Max	70.8	65.0	76.0	70.4	64.0	73.0	63.6	58.0	72.0	69.0	63.0	74.0	69.0	64.0	72.0	68.6	64.0	72.0	66.3	63.0	72.0
6	Benzene	µg/m3	5 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	BenzoPyrene	ng/m3	1 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	SO_X	µg/m^3	80 Max	39.1	35.0	43.0	42.5	40.0	45.0	37.1	32.0	42.0	43.4	38.0	46.0	39.1	37.0	41.0	36.5	32.0	40.0	36.4	31.0	40.0
9	Pb	µg/m^3	1 Max	9.233	0.010	13.480	8.821	0.016	12.400	6.8	0.0	9.1	7.226	0.011	9.570	7.826	0.015	11.890	7.125	0.012	9.430	5.726	0.017	7.140
10	As	ng/m^3	6 Max	0.06	0.01	0.38	0.04	0.01	0.24	0.0	0.0	0.3	0.05	0.01	0.25	0.06	0.01	0.36	0.04	0.01	0.21	0.03	0.01	0.19
11	Ni	ng/m^3	20 Max	1.73	0.26	11.56	1.38	0.22	9.06	1.2	0.1	8.6	1.11	0.19	6.84	1.17	0.13	7.65	1.49	0.18	10.09	1.26	0.17	8.42
12	CO	mg/m^3	2 Max																0.25	0.22	0.28			

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, HSE Department.
2. Sample details: Sample collected by QC personnel and received as such.
3. The results relate only to the samples collected.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu
Quality Control Manager
Indian Oil Corporation Ltd
Paradip Refinery

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

AAQMS TEST REPORT MARCH-2025

Source of sample: AAQMS-1, 2, 3, 4, 5, 6 & 7 (All Ambient Air Monitoring Stations)

Date of Sample: 03, 06, 10, 13, 17, 20, 24, 27, 31.03.2025

Test report No: PDR/QC/AAQM/2024-2025/12 **Date: 05.04.2025**

S. No.	Parameter	UoM	Limit	AAQMS-1: Main Gate			AAQMS-2: IOTL Tech Bld			AAQMS-3: LT Flare			AAQMS-4: IOT Loading Area			AAQMS-5: ETP area			AAQMS-6: S-Fire Station/QCLab.			AAQMS-7: Incinerator		
				Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	Min	Max
1	PM2.5	µg/m^3	60 Max	36.3	28.0	45.0	40.8	28.0	52.0	38.3	27.0	53.0	32.3	27.0	41.0	40.4	35.0	47.0	32.6	26.0	38.0	29.0	24.0	35.0
2	PM10	µg/m^3	100 Max	75.9	66.0	92.0	82.3	62.0	97.0	78.7	63.0	96.0	67.7	57.0	88.0	81.4	69.0	92.0	69.3	56.0	82.0	60.4	51.0	65.0
3	Ozone	µg/m^3	100 Max	34.32	30.61	38.83	36.54	29.08	40.69	36.9	31.7	41.1	34.39	29.13	40.75	36.72	33.53	39.71	35.53	30.61	39.70	34.75	29.23	40.73
4	Ammonia	µg/m^3	400 Max	36.24	31.36	43.75	36.77	31.67	41.16	34.2	31.9	37.1	39.06	30.15	45.88	37.84	33.18	41.98	33.00	30.45	37.89	36.03	33.20	39.66
5	NO_X	µg/m^3	80 Max	71.9	66.0	77.0	71.1	61.0	75.0	66.4	59.0	72.0	68.9	62.0	74.0	67.0	61.0	72.0	67.0	64.0	69.0	67.6	64.0	72.0
6	Benzene	µg/m3	5 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	BenzoPyrene	ng/m3	1 Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	SO_X	µg/m^3	80 Max	39.2	35.0	43.0	41.4	36.0	46.0	35.2	31.0	41.0	41.2	33.0	45.0	39.0	34.0	42.0	34.9	30.0	40.0	35.4	31.0	40.0
9	Pb	µg/m^3	1 Max	0.018	0.012	0.022	0.016	0.010	0.024	0.0	0.0	0.0	0.021	0.012	0.031	0.017	0.011	0.021	0.015	0.011	0.024	0.015	0.010	0.019
10	As	ng/m^3	6 Max	0.30	0.18	0.39	0.28	0.23	0.33	0.3	0.2	0.4	0.26	0.17	0.40	0.26	0.19	0.36	0.28	0.19	0.36	0.28	0.18	0.39
11	Ni	ng/m^3	20 Max	8.60	6.55	10.43	10.10	6.90	12.40	9.7	6.9	13.1	7.55	5.89	9.82	9.30	7.46	11.53	8.32	6.80	10.74	7.13	6.58	7.91
12	CO	mg/m^3	2 Max																0.23	0.20	0.29			

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, HSE Department.
2. Sample details: Sample collected by QC personnel and received as such.
3. The results relate only to the samples collected.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu
Quality Control Manager
Indian Oil Corporation Ltd
Paradip Refinery

Annexure-6

Sulphur Balance

SULPHUR BALANCE

Oct-24

INPUT

TOTAL CRUDE CHARGED	**TMT/Month**		**1272.949**
SULPHUR CONTENT OF CRUDE MIX	**% WT**		**2.142**
ADDITIONAL VGO INPUT	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ADDITIONAL INPUT	**% WT**		**0.000**
INTERMEDIATE FEED STOCK BUILD-UP	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ISD	**% WT**		**0.000**
SULPHUR CONTENT IN INPUT	**TMT/Month**		**27.272**

PRODUCTS MAKE	**TMT/Month**	**AVG. SULPHUR IN PRODUCT, PPM**	**SULPHUR WT.%**	**SULPHUR CONTENT, TMT/Month**
LPG	97.953	150	0.015	0.01
NAPHTHA	26.081	250	0.025	0.01
PROPYLENE/Fuel for PP	14.699	0.01	0.000	0.00
GASOLENE-88	0.000	20	0.002	0.00
REFORMATE	54.452	1	0.000	0.00
MS-VI	263.553	10	0.001	0.00
KERO / PCK	3.309	1000	0.100	0.00
ATF	56.737	1000	0.100	0.06
HSD	482.653	8.5	0.001	0.00
HF HSD	35.827	10	0.001	0.00
LCO	21.315	677	0.068	0.01
COKE	87.422	73500.0	7.35	6.43
SULPHUR PRODUCT	20.644			20.64
Sulphur content in product				27.17
ISD build up/line fill				
Sulphur in Input	27.27			
Sulphur in Product	27.17			
S' emission, TMT/Month	0.10		SRU Recovery	
SO2 emission, kg/hr	**266.4**		**99.52%**	

SULPHUR BALANCE

Nov-24 no. of days 30

INPUT

TOTAL CRUDE CHARGED	**TMT/Month**		**1333.391**
SULPHUR CONTENT OF CRUDE MIX	**% WT**		**2.337**
ADDITIONAL VGO INPUT	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ADDITIONAL INPUT	**% WT**		**0.000**
INTERMEDIATE FEED STOCK BUILD-UP	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ISD	**% WT**		**0.000**
SULPHUR CONTENT IN INPUT	**TMT/Month**		**31.166**

PRODUCTS MAKE	**TMT/Month**	**AVG. SULPHUR IN PRODUCT, PPM**	**SULPHUR WT.%**	**SULPHUR CONTENT, TMT/Month**	
LPG	104.113	150	0.015	0.02	
NAPHTHA	47.617	250	0.025	0.01	
PROPYLENE/Fuel for PP	14.256	0.01	0.000	0.00	
GASOLENE-88	0.000	20	0.002	0.00	
REFORMATE	73.930	1	0.000	0.00	
MS-VI	261.548	10	0.001	0.00	
KERO / PCK	1.952	1000	0.100	0.00	PCK
ATF	60.426	1000	0.100	0.06	
HSD	508.148	8.5	0.001	0.00	
HF HSD	72.676	10	0.001	0.00	
LCO	23.731	677	0.068	0.02	
COKE	102.793	79590.0	7.96	8.18	
SULPHUR PRODUCT	22.764			22.76	
Sulphur content in product				31.06	
ISD build up/line fill					
Sulphur in Input	31.17				
Sulphur in Product	31.06				
S' emission, TMT/Month	0.11		SRU Recovery		
SO2 emission, kg/hr	**298.5**		**99.53%**		

SULPHUR BALANCE

Dec-24 no. of days 31

INPUT

TOTAL CRUDE CHARGED	**TMT/Month**		**1403.144**
SULPHUR CONTENT OF CRUDE MIX	**% WT**		**2.263**
ADDITIONAL VGO INPUT	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ADDITIONAL INPUT	**% WT**		**0.000**
INTERMEDIATE FEED STOCK BUILD-UP	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ISD	**% WT**		**0.000**
SULPHUR CONTENT IN INPUT	**TMT/Month**		**31.760**

PRODUCTS MAKE	**TMT/Month**	**AVG. SULPHUR IN PRODUCT, PPM**	**SULPHUR WT.%**	**SULPHUR CONTENT, TMT/Month**	
LPG	100.236	150	0.015	0.02	
NAPHTHA	49.761	250	0.025	0.01	
PROPYLENE/Fuel for PP	14.655	0.01	0.000	0.00	
GASOLENE-88	0.000	20	0.002	0.00	
REFORMATE	76.232	1	0.000	0.00	
MS-VI	257.116	10	0.001	0.00	
KERO / PCK	2.416	1000	0.100	0.00	PCK
ATF	83.352	1000	0.100	0.08	
HSD	550.547	8.5	0.001	0.00	
HF HSD	26.552	10	0.001	0.00	
LCO	18.441	677	0.068	0.01	
COKE	103.194	77550.0	7.76	8.00	
SULPHUR PRODUCT	23.510			23.51	
Sulphur content in product				31.65	
ISD build up/line fill					

Sulphur in Input	31.76
Sulphur in Product	31.65
S' emission, TMT/Month	0.11
SO2 emission, kg/hr	**305.2**

SRU Recovery
99.52%

SULPHUR BALANCE **Jan-25** no. of days 31

INPUT

TOTAL CRUDE CHARGED	**TMT/Month**		**1436.191**
SULPHUR CONTENT OF CRUDE MIX	**% WT**		**2.024**
ADDITIONAL VGO INPUT	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ADDITIONAL INPUT	**% WT**		**0.000**
INTERMEDIATE FEED STOCK BUILD-UP	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ISD	**% WT**		**0.000**
SULPHUR CONTENT IN INPUT	**TMT/Month**		**29.072**

PRODUCTS MAKE	**TMT/Month**	**AVG. SULPHUR IN PRODUCT, PPM**	**SULPHUR WT.%**	**SULPHUR CONTENT, TMT/Month**
LPG	117.904	150	0.015	0.02
NAPHTHA	39.822	250	0.025	0.01
PROPYLENE/Fuel for PP	8.114	0.01	0.000	0.00
GASOLENE-88	0.000	20	0.002	0.00
REFORMATE	73.141	1	0.000	0.00
MS-VI	283.916	10	0.001	0.00
KERO / PCK	2.056	1000	0.100	0.00
ATF	43.524	1000	0.100	0.04
HSD	526.544	8.5	0.001	0.00
HF HSD	77.849	10	0.001	0.00
LCO	10.648	677	0.068	0.01
COKE	109.754	72000.0	7.200	7.90
SULPHUR PRODUCT	20.978			20.98
Sulphur content in product				28.97
ISD build up/line fill				

Sulphur in Input	29.07
Sulphur in Product	28.97
S' emission, TMT/Month	0.10
SO2 emission, kg/hr	**277.0**

SRU Recovery
99.51%

SULPHUR BALANCE **Feb-25** no. of days 28

INPUT

TOTAL CRUDE CHARGED	**TMT/Month**		**1296.510**
SULPHUR CONTENT OF CRUDE MIX	**% WT**		**2.209**
ADDITIONAL VGO INPUT	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ADDITIONAL INPUT	**% WT**		**0.000**
INTERMEDIATE FEED STOCK BUILD-UP	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ISD	**% WT**		**0.000**
SULPHUR CONTENT IN INPUT	**TMT/Month**		**28.636**

PRODUCTS MAKE	**TMT/Month**	**AVG. SULPHUR IN PRODUCT, PPM**	**SULPHUR WT.%**	**SULPHUR CONTENT, TMT/Month**
LPG	107.101	150	0.015	0.02
NAPHTHA	26.254	250	0.025	0.01
PROPYLENE/Fuel for PP	6.397	0.01	0.000	0.00
GASOLENE-88	0.000	20	0.002	0.00
REFORMATE	68.259	1	0.000	0.00
MS-VI	253.153	10	0.001	0.00
KERO / PCK	5.813	1000	0.100	0.01
ATF	60.062	1000	0.100	0.06
HSD	482.641	8.5	0.001	0.00
HF HSD	67.038	10	0.001	0.00
LCO	11.102	677	0.068	0.01
COKE	98.573	67000.0	6.700	6.60
SULPHUR PRODUCT	21.825			21.83
Sulphur content in product				28.53
ISD build up/line fill				
Sulphur in Input	28.64			
Sulphur in Product	28.53		SRU Recovery	
S' emission, TMT/Month	0.10		**99.53%**	
SO2 emission, kg/hr	**305.8**			

SULPHUR BALANCE

Mar-25 no. of days 31

INPUT

TOTAL CRUDE CHARGED	**TMT/Month**		**1415.461**
SULPHUR CONTENT OF CRUDE MIX	**% WT**		**1.969**
ADDITIONAL VGO INPUT	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ADDITIONAL INPUT	**% WT**		**0.000**
INTERMEDIATE FEED STOCK BUILD-UP	**TMT/Month**		**0.000**
SULPHUR CONTENT OF ISD	**% WT**		**0.000**
SULPHUR CONTENT IN INPUT	**TMT/Month**		**27.870**

PRODUCTS MAKE	**TMT/Month**	**AVG. SULPHUR IN PRODUCT, PPM**	**SULPHUR WT.%**	**SULPHUR CONTENT, TMT/Month**
LPG	116.026	150	0.015	0.02
NAPHTHA	60.755	250	0.025	0.02
PROPYLENE/Fuel for PP	13.658	0.01	0.000	0.00
GASOLENE-88	0.000	20	0.002	0.00
REFORMATE	65.530	1	0.000	0.00
MS-VI	258.240	10	0.001	0.00
KERO / PCK	5.813	1000	0.100	0.01
ATF	68.855	1000	0.100	0.07
HSD	540.855	8.5	0.001	0.00
HF HSD	61.705	10	0.001	0.00
LCO	14.212	677	0.068	0.01
COKE	104.066	68500.0	6.85	7.13
SULPHUR PRODUCT	20.515			20.52
Sulphur content in product				27.77
ISD build up/line fill				
Sulphur in Input	27.87			
Sulphur in Product	27.77		SRU Recovery	
S' emission, TMT/Month	0.10		**99.51%**	
SO2 emission, kg/hr	**272.7**			

Annexure-7

LDAR Report

REPORT ON

LDAR MONITORING AT INDIANOIL ADANI VENTURES LIMITED BOOT#3 IOCL PARADIP

DECEMBER 2024

SUBMITTED TO

IndianOil Adani Ventures

IndianOil Adani Ventures Limited

(Formerly Indian Oiltanking Limited)

Paradip BOOT TRM 80005, IndianOil Adani Ventures, BOOT-3 Terminal, IOCL Refinery, Jagatsingpur, Paradip, Odisha PIN-754141

SUBMITTED BY:

SGS

SGS India Private Limited
CS Plot-512 (P), Mouza, Hanspukuria,
Diamond Harbour Road, PO-Joka,South 24Parganas
Kolkata - 700104

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1 Introduction 3
1.1 About Industry 3
2 Objective 4
3 Present study 4
4 Scope of Work 4
5 About LDAR 5
6 Methodology of the study 5
6.1 Sampling Methodology 5
6.2 Individual Source Surveys 6
7 Calculation 1-57
8 Annexure 1 (Test Results) .....

per pro SGS India Private Ltd.

Satya Charan Manna
Manager (Laboratory)

1 Introduction

SGS India Private Limited has been contracted to conduct LDAR monitoring at BOOT # 3 & SOJ of IOCL Paradip for 2021-2022 period. Accordingly the measurement of the identified fugitive emission sources within the study area to detect leaking components as per USEPA 21 Guideline were conducted during November-December 2021. Although the leak definition as per CPCB guideline is 3000 ppmv and 5000 ppmv, M/s IOT wanted SGS to report any source emission above 300 ppmv.

1.1 About Industry

IndianOil Adani Ventures Limited (formally known as Indian Oiltanking) jointly owned by IndianOil Corporation and APSEZ provides Infrastructure-led terminalling services to Petroleum, Petrochemical and Chemical companies in India since 1996. Over the past 22 years, the company has evolved into an integrated services provider with niche capabilities in Engineering, Build Capabilities, Operations and Maintenance (O&M) of Storage Terminals. Currently, we operate six terminals in India through various business models including BOO/BOOT (Build, Own, Operate/Transfer) and O&M.

The company brought the concept of independent terminalling in India for Petroleum products, wherein the operator does not own the product and provides services to users on a common user basis. It has pioneered the concepts of 'Build & Own' (BO), 'Build Own Operate' (BOO), BOO & Transfer (BOOT), Operations & Maintenance of third party terminals in India.

The company has also set up a first-of-its kind crude oil and petroleum product storage BOOT project inside Indian Oil Corporation's refinery at Paradip on India's East Coast, wherein the entire offsite storage of crude and finished products has been built.

PARADIP TERMINAL FACTS

Tank Capacity 1,513,968 cbm

Tanks 51

Tank Types Mild steel, pressure vessel steel

Access Types - Vessels, Tank Trucks, Pipeline, Berth

No. of Berths - 1

Products - Clean Petroleum Products, Crude Oil, Gases

Services - Pipeline connections to refineries, Tank-to-tank transfer, Vessel loading and unloading, Truck loading, Blending services, Homogenizing

2 Sampling Schedule

From 03.12.2024 to 09.12.2024

3 Objective

The objective of the studies to Identifying potential fugitive emission sources and quantification of the fugitive emission during oil production in terminals.

A typical industry can emit tons per year of VOCs from leaking equipment, such as valves, connectors, pumps, sampling connections, compressors, pressure relief devices and open-ended lines etc. Process components covering all joints as mentioned above are monitored under "fugitive emission monitoring" program covering all the components in Boot # 3 & SOJ.

4 Present study

a) Carry out onsite detection through physical scanning for leaks and vented emissions (if any) in the operating assets using portable analyzer according USEPA Method 21 (sniffing method).

b) Monitoring and measurement of the identified fugitive emission sources within the study area and tagging the detected leaking components.

c) The outcome of the study shall focus on the details the programme undertaken, methodology, findings, monitored fugitive emissions rates, conclusion and recommendations for improvement.

5 Scope of Work

- Fugitive emission monitoring at IOCL Paradip (Boot # 3 & SOJ) terminal.
- Monitoring and measurement of the identified fugitive emission sources (supplied by IOT) within the study area and tagging the detected leaking components as per USEPA method 21.

About LDAR:

Leak Detection and Repair (LDAR) is a program implemented to comply with environmental regulations for reducing the fugitive emissions of targeted chemicals into the environment. Several standards such as *Maximum Achievable Control Technology* (MACT) standards, *New Source Performance Standards* (NSPS), *National Emissions Standards for Hazardous Air Pollutants* (NESHAP) and Central Pollution Control Board (CPCB) require the monitoring and reporting of these fugitive emissions from process equipment.

Process components covering Boot # 3 and SOJ were monitored as LDAR and covered all the components in the process plant. The environmental regulations are prescribed LDAR programs as a means of reducing emissions have very specific standards and applied to a monitoring and repair program. The LDAR study included the following protocols:

- **Types of components (pumps, valves, connectors, Flanges etc.) to be monitored** – All the sources assumed to be leaking source are monitored as per the USEPA Method 21 Protocol.
- **Measured concentration in PPM that indicates a leak** – Emission source is measured at PPM (parts per million) level.
- **Frequency of monitoring** – As per EPA act 1986 page 409, Fugitive emission monitoring program is undertaken every year (including Heat Exchangers and Pump seal as a part of Quarterly Monitoring).
- Method of monitoring
- **Actions to be taken if a leak is discovered** – A leak source above the limit as per EPA act should be reported and repaired immediately and the sources emitting the leak under the limit should be reported and an appropriate action should be undertaken.

- **Length of time in which an initial attempt to repair the leak must be performed** – Depending upon the nature of leak source, a leak source above the limits as per EPA guidelines should be reported and repaired immediately.
- **Actions that must be taken if a leak cannot be repaired within guidelines** – A proper action should be undertaken as a leaking source contributes in air pollution.
- **Record-keeping and reporting requirements** – A proper record should be maintained so that the leak source can be monitored again to see discrepancies if any.

Affected Sources: Each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange and connector that contains or contacts a fluid or gas, that is exceeding more than 5000ppm of pump and compressor seals and 3000 ppm other components is an affected source.

Equipment Leak: A leak is defined as greater than or equal to 3,000 & 5000 ppmv as methane, for organic compounds, as determined by EPA Reference Method 21. Most of the emissions are from valves and connectors because these are most prevalent components and can number in the thousands. The major cause of emissions from valves and connectors is seal or gasket failure due to normal wear or improper maintenance. More than 90% of emissions from the leaking equipment with valves are being the most significant source. The open-ended lines and sampling connections account for as much as 5 – 10% of total VOC emissions from equipment leaks.

Minimum Requirements for an Acceptable Organic LDAR Program:

- Each affected source is screened initially using USEPA Method 21.
- Monthly visual inspections must be performed by industry on each affected source for signs of leakage (e.g. dripping liquid, spraying, misting, clouding, ice formation, distinctive odors, etc.).
- Monitoring of each affected source is to be conducting quarterly using Method 21.

All potential leak points associated with a component must be identified and screened for leaks. The detected leaks by Method 21 test was tagged and repaired. The leak sources are measured after repair and the same is recorded.

6 Methodology of the study:

USEPA Method – 21 was followed to monitor source emissions at IAVL/IOCL Paradip.

6.1 Individual Source Surveys.

Leak Definition Based on Concentration. Place the probe inlet at the surface of the component interface where leakage could occur. Move the probe along the interface periphery while

observing the instrument readout. If an increased meter reading is observed, slowly sample the interface where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately two times the instrument response time. If the maximum observed meter reading is greater than the leak definition in the applicable regulation, record and report the results as specified in the regulation reporting requirements. Examples of the application of this general technique to specific equipment types are:

- Valves - The most common source of leaks from valves is the seal between the stem and housing.

Place the probe at the interface where the stem exits the packing gland and sample the stem circumference. Also, place the probe at the interface of the packing gland take-up flange seat and sample the periphery. In addition, survey valve housings of multipart assembly at the surface of all interfaces where a leak could occur.

- Flanges and Other Connections - For welded flanges, place the probe at the outer edge of the flange-gasket interface and sample the circumference of the flange. Sample other types of nonpermanent joints (such as threaded connections) with a similar traverse.

- Pumps and Compressors - Conduct a circumferential traverse at the outer surface of the pump or compressor shaft and seal interface. If the source is a rotating shaft, position the probe inlet within 1 cm of the shaft-seal interface for the survey. If the housing configuration prevents a complete traverse of the shaft periphery, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

- Pressure Relief Devices - The configuration of most pressure relief devices prevents sampling at the sealing seat interface. For those devices equipped with an enclosed extension, or horn, place the probe inlet at approximately the center of the exhaust area to the atmosphere.

- Process Drains - For open drains, place the probe inlet at approximately the center of the area open to the atmosphere. For covered drains, place the probe at the surface of the cover interface and conduct a peripheral traverse.

- Access door seals. Place the probe inlet at the surface of the door seal interface and conduct a peripheral traverse.

Calculation:

(Reference – EPA 1995 Protocol for Equipment Leak Emission Estimation Table 2-10)

Component Type	Default Zero Factor [Kg/hr]	Correlation Equation [Kg/hr]
Valves	[7.8E-06]	[2.29E-06(SV)^0.746]
Pump Seals	[1.9E-05]	[5.03E-05(SV)^0.610]
Others	[4.0E-06]	[1.36E-05(SV)^0.589]
Connectors	[7.5E-06]	[1.53E-06(SV)^0.735]
Flanges	[3.1E-07]	[4.61E-06(SV)^0.703]
Open-ended Lines	[2.0E-06]	[2.20E-06(SV)^0.704]

The default zero factors apply only when the screening value(SV) corrected for background equals 0 ppmv.

The correlation equations apply for actual screening values, corrected for background.

The "other" component type includes instruments, loading arms, pressure relief valves, vents, compressors, dump lever arms, diaphragms, drains, hatches, meters and polished rods stuffing boxes. This "other" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps or valves.

For example,

Reference USEPA-Method-21)

The screening value (SV) concentration in Valves is 2600 ppm

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

RF = Response Factor = 1

Response Factors of Different Volatiles (USEPA Method-21):	
Gasoline Vapors	1.05
Naphtha	1.0
Heavy Oil	1.1
Petrol & Diesel	0.8
Gasoline Vapors 2	0.7
Light Oil	1.0

% of VOC Flow = material passing on that particular pipe line.

0.00000227 = Correlation factor

SV = Screening Value in ppm

If we will apply all the values in the below formula

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

= 1 (100/100) *0.0000023*2600^0.746

= 0.000815 kg/hr

Total hours of operation per year are 8760 (24 hours x 365 days)

The volatile emission = 7.109 Kgs/year.

SUMMARY OF THE STUDY

SGS has monitored more than four thousand points in study area selected by IOT at IOCL Paradip Boot # 3 area and more than one thousand points at the Berth at Paradip Port.

TEST RESULTS

SUMMARY SHEET OF TVOC EMISSION MEASUREMENT			
UNIT	NO. OF POINT MEASURE	TOTAL VOC EMISSION IN kg/Hr.	TOTAL VOC EMISSION IN kg/Year
Boot # 3	4357	0.021633	189.505043
SOJ	1417	0.000447	3.917661
TOTAL POINTS	5774	0.02208	193.422704

CONCLUSION:

The results are submitted component wise in the enclosed Annexure-1 As per CPCB guidelines no components detected with more than the standard values of 3000ppmv and 5000ppmv. Hence no recommendations are given for repairing of any leakage sources. However M/s IOT wanted SGS to report any source emission above 300 ppmv and accordingly SGS has tagged and reported for the points with emission of 300 ppmv and above. Total 3 points with emission of 300 ppmv and above were detected at BOOT # 3 and one such point was detected at SOJ area. Maximum Screening Value at Boot # 3 was 1753 ppmv and that at SOJ(Dock Yard at Paradip Port) was 165.4 ppmv.

Based on the calculation and concentrations of VOC in the equipment, we took default value 1 & 0.8 for Response Factor (RF) as per the product in the lines.

REPORT ON

LDAR MONITORING AT INDIANOIL ADANI VENTURES LIMITED, SOJ IOCL PARADIP DECEMBER' 2024

SUBMITTED TO

IndianOil Adani Ventures Limited

(Formerly Indian Oiltanking Limited)

Paradip BOOT TRM 80005, IndianOil Adani Ventures, BOOT-3 Terminal, IOCL Refinery, Jagatsingpur, Paradip, Odisha PIN-754141

SUBMITTETED BY:

SGS India Private Limited
CS Plot-512 (P), Mouza, Hanspukuria,
Diamond Harbour Road, PO-Joka,South 24Parganas
Kolkata - 700104

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per pro SGS India Private Ltd.

Satya Charan Manna
Manager (Laboratory)

1 Introduction

SGS India Private Limited has been contracted to conduct LDAR monitoring at BOOT # 3 & SOJ of IOCL Paradip for 2021-2022 period. Accordingly the measurement of the identified fugitive emission sources within the study area to detect leaking components as per USEPA 21 Guideline were conducted during November-December 2021. Although the leak definition as per CPCB guideline is 3000 ppmv and 5000 ppmv, M/s IOT wanted SGS to report any source emission above 300 ppmv.

1.1 About Industry

IndianOil Adani Ventures Limited (formally known as Indian Oiltanking) jointly owned by IndianOil Corporation and APSEZ provides Infrastructure-led terminalling services to Petroleum, Petrochemical and Chemical companies in India since 1996. Over the past 22 years, the company has evolved into an integrated services provider with niche capabilities in Engineering, Build Capabilities, Operations and Maintenance (O&M) of Storage Terminals. Currently, we operate six terminals in India through various business models including BOO/BOOT (Build, Own, Operate/Transfer) and O&M.

The company brought the concept of independent terminalling in India for Petroleum products, wherein the operator does not own the product and provides services to users on a common user basis. It has pioneered the concepts of 'Build & Own' (BO), 'Build Own Operate' (BOO), BOO & Transfer (BOOT), Operations & Maintenance of third party terminals in India.

The company has also set up a first-of-its kind crude oil and petroleum product storage BOOT project inside Indian Oil Corporation's refinery at Paradip on India's East Coast, wherein the entire offsite storage of crude and finished products has been built.

PARADIP TERMINAL FACTS

Tank Capacity 1,513,968 cbm

Tanks 51

Tank Types Mild steel, pressure vessel steel

Access Types - Vessels, Tank Trucks, Pipeline, Berth

No. of Berths - 1

Products - Clean Petroleum Products, Crude Oil, Gases

Services - Pipeline connections to refineries, Tank-to-tank transfer, Vessel loading and unloading, Truck loading, Blending services, Homogenizing

2 Sampling Schedule

From 03.12.2024 to 09.12.2024

3 Objective

The objective of the studies to Identifying potential fugitive emission sources and quantification of the fugitive emission during oil production in terminals.

A typical industry can emit tons per year of VOCs from leaking equipment, such as valves, connectors, pumps, sampling connections, compressors, pressure relief devices and open-ended lines etc. Process components covering all joints as mentioned above are monitored under "fugitive emission monitoring" program covering all the components in Boot # 3 & SOJ.

4 Present study

a) Carry out onsite detection through physical scanning for leaks and vented emissions (if any) in the operating assets using portable analyzer according USEPA Method 21 (sniffing method).

b) Monitoring and measurement of the identified fugitive emission sources within the study area and tagging the detected leaking components.

c) The outcome of the study shall focus on the details the programme undertaken, methodology, findings, monitored fugitive emissions rates, conclusion and recommendations for improvement.

5 Scope of Work

- Fugitive emission monitoring at IOCL Paradip (Boot # 3 & SOJ) terminal.
- Monitoring and measurement of the identified fugitive emission sources (supplied by IOT) within the study area and tagging the detected leaking components as per USEPA method 21.

About LDAR:

Leak Detection and Repair (LDAR) is a program implemented to comply with environmental regulations for reducing the fugitive emissions of targeted chemicals into the environment. Several standards such as *Maximum Achievable Control Technology* (MACT) standards, *New Source Performance Standards* (NSPS), *National Emissions Standards for Hazardous Air Pollutants* (NESHAP) and Central Pollution Control Board (CPCB) require the monitoring and reporting of these fugitive emissions from process equipment.

Process components covering Boot # 3 and SOJ were monitored as LDAR and covered all the components in the process plant. The environmental regulations are prescribed LDAR programs as a means of reducing emissions have very specific standards and applied to a monitoring and repair program. The LDAR study included the following protocols:

- **Types of components (pumps, valves, connectors, Flanges etc.) to be monitored** – All the sources assumed to be leaking source are monitored as per the USEPA Method 21 Protocol.
- **Measured concentration in PPM that indicates a leak** – Emission source is measured at PPM (parts per million) level.
- **Frequency of monitoring** – As per EPA act 1986 page 409, Fugitive emission monitoring program is undertaken every year (including Heat Exchangers and Pump seal as a part of Quarterly Monitoring).
- Method of monitoring
- **Actions to be taken if a leak is discovered** – A leak source above the limit as per EPA act should be reported and repaired immediately and the sources emitting the leak under the limit should be reported and an appropriate action should be undertaken.

- **Length of time in which an initial attempt to repair the leak must be performed** – Depending upon the nature of leak source, a leak source above the limits as per EPA guidelines should be reported and repaired immediately.
- **Actions that must be taken if a leak cannot be repaired within guidelines** – A proper action should be undertaken as a leaking source contributes in air pollution.
- **Record-keeping and reporting requirements** – A proper record should be maintained so that the leak source can be monitored again to see discrepancies if any.

Affected Sources: Each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange and connector that contains or contacts a fluid or gas, that is exceeding more than 5000ppm of pump and compressor seals and 3000 ppm other components is an affected source.

Equipment Leak: A leak is defined as greater than or equal to 3,000 & 5000 ppmv as methane, for organic compounds, as determined by EPA Reference Method 21. Most of the emissions are from valves and connectors because these are most prevalent components and can number in the thousands. The major cause of emissions from valves and connectors is seal or gasket failure due to normal wear or improper maintenance. More than 90% of emissions from the leaking equipment with valves are being the most significant source. The open-ended lines and sampling connections account for as much as 5 – 10% of total VOC emissions from equipment leaks.

Minimum Requirements for an Acceptable Organic LDAR Program:

- Each affected source is screened initially using USEPA Method 21.
- Monthly visual inspections must be performed by industry on each affected source for signs of leakage (e.g. dripping liquid, spraying, misting, clouding, ice formation, distinctive odors, etc.).
- Monitoring of each affected source is to be conducting quarterly using Method 21.

All potential leak points associated with a component must be identified and screened for leaks. The detected leaks by Method 21 test was tagged and repaired. The leak sources are measured after repair and the same is recorded.

6 Methodology of the study:

USEPA Method – 21 was followed to monitor source emissions at IOT/IOCL Paradip.

6.1 Individual Source Surveys.

Leak Definition Based on Concentration. Place the probe inlet at the surface of the component interface where leakage could occur. Move the probe along the interface periphery while

observing the instrument readout. If an increased meter reading is observed, slowly sample the interface where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately two times the instrument response time. If the maximum observed meter reading is greater than the leak definition in the applicable regulation, record and report the results as specified in the regulation reporting requirements. Examples of the application of this general technique to specific equipment types are:

- Valves - The most common source of leaks from valves is the seal between the stem and housing. Place the probe at the interface where the stem exits the packing gland and sample the stem circumference. Also, place the probe at the interface of the packing gland take-up flange seat and sample the periphery. In addition, survey valve housings of multipart assembly at the surface of all interfaces where a leak could occur.

- Flanges and Other Connections - For welded flanges, place the probe at the outer edge of the flange-gasket interface and sample the circumference of the flange. Sample other types of nonpermanent joints (such as threaded connections) with a similar traverse.

- Pumps and Compressors - Conduct a circumferential traverse at the outer surface of the pump or compressor shaft and seal interface. If the source is a rotating shaft, position the probe inlet within 1 cm of the shaft-seal interface for the survey. If the housing configuration prevents a complete traverse of the shaft periphery, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

- Pressure Relief Devices - The configuration of most pressure relief devices prevents sampling at the sealing seat interface. For those devices equipped with an enclosed extension, or horn, place the probe inlet at approximately the center of the exhaust area to the atmosphere.

- Process Drains - For open drains, place the probe inlet at approximately the center of the area open to the atmosphere. For covered drains, place the probe at the surface of the cover interface and conduct a peripheral traverse.

- Access door seals. Place the probe inlet at the surface of the door seal interface and conduct a peripheral traverse.

Calculation:

(Reference – EPA 1995 Protocol for Equipment Leak Emission Estimation Table 2-10)

Component Type	Default Zero Factor [Kg/hr]	Correlation Equation [Kg/hr]
Valves	[7.8E-06]	[2.29E-06(SV)^0.746]
Pump Seals	[1.9E-05]	[5.03E-05(SV)^0.610]
Others	[4.0E-06]	[1.36E-05(SV)^0.589]
Connectors	[7.5E-06]	[1.53E-06(SV)^0.735]
Flanges	[3.1E-07]	[4.61E-06(SV)^0.703]
Open-ended Lines	[2.0E-06]	[2.20E-06(SV)^0.704]

The default zero factors apply only when the screening value(SV) corrected for background equals 0 ppmv.

The correlation equations apply for actual screening values, corrected for background.

The "other" component type includes instruments, loading arms, pressure relief valves, vents, compressors, dump lever arms, diaphragms, drains, hatches, meters and polished rods stuffing boxes. This "other" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps or valves.

For example,

Reference USEPA-Method-21)

The screening value (SV) concentration in Valves is 2600 ppm

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

RF = Response Factor = 1

Response Factors of Different Volatiles (USEPA Method-21):	
Gasoline Vapors	1.05
Naphtha	1.0
Heavy Oil	1.1
Petrol & Diesel	0.8
Gasoline Vapors 2	0.7
Light Oil	1.0

% of VOC Flow = material passing on that particular pipe line.

0.00000227 = Correlation factor

SV = Screening Value in ppm

If we will apply all the values in the below formula

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

= 1 (100/100) *0.0000023*2600^0.746

= 0.000815 kg/hr

Total hours of operation per year are 8760 (24 hours x 365 days)

The volatile emission = 7.109 Kgs/year.

SUMMARY OF THE STUDY

SGS has monitored more than four thousand points in study area selected by IOT at IOCL Paradip Boot # 3 area and more than one thousand points at the Berth at Paradip Port.

TEST RESULTS

SUMMARY SHEET OF TVOC EMISSION MEASUREMENT			
UNIT	NO. OF POINT MEASURE	TOTAL VOC EMISSION IN kg/Hr.	TOTAL VOC EMISSION IN kg/Year
Boot # 3	4357	0.021633	189.505043
SOJ	1417	0.000447	3.917661
TOTAL POINTS	5774	0.02208	193.422704

CONCLUSION:

The results are submitted component wise in the enclosed Annexure-1 As per CPCB guidelines no components detected with more than the standard values of 3000ppmv and 5000ppmv. Hence no recommendations are given for repairing of any leakage sources. However M/s IOT wanted SGS to report any source emission above 300 ppmv and accordingly SGS has tagged and reported for the points with emission of 300 ppmv and above. Total 3 points with emission of 300 ppmv and above were detected at BOOT # 3 and no such point was detected at SOJ area. Maximum Screening Value at Boot # 3 was 1753 ppmv and that at SOJ(Dock Yard at Paradip Port) was 165.4 ppmv.

Based on the calculation and concentrations of VOC in the equipment, we took default value 1 & 0.8 for Response Factor (RF) as per the product in the lines.

REPORT ON

LDAR MONITORING AT INDIAN OIL ADANI VENTURES LIMITED BOOT # 3 IOCL PARADIP MARCH 2025

SUBMITTED TO

IndianOil Adani Ventures

Indian Oil Adani Ventures Limited

(Formerly Indian Oiltanking Limited)

Paradip BOOT TRM 80005, IndianOil Adani Ventures, BOOT-3 Terminal, IOCL Refinery, Jagatsingpur, Paradip, Odisha PIN-754141

SUBMITTED BY:

SGS

SGS India Private Limited
CS Plot-512 (P), Mouza, Hanspukuria,
Diamond Harbour Road, PO-Joka,South 24Parganas
Kolkata - 700104

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per pro SGS India Private Ltd.

Authorized Signatory

1 Introduction

SGS India Private Limited has been contracted to conduct LDAR monitoring at BOOT # 3 & SOJ of IOCL Paradip for 2021-2022 period. Accordingly the measurement of the identified fugitive emission sources within the study area to detect leaking components as per USEPA 21 Guideline were conducted during November-December 2021. Although the leak definition as per CPCB guideline is 3000 ppmv and 5000 ppmv, M/s IOT wanted SGS to report any source emission above 300 ppmv.

1.1 About Industry

Indian Oil Adani Ventures Limited (formally known as Indian Oiltanking) jointly owned by Indian Oil Corporation and APSEZ provides Infrastructure-led terminalling services to Petroleum, Petrochemical and Chemical companies in India since 1996. Over the past 22 years, the company has evolved into an integrated services provider with niche capabilities in Engineering, Build Capabilities, Operations and Maintenance (O&M) of Storage Terminals. Currently, we operate six terminals in India through various business models including BOO/BOOT (Build, Own, Operate/Transfer) and O&M.

The company brought the concept of independent terminalling in India for Petroleum products, wherein the operator does not own the product and provides services to users on a common user basis. It has pioneered the concepts of 'Build & Own' (BO), 'Build Own Operate' (BOO), BOO & Transfer (BOOT), Operations & Maintenance of third party terminals in India.

The company has also set up a first-of-its kind crude oil and petroleum product storage BOOT project inside Indian Oil Corporation's refinery at Paradip on India's East Coast, wherein the entire offsite storage of crude and finished products has been built.

PARADIP TERMINAL FACTS

Tank Capacity 1,513,968 cbm

Tanks 51

Tank Types Mild steel, pressure vessel steel

Access Types - Vessels, Tank Trucks, Pipeline, Berth

No. of Berths - 1

Products - Clean Petroleum Products, Crude Oil, Gases

Services - Pipeline connections to refineries, Tank-to-tank transfer, Vessel loading and unloading, Truck loading, Blending services, Homogenizing

2 Sampling Schedule & Report Number

KE25-000531.001 From 13.03.2025 to 19.03.2025

3 Objective

The objective of the studies to Identifying potential fugitive emission sources and quantification of the fugitive emission during oil production in terminals.

A typical industry can emit tons per year of VOCs from leaking equipment, such as valves, connectors, pumps, sampling connections, compressors, pressure relief devices and open-ended lines etc. Process components covering all joints as mentioned above are monitored under "fugitive emission monitoring" program covering all the components in Boot # 3 & SOJ.

4 Present study

a) Carry out onsite detection through physical scanning for leaks and vented emissions (if any) in the operating assets using portable analyzer according USEPA Method 21 (sniffing method).

b) Monitoring and measurement of the identified fugitive emission sources within the study area and tagging the detected leaking components.

c) The outcome of the study shall focus on the details the programme undertaken, methodology, findings, monitored fugitive emissions rates, conclusion and recommendations for improvement.

5 Scope of Work

- Fugitive emission monitoring at IOCL Paradip (Boot # 3 & SOJ) terminal.
- Monitoring and measurement of the identified fugitive emission sources (supplied by IOT) within the study area and tagging the detected leaking components as per USEPA method 21.

About LDAR:

Leak Detection and Repair (LDAR) is a program implemented to comply with environmental regulations for reducing the fugitive emissions of targeted chemicals into the environment. Several standards such as *Maximum Achievable Control Technology* (MACT) standards, *New Source Performance Standards* (NSPS), *National Emissions Standards for Hazardous Air Pollutants* (NESHAP) and Central Pollution Control Board (CPCB) require the monitoring and reporting of these fugitive emissions from process equipment.

Process components covering Boot # 3 and SOJ were monitored as LDAR and covered all the components in the process plant. The environmental regulations are prescribed LDAR programs as a means of reducing emissions have very specific standards and applied to a monitoring and repair program. The LDAR study included the following protocols:

- **Types of components (pumps, valves, connectors, Flanges etc.) to be monitored** – All the sources assumed to be leaking source are monitored as per the USEPA Method 21 Protocol.
- **Measured concentration in PPM that indicates a leak** – Emission source is measured at PPM (parts per million) level.
- **Frequency of monitoring** – As per EPA act 1986 page 409, Fugitive emission monitoring program is undertaken every year (including Heat Exchangers and Pump seal as a part of Quarterly Monitoring).
- Method of monitoring
- **Actions to be taken if a leak is discovered** – A leak source above the limit as per EPA act should be reported and repaired immediately and the sources emitting the leak under the limit should be reported and an appropriate action should be undertaken.

- **Length of time in which an initial attempt to repair the leak must be performed** – Depending upon the nature of leak source, a leak source above the limits as per EPA guidelines should be reported and repaired immediately.
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Affected Sources: Each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange and connector that contains or contacts a fluid or gas, that is exceeding more than 5000ppm of pump and compressor seals and 3000 ppm other components is an affected source.

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All potential leak points associated with a component must be identified and screened for leaks. The detected leaks by Method 21 test was tagged and repaired. The leak sources are measured after repair and the same is recorded.

6 Methodology of the study:

USEPA Method – 21 was followed to monitor source emissions at IOT/IOCL Paradip.

6.1 Individual Source Surveys.

Leak Definition Based on Concentration. Place the probe inlet at the surface of the component interface where leakage could occur. Move the probe along the interface periphery while

observing the instrument readout. If an increased meter reading is observed, slowly sample the interface where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately two times the instrument response time. If the maximum observed meter reading is greater than the leak definition in the applicable regulation, record and report the results as specified in the regulation reporting requirements. Examples of the application of this general technique to specific equipment types are:

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- Flanges and Other Connections - For welded flanges, place the probe at the outer edge of the flange-gasket interface and sample the circumference of the flange. Sample other types of nonpermanent joints (such as threaded connections) with a similar traverse.

- Pumps and Compressors - Conduct a circumferential traverse at the outer surface of the pump or compressor shaft and seal interface. If the source is a rotating shaft, position the probe inlet within 1 cm of the shaft-seal interface for the survey. If the housing configuration prevents a complete traverse of the shaft periphery, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

- Pressure Relief Devices - The configuration of most pressure relief devices prevents sampling at the sealing seat interface. For those devices equipped with an enclosed extension, or horn, place the probe inlet at approximately the center of the exhaust area to the atmosphere.

- Process Drains - For open drains, place the probe inlet at approximately the center of the area open to the atmosphere. For covered drains, place the probe at the surface of the cover interface and conduct a peripheral traverse.

- Access door seals. Place the probe inlet at the surface of the door seal interface and conduct a peripheral traverse.

Calculation:

(Reference – EPA 1995 Protocol for Equipment Leak Emission Estimation Table 2-10)

Component Type	Default Zero Factor [Kg/hr]	Correlation Equation [Kg/hr]
Valves	[7.8E-06]	[2.29E-06(SV)^0.746]
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Others	[4.0E-06]	[1.36E-05(SV)^0.589]
Connectors	[7.5E-06]	[1.53E-06(SV)^0.735]
Flanges	[3.1E-07]	[4.61E-06(SV)^0.703]
Open-ended Lines	[2.0E-06]	[2.20E-06(SV)^0.704]

The default zero factors apply only when the screening value(SV) corrected for background equals 0 ppmv.

The correlation equations apply for actual screening values, corrected for background.

The "other" component type includes instruments, loading arms, pressure relief valves, vents, compressors, dump lever arms, diaphragms, drains, hatches, meters and polished rods stuffing boxes. This "other" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps or valves.

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= RF (% of VOC Flow/100) *0.0000023*SV^0.746

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Gasoline Vapors	1.05
Naphtha	1.0
Heavy Oil	1.1
Petrol & Diesel	0.8
Gasoline Vapors 2	0.7
Light Oil	1.0

% of VOC Flow = material passing on that particular pipe line.

0.00000227 = Correlation factor

SV = Screening Value in ppm

If we will apply all the values in the below formula

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

= 1 (100/100) *0.0000023*2600^0.746

= 0.004681 kg/hr

Total hours of operation per year are 8760 (24 hours x 365 days)

The volatile emission = 41.005720 Kgs/year.

SUMMARY OF THE STUDY

SGS has monitored more than four thousand three hundred fifty-seven points in study area selected by IOT at IOCL Paradip Boot # 3 area and more than one thousand points at the Berth at Paradip Port.

TEST RESULTS

SUMMARY SHEET OF TVOC EMISSION MEASUREMENT			
UNIT	NO. OF POINT MEASURE	TOTAL VOC EMISSION IN kg/Hr.	TOTAL VOC EMISSION IN kg/Year
Boot # 3	4357	0.004681	41.005720
SOJ	1893	0.001135	9.940567
TOTAL POINTS	6250	0.005816	50.946287

CONCLUSION:

The results are submitted component wise in the enclosed Annexure-1 As per CPCB guidelines no components detected with more than the standard values of 3000ppmv and 5000ppmv. Hence no recommendations are given for repairing of any leakage sources. However M/s IOT wanted SGS to report any source emission above 300 ppmv and accordingly SGS has tagged and reported for the points with emission of 300 ppmv and above. Total 2 points with emission of 300 ppmv and above were detected at BOOT # 3 & SOJ and one such point was detected at SOJ area. Maximum Screening Value at Boot # 3 was 360 ppmv and that at SOJ(Dock Yard at Paradip Port) was 2164 ppmv.

Based on the calculation and concentrations of VOC in the equipment, we took default value 1 & 0.8 for Response Factor (RF) as per the product in the lines.

REPORT ON

LDAR MONITORING AT INDIAN OIL ADANI VENTURES LIMITED SOJ IOCL PARADIP MARCH' 2025

SUBMITTED TO

IndianOil Adani Ventures

IndianOil Adani Ventures Limited

(Formerly Indian Oiltanking Limited)

Paradip BOOT TRM 80005, IndianOil Adani Ventures, BOOT-3 Terminal, IOCL Refinery, Jagatsingpur, Paradip, Odisha PIN-754141

SUBMITTETED BY:

SGS

SGS India Private Limited
CS Plot-512 (P), Mouza, Hanspukuria,
Diamond Harbour Road, PO-Joka,South 24Parganas
Kolkata - 700104

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per pro SGS India Private Ltd.

Authorized Signatory

1 Introduction

SGS India Private Limited has been contracted to conduct LDAR monitoring at BOOT # 3 & SOJ of IOCL Paradip for 2021-2022 period. Accordingly the measurement of the identified fugitive emission sources within the study area to detect leaking components as per USEPA 21 Guideline were conducted during November-December 2021. Although the leak definition as per CPCB guideline is 3000 ppmv and 5000 ppmv, M/s IOT wanted SGS to report any source emission above 300 ppmv.

1.1 About Industry

IndianOil Adani Ventures Limited (formally known as Indian Oiltanking) jointly owned by IndianOil Corporation and APSEZ provides Infrastructure-led terminalling services to Petroleum, Petrochemical and Chemical companies in India since 1996. Over the past 22 years, the company has evolved into an integrated services provider with niche capabilities in Engineering, Build Capabilities, Operations and Maintenance (O&M) of Storage Terminals. Currently, we operate six terminals in India through various business models including BOO/BOOT (Build, Own, Operate/Transfer) and O&M.

The company brought the concept of independent terminalling in India for Petroleum products, wherein the operator does not own the product and provides services to users on a common user basis. It has pioneered the concepts of 'Build & Own' (BO), 'Build Own Operate' (BOO), BOO & Transfer (BOOT), Operations & Maintenance of third party terminals in India.

The company has also set up a first-of-its kind crude oil and petroleum product storage BOOT project inside Indian Oil Corporation's refinery at Paradip on India's East Coast, wherein the entire offsite storage of crude and finished products has been built.

PARADIP TERMINAL FACTS

Tank Capacity 1,513,968 cbm

Tanks 51

Tank Types Mild steel, pressure vessel steel

Access Types - Vessels, Tank Trucks, Pipeline, Berth

No. of Berths - 1

Products - Clean Petroleum Products, Crude Oil, Gases

Services - Pipeline connections to refineries, Tank-to-tank transfer, Vessel loading and unloading, Truck loading, Blending services, Homogenizing

2 Sampling Schedule & Report Number.

KE25-000532.001 From 13.03.2025 to 19.03.2025

3 Objective

The objective of the studies to Identifying potential fugitive emission sources and quantification of the fugitive emission during oil production in terminals.

A typical industry can emit tons per year of VOCs from leaking equipment, such as valves, connectors, pumps, sampling connections, compressors, pressure relief devices and open-ended lines etc. Process components covering all joints as mentioned above are monitored under "fugitive emission monitoring" program covering all the components in Boot # 3 & SOJ.

4 Present study

a) Carry out onsite detection through physical scanning for leaks and vented emissions (if any) in the operating assets using portable analyzer according USEPA Method 21 (sniffing method).

b) Monitoring and measurement of the identified fugitive emission sources within the study area and tagging the detected leaking components.

c) The outcome of the study shall focus on the details the programme undertaken, methodology, findings, monitored fugitive emissions rates, conclusion and recommendations for improvement.

5 Scope of Work

- Fugitive emission monitoring at IOCL Paradip (Boot # 3 & SOJ) terminal.
- Monitoring and measurement of the identified fugitive emission sources (supplied by IOT) within the study area and tagging the detected leaking components as per USEPA method 21.

About LDAR:

Leak Detection and Repair (LDAR) is a program implemented to comply with environmental regulations for reducing the fugitive emissions of targeted chemicals into the environment. Several standards such as *Maximum Achievable Control Technology* (MACT) standards, *New Source Performance Standards* (NSPS), *National Emissions Standards for Hazardous Air Pollutants* (NESHAP) and Central Pollution Control Board (CPCB) require the monitoring and reporting of these fugitive emissions from process equipment.

Process components covering Boot # 3 and SOJ were monitored as LDAR and covered all the components in the process plant. The environmental regulations are prescribed LDAR programs as a means of reducing emissions have very specific standards and applied to a monitoring and repair program. The LDAR study included the following protocols:

- **Types of components (pumps, valves, connectors, Flanges etc.) to be monitored** – All the sources assumed to be leaking source are monitored as per the USEPA Method 21 Protocol.
- **Measured concentration in PPM that indicates a leak** – Emission source is measured at PPM (parts per million) level.
- **Frequency of monitoring** – As per EPA act 1986 page 409, Fugitive emission monitoring program is undertaken every year (including Heat Exchangers and Pump seal as a part of Quarterly Monitoring).
- Method of monitoring
- **Actions to be taken if a leak is discovered** – A leak source above the limit as per EPA act should be reported and repaired immediately and the sources emitting the leak under the limit should be reported and an appropriate action should be undertaken.

- **Length of time in which an initial attempt to repair the leak must be performed** – Depending upon the nature of leak source, a leak source above the limits as per EPA guidelines should be reported and repaired immediately.
- **Actions that must be taken if a leak cannot be repaired within guidelines** – A proper action should be undertaken as a leaking source contributes in air pollution.
- **Record-keeping and reporting requirements** – A proper record should be maintained so that the leak source can be monitored again to see discrepancies if any.

Affected Sources: Each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange and connector that contains or contacts a fluid or gas, that is exceeding more than 5000ppm of pump and compressor seals and 3000 ppm other components is an affected source.

Equipment Leak: A leak is defined as greater than or equal to 3,000 & 5000 ppmv as methane, for organic compounds, as determined by EPA Reference Method 21. Most of the emissions are from valves and connectors because these are most prevalent components and can number in the thousands. The major cause of emissions from valves and connectors is seal or gasket failure due to normal wear or improper maintenance. More than 90% of emissions from the leaking equipment with valves are being the most significant source. The open-ended lines and sampling connections account for as much as 5 – 10% of total VOC emissions from equipment leaks.

Minimum Requirements for an Acceptable Organic LDAR Program:

- Each affected source is screened initially using USEPA Method 21.
- Monthly visual inspections must be performed by industry on each affected source for signs of leakage (e.g. dripping liquid, spraying, misting, clouding, ice formation, distinctive odors, etc.).
- Monitoring of each affected source is to be conducting quarterly using Method 21.

All potential leak points associated with a component must be identified and screened for leaks. The detected leaks by Method 21 test was tagged and repaired. The leak sources are measured after repair and the same is recorded.

6 Methodology of the study:

USEPA Method – 21 was followed to monitor source emissions at IOT/IOCL Paradip.

6.1 Individual Source Surveys.

Leak Definition Based on Concentration. Place the probe inlet at the surface of the component interface where leakage could occur. Move the probe along the interface periphery while

observing the instrument readout. If an increased meter reading is observed, slowly sample the interface where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately two times the instrument response time. If the maximum observed meter reading is greater than the leak definition in the applicable regulation, record and report the results as specified in the regulation reporting requirements. Examples of the application of this general technique to specific equipment types are:

- Valves - The most common source of leaks from valves is the seal between the stem and housing. Place the probe at the interface where the stem exits the packing gland and sample the stem circumference. Also, place the probe at the interface of the packing gland take-up flange seat and sample the periphery. In addition, survey valve housings of multipart assembly at the surface of all interfaces where a leak could occur.

- Flanges and Other Connections - For welded flanges, place the probe at the outer edge of the flange-gasket interface and sample the circumference of the flange. Sample other types of nonpermanent joints (such as threaded connections) with a similar traverse.

- Pumps and Compressors - Conduct a circumferential traverse at the outer surface of the pump or compressor shaft and seal interface. If the source is a rotating shaft, position the probe inlet within 1 cm of the shaft-seal interface for the survey. If the housing configuration prevents a complete traverse of the shaft periphery, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

- Pressure Relief Devices - The configuration of most pressure relief devices prevents sampling at the sealing seat interface. For those devices equipped with an enclosed extension, or horn, place the probe inlet at approximately the center of the exhaust area to the atmosphere.

- Process Drains - For open drains, place the probe inlet at approximately the center of the area open to the atmosphere. For covered drains, place the probe at the surface of the cover interface and conduct a peripheral traverse.

- Access door seals. Place the probe inlet at the surface of the door seal interface and conduct a peripheral traverse.

Calculation:

(Reference – EPA 1995 Protocol for Equipment Leak Emission Estimation Table 2-10)

Component Type	Default Zero Factor [Kg/hr]	Correlation Equation [Kg/hr]
Valves	[7.8E-06]	[2.29E-06(SV)^0.746]
Pump Seals	[1.9E-05]	[5.03E-05(SV)^0.610]
Others	[4.0E-06]	[1.36E-05(SV)^0.589]
Connectors	[7.5E-06]	[1.53E-06(SV)^0.735]
Flanges	[3.1E-07]	[4.61E-06(SV)^0.703]
Open-ended Lines	[2.0E-06]	[2.20E-06(SV)^0.704]

The default zero factors apply only when the screening value(SV) corrected for background equals 0 ppmv.

The correlation equations apply for actual screening values, corrected for background.

The "other" component type includes instruments, loading arms, pressure relief valves, vents, compressors, dump lever arms, diaphragms, drains, hatches, meters and polished rods stuffing boxes. This "other" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps or valves.

For example,

Reference USEPA-Method-21)

The screening value (SV) concentration in Valves is 2600 ppm

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

RF = Response Factor = 1

Response Factors of Different Volatiles (USEPA Method-21):	
Gasoline Vapors	1.05
Naphtha	1.0
Heavy Oil	1.1
Petrol & Diesel	0.8
Gasoline Vapors 2	0.7
Light Oil	1.0

% of VOC Flow = material passing on that particular pipe line.

0.00000227 = Correlation factor

SV = Screening Value in ppm

If we will apply all the values in the below formula

= RF (% of VOC Flow/100) *0.0000023*SV^0.746

= 1 (100/100) *0.0000023*2600^0.746

= 0.001135 kg/hr

Total hours of operation per year are 8760 (24 hours x 365 days)

The volatile emission = 9.940567 Kgs/year.

SUMMARY OF THE STUDY

SGS has monitored more than One thousand eight hundred ninety three points in study area selected by IOT at IOCL Paradip Boot # 3 area and more than one thousand points at the Berth at Paradip Port.

TEST RESULTS

SUMMARY SHEET OF TVOC EMISSION MEASUREMENT			
UNIT	NO. OF POINT MEASURE	TOTAL VOC EMISSION IN kg/Hr.	TOTAL VOC EMISSION IN kg/Year
Boot # 3	4357	0.004681	41.005720
SOJ	1893	0.001135	9.940567
TOTAL POINTS	6250	0.005816	50.946287

CONCLUSION:

The results are submitted component wise in the enclosed Annexure-1 As per CPCB guidelines no components detected with more than the standard values of 3000ppmv and 5000ppmv. Hence no recommendations are given for repairing of any leakage sources. However M/s IOT wanted SGS to report any source emission above 300 ppmv and accordingly SGS has tagged and reported for the points with emission of 300 ppmv and above.

Based on the calculation and concentrations of VOC in the equipment, we took default value 1 & 0.8 for Response Factor (RF) as per the product in the lines.

Annexure-8

Treated Effluent Water Quality Report

INDIAN OIL CORPORATION LIMITED

PARADIP REFINERY

QUALITY CONTROL LABORATORY

IndianOil

TC-7180

Source of sample: ETP to Sea Discharge (HCOD) Outlet | **Method of collection: IS 3025 P:1**

Sample drawn by: Production | **Report No: PDR/QC/MINAS/2024-2025/Q3-Q4**

Date of Sample:

Sl No	Parameters	Test Method	UoM	Limits : MINAS	12.10.2024	12.11.2024	26.12.2024	11.01.2025	18.02.2025	18.03.2025
					Sea Discharge (HCOD Outlet)					
1	pH	APHA 4500 H^+B	...	6.0 -8.5	7.1	7.4	6.8	6.5	6.6	6.3
2	Oil & Grease	APHA 5520 D	mg/l	Max 5	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
3	BOD, 3days @ 27°C	IS 3025 (P:44)	mg/l	Max 15	8	11	8	9	6	10
4	COD	APHA 5220 B	mg/l	Max 125	68	90	64	73	52	82
5	Total Suspended Solid	APHA 2540 D	mg/l	Max 20	<2.5	3.0	<2.5	8.0	<2.5	<2.5
6	Phenols	APHA 5530 B&D	mg/l	Max 0.35	0.06	0.06	0.05	0.08	0.04	0.04
7	Sulphides	APHA 4500 S^{-2} F	mg/l	Max 0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	CN	APHA 4500 CN C&D	mg/l	Max 0.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
9	Ammonia as N	APHA 4500 NH_3 B&F	mg/l	Max 15	14.3	14.7	5.1	5.0	6.8	5.6
10	TKN	APHA 4500 N org B	mg/l	Max 40	34.8	36.3	12.6	15.3	15.6	16.1
11	Phosphorus as P	APHA 4500 P D	mg/l	Max 3	0.195	0.176	<0.005	0.023	<0.005	0.010
12	Cr (Hexavalent)	APHA3500 Cr B	mg/l	Max 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Cr (Total)	APHA3030E &3111 B	mg/l	Max 2	<0.001	<0.001	0.001	0.002	<0.001	<0.001
14	Pb	APHA3030E &3111 B	mg/l	Max 0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15	Hg	APHA3030E &3112 B/ APHA 3125	mg/l	Max 0.01	0.002	0.002	<0.001	0.001	0.001	<0.001
16	Zn	APHA 3030E &3111 B	mg/l	Max 5	0.013	0.054	0.023	0.023	0.004	0.011
17	Ni	APHA 3030E &3111 B	mg/l	Max 1	0.004	0.004	0.006	0.003	0.003	0.005
18	Cu	APHA 3030E &3111 B	mg/l	Max 1	0.004	0.003	0.005	0.003	<0.001	0.005
19	V	APHA3030E &3111 B&D	mg/l	Max 0.2	0.005	0.006	0.002	0.001	0.002	0.002
20	Benzene	APHA 6200	mg/l	Max 0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
21	Benzo(a)-pyrene	APHA 6440	mg/l	Max 0.2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Note: 1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, Production/HSE Department.

2. Sample details: Sample submitted by customer and received as such. Information provided with the sample may affect validity of results.

3. The results relate only to the samples submitted/ as received unless otherwise stated.

4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.

5. Customer confidential information shall be maintained as per customer agreement, if any.

6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.

7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.

8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu (QCM)

Annexure-9

Ground Water Quality Report

Indian Oil Corporation Limited

Paradip Refinery

Quality Control Laboratory

IndianOil

TC-7180

Source of sample: Ground Water: Secure Landfill (SLF), ETP | Method of collection: IS 3025 P:1

Sample drawn by: Production/HSE | Report No: PDR/QC/Ground Water/2024-25/Q3-Q4

Date of Sample:

S. No.	Parameters	Method	UOM	12.12.2024			12.03.2025		
				SLF-1	SLF-2	SLF-3	SLF-1	SLF-2	SLF-3
1	pH (at 25°C)	APHA 4500 H^+B	NA	7.7	7.0	7.4	7.5	7.7	7.9
2	Oil and Grease	APHA 5520 D	mg/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
3	BOD 3 Days	IS 3025 (P:44)	mg/L	3	2	3	4	3	3
4	COD	APHA 5220 B	mg/L	25	16	27	29	26	22
5	Phenol	APHA 5530 B&D	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6	Sulphide	APHA 4500 S^{-2} F	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7	Cyanide(CN-)	APHA 4500 CN^- C&D	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
8	Ammonical Nitrogen	APHA 4500 NH_3 B&F	mg/L	0.18	0.17	0.35	0.20	0.18	0.14
9	Amonia(NH3)		mg/L	0.22	0.21	0.43	0.24	0.22	0.17
10	TKN	APHA4500 Norg B	mg/L	0.4	0.4	0.8	0.5	0.4	0.3
11	Phosphate	APHA 4500 P D	mg/L	1.1	0.7	1.2	1.3	0.5	0.3
12	Cr (VI)	APHA3500 Cr B	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Chromium (Cr)	APHA3030E & 3111B/ APHA 3125	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
14	Lead(Pb)		mg/L	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001
15	Mercury(Hg)	APHA3112B/3125	mg/L	0.002	0.002	0.002	<0.001	<0.001	<0.001
16	Znic(Zn)	APHA 3030E &3111B/ APHA 3125	mg/L	0.061	0.021	0.003	0.055	0.001	0.004
17	Nickel(Ni)		mg/L	0.002	0.001	0.003	0.001	0.002	<0.001
18	Copper(Cu)		mg/L	0.004	0.004	0.005	0.003	0.003	0.002
19	Vanadium(V)		mg/L	0.003	<0.001	0.005	0.002	0.001	<0.001
20	Benzene in Water	APHA 6200	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
21	Benzo Pyrene	APHA 6440	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
22	Conductivity (at 25°C)	APHA 2510	µS/cm	1920	1088	2160	3200	2320	2030
23	Total Hardness	APHA 2340	mg/L	195	117	179	301	199	182
24	Turbidity	APHA 2130	NTU	1.5	0.3	0.3	2.2	3.5	5.2
25	Alkalinity	APHA 2310	mg/L	43.0	25.8	42.6	68.6	49.0	45.0

1. Customer Information: Indian Oil Corporation Limited, Paradip Refinery, Production/HSE Department.
2. Sample details: Sample submitted by customer and received as such. Information provided with the sample may affect validity of results.
3. The results relate only to the samples submitted/ as received unless otherwise stated.
4. All tests/analyses performed at PDR Quality Control Laboratory as per applicable test methods, unless otherwise stated without any deviations to test method.
5. Customer confidential information shall be maintained as per customer agreement, if any.
6. This report shall not be produced except in full, without the written approval of Quality Control Laboratory, Paradip Refinery.
7. All test methods referred to in this certificate include a precision statement. The interpretation of results based on test method/ precision shall be used whenever applicable.
8. Laboratory Environmental Condition: 23±2 °C and 65 ± 10 %RH.

Dr. RC Sahu (QCM)

Annexure-10

Occupational Health Report

Occupational Health

a) Number of workers exposed beyond permissible limits of exposure of chemical and toxic substances specified in section 41-E (Second Schedule) of Factories Act 1948.

Unit/Installations with Location	Substance	Permissible limits of exposure as per Second Schedule (section 41-E) of Factories Act 1948		Number of workers exposed beyond permissible limit
		TWA (ppm, mg/m3)	STEL (ppm, mg/m3)	
-	H2S	10	15	NIL
	CO	35	400	NIL

Status of Periodic Medical Examination for workers exposed beyond permissible limits of chemical and toxic substances as mentioned above.

Number of workers for whom periodic medical examination planned during the year	Number of workers for whom periodic medical examination done during the quarter	% Overall Compliance
Units (Target annual)-371 Production-237 P & U-72 Mech. Maintenance-36 Instrumentation-26	3rd &4th qtrs. 47 11 01 05	100.00%

b) Number of workers exposed to sound levels beyond maximum exposure levels stipulated in the Factory Rules.

Unit/Installation with Location	Maximum exposure level stipulated in the Factory Rule	Number of workers exposed to sound levels beyond maximum exposure levels stipulated in Factory Rules.
Production P & U Mech. Maintenance Instrumentation	TWA-90dbA STEL-115dbA	NIL

c)Status of Auditory Examination of the workers as identified above.

Number of workers for whom Auditory Examination planned during the year 2024-25 (3rd &4th Quarter)	Number of workers for whom Auditory Examination done during the quarter	% Overall Compliance
P & U Mech. Maintenance	11 01	100.00%

d)Notified disease as per Section 89 of Factories Act, 1948

Unit/Installation with location	Name of disease as per "Third Schedule' of Factories Act.	Number of workers identified	Date of intimation to the Factory Inspectorate
-	NIL	-	-

02/6/25

डा. अशोक कुमार
DR. ASHOK KUMAR
अतिरिक्त मुख्य चिकित्सा अधिकारी
Additional Chief Medical Offcer
पारादीप रिफाइनरी (इंडियनऑयल)
Paradip Refinery (IndianOil)
पारादीप / Paradip - 754141 (Odisha)

Occupational Health Physician

Annexure-11

Marine Water Quality Report

Nitya
Work for Quality

Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery, PO Jhimani, Via: Kujang
Distt. Jagatsinghpur, Odisha, India

Test Report No.: 202410090124-125
Test Report Date: 22/10/2024

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	14/10/2024
Test Completed	:	21/10/2024
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	11/10/2024
Sampling Conducted By	:	Mr. Praveen Parmanik
Place of Sampling	:	Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW1-Surface) Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW2-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result		Protocol
			SW1-Surface	SW2-Bottom	
1	pH	-	7.50	7.60	IS:3025 (P-11)
2	Temperature	^{O}C	25	25.5	IS:3025 (P-9)
3	Total Suspended Solids	mg/L	140	162	IS:3025 (P-17)
4	Sulphide as S	mg/L	0.8	1.2	IS:3025 (P-29)
5	Nitrate as NO_3	mg/L	13.4	23.5	IS:3025 (P-34)
6	Ammonia as NH_4	mg/L	3.10	5.98	IS:3025 (P-34)
7	Fluoride as F	mg/L	0.62	1.4	IS:3025 (P-60)
8	Iron as Fe	mg/L	1.34	1.62	APHA 23rd Ed.
9	Dissolved Oxygen (DO)	mg/L	6.5	4.2	IS:3025 (P-38)
10	Chemical Oxygen Demand	mg/L	70	86	IS:3025 (P-58)
11	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	12	15	IS:3025 (P-44)
12	Manganese as Mn	mg/L	0.34	0.64	IS:3025 (P-59)
13	Chromium as Cr^{+6}	mg/L	ND [DL- 0.05]	ND [DL- 0.05]	APHA 23rd Ed.
14	Lead as Pb	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
15	Zinc as Zn	mg/L	0.49	0.60	APHA 23rd Ed.
16	Cadmium as Cd	mg/L	ND [DL- 0.003]	ND [DL- 0.003]	APHA 23rd Ed.
17	Copper as Cu	mg/L	ND [DL- 0.25]	ND [DL- 0.25]	APHA 23rd Ed.
18	Nickel as Ni	mg/L	ND [DL- 0.02]	ND [DL- 0.02]	APHA 23rd Ed.
19	Arsenic as As	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
20	Selenium as Se	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	IS:3025 (P-56)
21	Oil & Grease	mg/L	ND [DL- 2]	ND [DL- 2]	IS:3025 (P-39)
22	Phenolic Compound as C_6H_5OH	mg/L	ND [DL- 0.1]	ND [DL- 0.1]	IS:3025 (P-43)
23	Faecal Coliform*	MPN/100 ml	242	274	IS 1622

Remark: ND-Below Detection Limit, DL-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202410090124-125
Test Report Date: 22/10/2024

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	14/10/2024
Test Completed	:	21/10/2024
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	11/10/2024
Sampling Conducted By	:	Mr. Praveen Parmanik
Place of Sampling	:	Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW1-Surface) Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW2-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW1-Surface	SW2-Bottom
1	Salinity	-	45896	48396
2	P- Alkalinity as $CaCO_3$	mg/L	2.0	4.8
3	Phosphates as PO_4	mg/L	2.4	3.2
4	Nitrite as NO_2	mg/L	ND [DL- 0.5]	ND [DL- 0.5]
5	Silica as SiO_2	mg/L	12.2	26.34
6	TOC	mg/L	5.0	6.0
7	Conductivity	µS/cm	57321	60013
8	Total Dissolved Solids	mg/L	37240	39182
9	Total Alkalinity as $CaCO_3$	mg/L	3694	4012
10	Chloride as Cl	mg/L	19842	22131
11	Sulphate as SO_4	mg/L	1250	1360
12	Total Hardness as $CaCO_3$	mg/L	6501	6621
13	Calcium as Ca	mg/L	1084	1254
14	Magnesium as Mg	mg/L	810	940
15	Sodium as Na	mg/L	8310	8901
16	Potassium as K	mg/L	1890	2240
17	Gross Alpha	Bq/l	<0.1	<0.1
18	Gross Beta	Bq/l	<0.1	<0.1
19	Sand	%	50	78
20	Silt	%	42	18
21	Clay	%	16	13

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202410090124-125
Test Report Date: 22/10/2024

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	14/10/2024
Test Completed	:	21/10/2024
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	11/10/2024
Sampling Conducted By	:	Mr. Praveen Parmanik
Place of Sampling	:	Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW1-Surface) Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW2-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW1-Surface	SW2-Bottom
1	Copepoda	Nos/Litre	61425	70172
2	Decapoda			
	Brachyuran larvaae	Nos/Litre	1037	591
	Zoea larvae	Nos/Litre	3728	10271
	Schizopod larvae	Nos/Litre	0	0
	Protozoea of *A.indicus*	Nos/Litre	120	401
	Post larva of *P.indicus*	Nos/Litre	0	0
	A caridean	Nos/Litre	0	84
3	Cumaceae	Nos/Litre	65	574
4	Sergestidae			
	Lucifer sp.	Nos/Litre	134	748
5	Isopoda	Nos/Litre	98	65
6	Euphausidacae (furcilla)	Nos/Litre	0	0
7	Nematoda	Nos/Litre	156	298
8	Fish egg/larvae	Nos/Litre	243	758
9	Phyllosoma larvae	Nos/Litre	167	762
10	Bippinaria larvae	Nos/Litre	90	112
11	Actinotrocha larvae	Nos/Litre	0	0
12	Polychaetes	Nos/Litre	876	726
13	Echinoderm larvae	Nos/Litre	5262	8272
14	Mysids	Nos/Litre	2017	1028
15	Gastropod larvae	Nos/Litre	42	65
16	Chlorophyll 'a	mg/m^3	2.4	3.9
17	Phaeophytin	mg/m^3	16.9	20.4

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202410090126-127
Test Report Date: 22/10/2024

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	14/10/2024
Test Completed	:	21/10/2024
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	10/10/2024
Sampling Conducted By	:	Mr. Praveen Parmanik
Place of Sampling	:	South Oil Jetty, Paradip Port (SW3-Surface) South Oil Jetty, Paradip Port (SW4-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result		Protocol
			SW3-Surface	SW4-Bottom	
1	pH	...	7.71	8.30	IS:3025 (P-11)
2	Temperature (^{O}C)	mg/L	29.5	31	IS:3025 (P-9)
3	Total Suspended Solids	mg/L	79	95	IS:3025 (P-17)
4	Sulphide as S	mg/L	1.0	1.6	IS:3025 (P-29)
5	Nitrate as NO_3	mg/L	15	18	IS:3025 (P-34)
6	Ammonia as NH_4	mg/L	3.0	5.0	IS:3025 (P-34)
7	Fluoride as F	mg/L	0.61	1.3	IS:3025 (P-60)
8	Iron as Fe	mg/L	1.8	2.60	APHA 23rd Ed.
9	Dissolved Oxygen (DO)	mg/L	6.0	3.8	IS:3025 (P-38)
10	Chemical Oxygen Demand	mg/L	80	100	IS:3025 (P-58)
11	BOD (3 days at 270 C)	mg/L	10	20	IS:3025 (P-44)
12	Manganese as Mn	mg/L	0.28	0.50	IS:3025 (P-59)
13	Chromium as Cr^{+6}	mg/L	ND [DL- 0.05]	ND [DL- 0.05]	APHA 23rd Ed.
14	Lead as Pb	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
15	Zinc as Zn	mg/L	0.56	0.65	APHA 23rd Ed.
16	Cadmium as Cd	mg/L	ND [DL- 0.003]	ND [DL- 0.003]	APHA 23rd Ed.
17	Copper as Cu	mg/L	ND [DL- 0.25]	ND [DL- 0.25]	APHA 23rd Ed.
18	Nickel as Ni	mg/L	ND [DL- 0.02]	ND [DL- 0.02]	APHA 23rd Ed.
19	Arsenic as As	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
20	Selenium as Se	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	IS:3025 (P-56)
21	Oil & Grease	mg/L	ND [DL- 2]	ND [DL- 2]	S:3025 (P-39)
22	Phenolic Compound as C_6H_5OH	mg/L	ND [DL- 0.1]	ND [DL- 0.1]	IS:3025 (P-43)
23	Total Coliform	MPN/100ml	14	20	IS 1622
24	Standard Plate Count	CFU/ml	764	980	IS 1622

Remark: ND-Below Detection Limit, DL-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

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Issued To **Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang
Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202410090126-127
Test Report Date: 22/10/2024

Sample Particulars

Nature of the Sample & No. of Samples	:	**Surface Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	14/10/2024
Test Completed	:	21/10/2024
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	10/10/2024
Sampling Conducted By	:	Mr. Praveen Parmanik
Place of Sampling	:	South Oil Jetty, Paradip Port (SW3-Surface) South Oil Jetty, Paradip Port (SW4-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW3-Surface	SW4-Bottom
1	Salinity	-	45920	48012
2	P- Alkalinity as $CaCO_3$	mg/L	3.8	4.7
3	Phosphates as PO_4	mg/L	2.0	2.6
4	Nitrite as NO_2	mg/L	BDL (LOD-0.5)	BDL (LOD-0.5)
5	Silica as SiO_2	mg/L	40	46
6	TOC	mg/L	5.2	6.8
7	Conductivity (µS/cm)	mg/L	57120	59321
8	Total Dissolved Solids	mg/L	37110	38960
9	Total Alkalinity as $CaCO_3$	mg/L	1925	2240
10	Chloride as Cl	mg/L	19870	23110
11	Sulphate as SO_4	mg/L	1184	1312
12	Total Hardness as $CaCO_3$	mg/L	5865	6510
13	Calcium as Ca	mg/L	1350	1550
14	Magnesium as Mg	mg/L	590	610
15	Sodium as Na	mg/L	9240	9639
16	Potassium as K	mg/L	1720	2005
17	Sand	%	50	70
18	Silt	%	20	11
19	Clay	%	25	10

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Paradip Refinery
PO Jhimani, Via: Kujang
Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202410090126-127
Test Report Date: 22/10/2024

Sample Particulars

Nature of the Sample & No. of Samples	:	**Surface Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	14/10/2024
Test Completed	:	21/10/2024
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	10/10/2024
Sampling Conducted By	:	Mr. Praveen Parmanik
Place of Sampling	:	South Oil Jetty, Paradip Port (SW3-Surface) South Oil Jetty, Paradip Port (SW4-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW3-Surface	SW4-Bottom
1	Copepoda	Nos/Litre	16278	47363
2	Decapoda			
	Brachyuran larvaae	Nos/Litre	578	1324
	Zoea larvae	Nos/Litre	298	7826
	Schizopod larvae	Nos/Litre	0	0
	Protozoea of *A.indicus*	Nos/Litre	149	204
	Post larva of *P.indicus*	Nos/Litre	0	0
	A caridean	Nos/Litre	0	0
3	Cumaceae	Nos/Litre	23	78
4	Sergestidae			
	Lucifer sp.	Nos/Litre	34	132
5	Isopoda	Nos/Litre	46	65
6	Euphausidacae (furcilla)	Nos/Litre	0	0
7	Nematoda	Nos/Litre	70	121
8	Fish egg/larvae	Nos/Litre	827	1324
9	Phyllosoma larvae	Nos/Litre	113	243
10	Bippinaria larvae	Nos/Litre	0	0
11	Actinotrocha larvae	Nos/Litre	0	0
12	Polychaetes	Nos/Litre	214	365
13	Echinoderm larvae	Nos/Litre	1072	4352
14	Mysids	Nos/Litre	287	1243
15	Gastropod larvae	Nos/Litre	102	267
16	Chlorophyll 'a	mg/m^3	2.12	1.13
17	Phaeophytin	mg/m^3	16.28	19.43

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202501280110-111
Test Report Date: 04/02/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	28/01/2025
Test Completed	:	03/02/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	24/01/2025
Sampling Conducted By	:	Mr. Munaraj
Place of Sampling	:	Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW1-Surface) Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW2-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result		Protocol
			SW1-Surface	SW2-Bottom	
1	pH	-	7.51	7.69	IS:3025 (P-11)
2	Temperature	^{O}C	25.2	25.6	IS:3025 (P-9)
3	Total Suspended Solids	mg/L	114	136	IS:3025 (P-17)
4	Sulphide as S	mg/L	0.30	0.60	IS:3025 (P-29)
5	Nitrate as NO_3	mg/L	9.20	11.40	IS:3025 (P-34)
6	Ammonia as NH_4	mg/L	1.80	2.60	IS:3025 (P-34)
7	Fluoride as F	mg/L	0.34	0.70	IS:3025 (P-60)
8	Iron as Fe	mg/L	0.52	0.90	APHA 23rd Ed.
9	Dissolved Oxygen (DO)	mg/L	6.1	5.2	IS:3025 (P-38)
10	Chemical Oxygen Demand	mg/L	80	70	IS:3025 (P-58)
11	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	16	14	IS:3025 (P-44)
12	Manganese as Mn	mg/L	0.09	0.12	IS:3025 (P-59)
13	Chromium as Cr^{+6}	mg/L	ND [DL- 0.05]	ND [DL- 0.05]	APHA 23rd Ed.
14	Lead as Pb	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
15	Zinc as Zn	mg/L	0.18	0.26	APHA 23rd Ed.
16	Cadmium as Cd	mg/L	ND [DL- 0.003]	ND [DL- 0.003]	APHA 23rd Ed.
17	Copper as Cu	mg/L	ND [DL- 0.25]	ND [DL- 0.25]	APHA 23rd Ed.
18	Nickel as Ni	mg/L	ND [DL- 0.02]	ND [DL- 0.02]	APHA 23rd Ed.
19	Arsenic as As	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
20	Selenium as Se	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	IS:3025 (P-56)
21	Oil & Grease	mg/L	ND [DL- 2]	ND [DL- 2]	IS:3025 (P-39)
22	Phenolic Compound as C_6H_5OH	mg/L	ND [DL- 0.1]	ND [DL- 0.1]	IS:3025 (P-43)
23	Faecal Coliform*	MPN/100 ml	300	480	IS 1622

Remark: ND-Below Detection Limit, DL-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202501280110-111
Test Report Date: 04/02/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	28/01/2025
Test Completed	:	03/02/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	24/01/2025
Sampling Conducted By	:	Mr. Munaraj
Place of Sampling	:	Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW1-Surface) Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW2-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW1-Surface	SW2-Bottom
1	Salinity	-	39820	42420
2	P- Alkalinity as $CaCO_3$	mg/L	ND	ND
3	Phosphates as PO_4	mg/L	2.30	2.70
4	Nitrite as NO_2	mg/L	ND [DL- 0.5]	ND [DL- 0.5]
5	Silica as SiO_2	mg/L	15.40	23.20
6	TOC	mg/L	3	5
7	Conductivity	µS/cm	53448	57358
8	Total Dissolved Solids	mg/L	34740	37280
9	Total Alkalinity as $CaCO_3$	mg/L	3200	3600
10	Chloride as Cl	mg/L	18240	20420
11	Sulphate as SO_4	mg/L	1180	1200
12	Total Hardness as $CaCO_3$	mg/L	5800	6300
13	Calcium as Ca	mg/L	920	1000
14	Magnesium as Mg	mg/L	850.50	923.4
15	Sodium as Na	mg/L	8500	8920
16	Potassium as K	mg/L	1180	1020
17	Gross Alpha	Bq/l	<0.1	<0.1
18	Gross Beta	Bq/l	<0.1	<0.1
19	Sand	%	60	65
20	Silt	%	30	30
21	Clay	%	10	5

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202501280110-111
Test Report Date: 04/02/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	28/01/2025
Test Completed	:	03/02/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	24/01/2025
Sampling Conducted By	:	Mr. Munaraj
Place of Sampling	:	Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW1-Surface) Final effluent discharge from Refinery (3 Km inside the sea from the LTL) (SW2-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW1-Surface	SW2-Bottom
1	Copepoda	Nos/Litre	60000	71869
2	Decapoda			
	Brachyuran larvaae	Nos/Litre	1160	728
	Zoea larvae	Nos/Litre	3258	10850
	Schizopod larvae	Nos/Litre	0	0
	Protozoea of *A.indicus*	Nos/Litre	130	380
	Post larva of *P.indicus*	Nos/Litre	0	0
	A caridean	Nos/Litre	70	105
3	Cumaceae	Nos/Litre	124	368
4	Sergestidae			
	Lucifer sp.	Nos/Litre	220	984
5	Isopoda	Nos/Litre	104	84
6	Euphausidacae (furcilla)	Nos/Litre	0	0
7	Nematoda	Nos/Litre	210	344
8	Fish egg/larvae	Nos/Litre	200	789
9	Phyllosoma larvae	Nos/Litre	174	868
10	Bippinaria larvae	Nos/Litre	83	114
11	Actinotrocha larvae	Nos/Litre	0	0
12	Polychaetes	Nos/Litre	954	790
13	Echinoderm larvae	Nos/Litre	6423	10280
14	Mysids	Nos/Litre	2480	1170
15	Gastropod larvae	Nos/Litre	38	68
16	Chlorophyll 'a	mg/m^3	2.3	2.8
17	Phaeophytin	mg/m^3	16.1	21.3

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Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202501280112-113
Test Report Date: 04/02/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Marine Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	28/01/2025
Test Completed	:	03/02/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	24/01/2025
Sampling Conducted By	:	Mr. Munaraj
Place of Sampling	:	South Oil Jetty, Paradip Port (SW3-Surface) South Oil Jetty, Paradip Port (SW4-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result		Protocol
			SW3-Surface	SW4-Bottom	
1	pH	...	7.42	7.99	IS:3025 (P-11)
2	Temperature (^{O}C)	mg/L	26.5	26.8	IS:3025 (P-9)
3	Total Suspended Solids	mg/L	69	74	IS:3025 (P-17)
4	Sulphide as S	mg/L	0.4	0.6	IS:3025 (P-29)
5	Nitrate as NO_3	mg/L	10.20	13.40	IS:3025 (P-34)
6	Ammonia as NH_4	mg/L	1.20	2.40	IS:3025 (P-34)
7	Fluoride as F	mg/L	0.50	0.70	IS:3025 (P-60)
8	Iron as Fe	mg/L	0.60	1.05	APHA 23rd Ed.
9	Dissolved Oxygen (DO)	mg/L	6.3	4.9	IS:3025 (P-38)
10	Chemical Oxygen Demand	mg/L	50	60	IS:3025 (P-58)
11	BOD (3 days at 270 C)	mg/L	10	12	IS:3025 (P-44)
12	Manganese as Mn	mg/L	0.06	0.10	IS:3025 (P-59)
13	Chromium as Cr^{+6}	mg/L	ND [DL- 0.05]	ND [DL- 0.05]	APHA 23rd Ed.
14	Lead as Pb	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
15	Zinc as Zn	mg/L	0.21	0.34	APHA 23rd Ed.
16	Cadmium as Cd	mg/L	ND [DL- 0.003]	ND [DL- 0.003]	APHA 23rd Ed.
17	Copper as Cu	mg/L	ND [DL- 0.25]	ND [DL- 0.25]	APHA 23rd Ed.
18	Nickel as Ni	mg/L	ND [DL- 0.02]	ND [DL- 0.02]	APHA 23rd Ed.
19	Arsenic as As	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	APHA 23rd Ed.
20	Selenium as Se	mg/L	ND [DL- 0.01]	ND [DL- 0.01]	IS:3025 (P-56)
21	Oil & Grease	mg/L	ND [DL- 2]	ND [DL- 2]	S:3025 (P-39)
22	Phenolic Compound as C_6H_5OH	mg/L	ND [DL- 0.1]	ND [DL- 0.1]	IS:3025 (P-43)
23	Total Coliform	MPN/100ml	300	503	IS 1622
24	Standard Plate Count	CFU/ml	912	1086	IS 1622

Remark: ND-Below Detection Limit, DL-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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Work for Quality

Issued To **Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang
Distt. Jagatsinghpur
Odisha, India

Test Report No.: 202501280112-113
Test Report Date: 04/02/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Surface Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	28/01/2025
Test Completed	:	03/02/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	24/01/2025
Sampling Conducted By	:	Mr. Munaraj
Place of Sampling	:	South Oil Jetty, Paradip Port (SW3-Surface) South Oil Jetty, Paradip Port (SW4-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW3-Surface	SW4-Bottom
1	Salinity	-	35120	48280
2	P- Alkalinity as $CaCO_3$	mg/L	ND	ND
3	Phosphates as PO_4	mg/L	1.36	2.05
4	Nitrite as NO_2	mg/L	BDL (LOD-0.5)	BDL (LOD-0.5)
5	Silica as SiO_2	mg/L	28.50	33.90
6	TOC	mg/L	4	6
7	Conductivity (µS/cm)	mg/L	50620	52120
8	Total Dissolved Solids	mg/L	32900	33870
9	Total Alkalinity as $CaCO_3$	mg/L	1700	2000
10	Chloride as Cl	mg/L	18260	19860
11	Sulphate as SO_4	mg/L	1060	1120
12	Total Hardness as $CaCO_3$	mg/L	5400	6300
13	Calcium as Ca	mg/L	1160	1280
14	Magnesium as Mg	mg/L	607.5	753.30
15	Sodium as Na	mg/L	8440	8700
16	Potassium as K	mg/L	1200	1680
17	Sand	%	70	60
18	Silt	%	25	30
19	Clay	%	5	10

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PO Jhimani, Via: Kujang
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Odisha, India

Test Report No.: 202501280112-113
Test Report Date: 04/02/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Surface Water &Two Nos**
Sample Quantity & Packaging	:	5 Litre, Pet Bottle & 500 ml in Glass Bottle
Test Started on	:	28/01/2025
Test Completed	:	03/02/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	24/01/2025
Sampling Conducted By	:	Mr. Munaraj
Place of Sampling	:	South Oil Jetty, Paradip Port (SW3-Surface) South Oil Jetty, Paradip Port (SW4-Bottom)

Test Report

Sr. No.	Parameter	Unit	Result	
			SW3-Surface	SW4-Bottom
1	Copepoda	Nos/Litre	15680	42580
2	Decapoda			
	Brachyuran larvaae	Nos/Litre	554	1015
	Zoea larvae	Nos/Litre	366	6690
	Schizopod larvae	Nos/Litre	0	0
	Protozoea of *A.indicus*	Nos/Litre	129	209
	Post larva of *P.indicus*	Nos/Litre	0	0
	A caridean	Nos/Litre	0	0
3	Cumaceae	Nos/Litre	50	84
4	Sergestidae			
	Lucifer sp.	Nos/Litre	38	212
5	Isopoda	Nos/Litre	48	48
6	Euphausidacae (furcilla)	Nos/Litre	0	0
7	Nematoda	Nos/Litre	64	129
8	Fish egg/larvae	Nos/Litre	736	2158
9	Phyllosoma larvae	Nos/Litre	105	336
10	Bippinaria larvae	Nos/Litre	0	0
11	Actinotrocha larvae	Nos/Litre	0	0
12	Polychaetes	Nos/Litre	269	324
13	Echinoderm larvae	Nos/Litre	1219	7159
14	Mysids	Nos/Litre	245	1702
15	Gastropod larvae	Nos/Litre	87	229
16	Chlorophyll 'a	mg/m^3	2.09	1.48
17	Phaeophytin	mg/m^3	15.90	18.90

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(RAVINDER MITTAL)

Annexure-12

Noise Survey Report

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
1	AVU	P3 A/B	15	115	98.6
		P22 A/B	15	115	102.7
		P25 A/B	15	115	100.8
		KM 04 A/B	15	115	89.7
		P7 A/B	15	115	95.4
		P2 A/B	15	115	94.4
		Compressor House	15	115	92.4
		P13 A/B	15	115	93.8
		P10 A/B	15	115	94.9
		P30 A/B	15	115	99.8
		F 101	15	115	89.4
		F-002	15	115	87.2
		KM 01A/B	15	115	85.9
		P7 C	15	115	95.6

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
2	SRU	089 KM 1	15	115	97.5
		089 PM 003 B	15	115	92.6
		088 K 001	15	115	96.3
		087 V 001	15	115	89.2
		087 WHB 001	15	115	85.7
		087 Sulphur Pit	15	115	78.5
		087 E 003	15	115	83.6
		086 E 003	15	115	81.7
		086 K 001	15	115	82.1
		085 Pump	15	115	98.6
		84P01 A	15	115	85.5
		83P01 B	15	115	92.6
		087 K 001	15	115	99.3

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
3	ETP	Aeration Blower	15	115	88.4
		230 Air Compressor	15	115	95.2
		231 Air Compressor	15	115	104.2

Occupational Health Physician

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Paradip Refinery.

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
4	DHDT	RGC AREA	15	115	95.8
		HCDS Compressor Area	15	115	101.2

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
5	ROG-PSA	ROG COMPRESSOR AREA	15	115	92.5
		FG COMPRESSOR AREA	15	115	90.7

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
6	VGO-HDT	RGC AREA	15	115	107.5
		Atmospheric Column bottom Pump P12 RESIDUE	15	115	96.2
		MHC Feed Pumps-020 P1 A/B	15	115	91.1
		Wash Water Pumps-020 P2 A/B	15	115	87.2
		VGO Wash Pumps- 020 P3 A/B	15	115	100.1
		HDT Feed Pumps-020 P16 A/B	15	115	102.6
		Atmospheric Column Furnace FD Fans-020 KM 2A	15	115	89.8
		HP Amine Pump-020 P19 B	15	115	93.5
		Atmospheric Column Furnace-020 F 001	15	115	94.6

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NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
7	NHT-CCR	RU Compressor	15	115	91.8
		42 K4 Compressor	15	115	101.1
		42 K2 Compressor	15	115	102.7
		42 K3 Compressor	15	115	101.4
		42 K1 Compressor	15	115	96.3
		42 K2 Discharge	15	115	97.5
		42 AC 4C	15	115	97.2
		42 AC 4B	15	115	90.7
		42 AC 3A	15	115	97.3
		42 AC 1H	15	115	92.5
		42 AC 1A	15	115	95.2
		42 AC 7	15	115	89.1
		Near 041-P-05A/B & 041-P-03A/B	15	115	94.5

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
8	DCU	30 P45 B	15	115	84.4
		30 P7 A	15	115	90.7
		30 P13 A/B	15	115	92.8
		30 P1 A/B	15	115	94.1
		30 P11 A	15	115	98.8
		Compressor House GF	15	115	98.9
		30 C 008	15	115	80.5
		CHS Coke Yard	15	115	88.3
		RRLS Silo Building	15	115	101.8
		Bitumen Loading station	15	115	99.8
		72m CDS	15	115	86.8
		030-F-001	15	115	88.9
		030-F-002	15	115	78.5

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Additional Chief Medical Officer

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NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
9	FCCU	Reactor Resior	15	115	94.8
		Near J-Bend & CKN CV (Coke Naphtha)	15	115	101.4
		Bottom Pump P 10A/B/C (A,C - Run)	15	115	94.2
		Furnace Area (Inline)	15	115	90.5
		ID Fan Area (Run)	15	115	87.3
		FD Fan Area (Run)	15	115	83.8
		023 P 14 (Run)	15	115	93.0
		023 P 18 (Run)	15	115	101.1
		023 P 02 Back of P18	15	115	105.3
		023 P 001 A (Run)	15	115	101.9
		023 P 28A (Run)	15	115	96.6
		V 10,11,13	15	115	91.3
		WGC KOD V12 Vessel GF	15	115	95.4
		WGC Compressor PF	15	115	98.3
		WGC Near Surface Condenser	15	115	99.2
		MAB GF NEAR Turbine Valve	15	115	101.7
		MAB PF (Compressor) Turning Gear	15	115	105.3
		PRT Turbine LO Pump	15	115	93.9
		PRT Expander Area	15	115	92.6
		Seal Air Blower 23-KM-2131A (Run)	15	115	97.5
		Flue Gas Cooler (23-FGC-001) Area	15	115	96.2
		PRU-VRC(70-K-1001) Compressor platform	15	115	103.5
		LPG Treatment unit (26-K-001(A/B/C) air compressor house	15	115	107.2

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
10	CPP	GT 1	15	115	94.9
		GT 3	15	115	97.8
		Boiler 2	15	115	87.2
		Pump House	15	115	93.8
		BFP Building	15	115	103.7
		CPP Building Entrance	15	115	67.5
		HRSG 3	15	115	78.3
		UB Operator Cabin	15	115	61.5
		UB-1 & 2 Area	15	115	85.3
		New GIS (Outside)	15	115	81.3
		HHP Steam line spectacle blind Area	15	115	103.3
		UB-5 HHP Steam Header	15	115	82.9

Occupational Health Physician

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NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
11	Polypropylene Area	72-KM-901 A/B/C	15	115	101.6
		73-KM-901 A/B/C	15	115	105.6
		72-KM-804 A/B	15	115	99.2
		72-KM-801 A/B	15	115	97.1
		73-KM-801 A/B	15	115	97.7
		73-KM-804 A/B	15	115	93.1
		72-KM-301	15	115	86.4
		73-KM-301	15	115	91.1
		71-KM-601	15	115	89.2
		Extruder Area ground floor	15	115	92.0
		Powder conveying comp. line-1	15	115	88.5
		Powder conveying comp. line-2	15	115	93.2
		Pellet conveying comp. Area	15	115	91.7
		Dryer blower Area in PP line-1	15	115	83.3
		Dryer blower Area in PP line-1	15	115	90.5

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
12	MEG/ERU	RGC Compressor House	15	115	89.8
		RGC Discharge piping	15	115	92.8
		RGC Motor (061-KM-115)	15	115	90.2
		RGC Suction & Discharge piping	15	115	94.9
		EO Reactor	15	115	81.1
		Carbonate Solution pump (061-PM-2204)	15	115	92.8
		BFW Pump (061-PM-920A)	15	115	90.6
		Cycle water Pump (061-PM-312A)	15	115	101.3
		C-531 Column	15	115	85.3
		LP Condensate line near E-930	15	115	88.9
		061-KM-320	15	115	87.6
		OH gas line near V-101	15	115	99.4
		BRC Compressor House	15	115	96.2
		FGC Motor	15	115	95.3
		BRC Turbine	15	115	98.6
		V-104	15	115	92.3
		Cold Box First floor	15	115	90.5

Occupational Health Physician

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NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
13	Alkylation_Butamer	24K001 COMPRESSOR	15	115	98.7
		24/P15/PV200	15	115	87.6
		24 P109 B	15	115	94.3
		24R101 Reactor Area	15	115	83.5
		DIOS AREA 24P1A	15	115	94.2
		Product pump area 24 P11A	15	115	91.5
		Butamer feed pump 25-P-1A	15	115	98.6

NOISE MONITORING DATA NOVEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
14	KHDS	P-001A	15	115	94.5
		F-001	15	115	73.2
		K-001B	15	115	81.1
		P-002A	15	115	86.6
		P-004A	15	115	91.9
		Steam Vent	15	115	96.5
		AC-001	15	115	80.2
		AC-002	15	115	80.6
		Compressor Area	15	115	79.9
		Furnace Area(Inline)	15	115	73.2
		In between TS-1 & Compressor shed area	15	115	75.6
		TS-1 area ground floor	15	115	73.5
		TS-2 area ground floor	15	115	75.3

Occupational Health Physician

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TOXIC GAS MONITORING DATA FOR MONTH OF NOVEMBER 2024

AVU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL (%)	N/A	N/A	0.3
OXY (%)	N/A	N/A	21.1
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.9

SRU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.2
CO(ppm)	100	35	0.1
VOC(ppm)	25	10	0.5

ETP			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0
OXY(%)	N/A	N/A	21.1
H2S(ppm)	15	10	0
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	0.1

DCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.6
OXY(%)	N/A	N/A	21.6
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.3

Occupational Health Physician

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DHDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.2
OXY(%)	N/A	N/A	21.2
H2S(ppm)	15	10	0.9
CO(ppm)	100	35	0.4
VOC(ppm)	25	10	1.3

VGO-HDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.1

Alk_Butamer			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.2
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.2
CO(ppm)	100	35	1.3
VOC(ppm)	25	10	0.1

FCCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.2
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0.1
VOC(ppm)	25	10	1.3

Occupational Health Physician

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NHT-CCR			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	21.6
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.8

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NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
1	AVU	P3 A/B	15	115	96.8
		P22 A/B	15	115	101.6
		P25 A/B	15	115	104.3
		KM 04 A/B	15	115	87.9
		P7 A/B	15	115	98.2
		P2 A/B	15	115	92.4
		Compressor House	15	115	95.4
		P13 A/B	15	115	92.7
		P10 A/B	15	115	91.1
		P30 A/B	15	115	100.4
		F 101	15	115	89.2
		F-002	15	115	86.1
		KM 01A/B	15	115	88.2
		P7 C	15	115	98.8

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
2	SRU	089 KM 1	15	115	95.3
		089 PM 003 B	15	115	90.3
		088 K 001	15	115	93.2
		087 V 001	15	115	87.5
		087 WHB 001	15	115	89.2
		087 Sulphur Pit	15	115	77.6
		087 E 003	15	115	84.7
		086 E 003	15	115	82.3
		086 K 001	15	115	80.9
		085 Pump	15	115	97.5
		84P01 A	15	115	86.3
		83P01 B	15	115	93.7
		087 K 001	15	115	98.3

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
3	ETP	Aeration Blower	15	115	89.2
		230 Air Compressor	15	115	100.3
		231 Air Compressor	15	115	106.1

Occupational Health Physician

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NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
4	DHDT	RGC AREA	15	115	96.2
		HCDS Compressor Area	15	115	103.3

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
5	ROG-PSA	ROG COMPRESSOR AREA	15	115	98.2
		FG COMPRESSOR AREA	15	115	95.1

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
6	VGO-HDT	RGC AREA	15	115	98.9
		Atmospheric Column bottom Pump P12 RESIDUE	15	115	91.5
		MHC Feed Pumps-020 P1 A/B	15	115	91.1
		Wash Water Pumps-020 P2 A/B	15	115	90.8
		VGO Wash Pumps- 020 P3 A/B	15	115	95.4
		HDT Feed Pumps-020 P16 A/B	15	115	101.8
		Atmospheric Column Furnace FD Fans-020 KM 2A	15	115	91.3
		HP Amine Pump-020 P19 B	15	115	92.9
		Atmospheric Column Furnace-020 F 001	15	115	92.3

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NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
7	NHT-CCR	RU Compressor	15	115	92.7
		42 K4 Compressor	15	115	100.2
		42 K2 Compressor	15	115	99.8
		42 K3 Compressor	15	115	100.5
		42 K1 Compressor	15	115	95.5
		42 K2 Discharge	15	115	96.8
		42 AC 4C	15	115	98.3
		42 AC 4B	15	115	89.6
		42 AC 3A	15	115	95.4
		42 AC 1H	15	115	90.7
		42 AC 1A	15	115	99.1
		42 AC 7	15	115	87.2
		Near 041-P-05A/B & 041-P-03A/B	15	115	94.8

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
8	DCU	30 P45 B	15	115	98.3
		30 P7 A	15	115	96.8
		30 P13 A/B	15	115	91.1
		30 P1 A/B	15	115	92.7
		30 P11 A	15	115	90.3
		Compressor House GF	15	115	98.7
		30 C 008	15	115	82.3
		CHS Coke Yard	15	115	89.2
		RRLS Silo Building	15	115	101.5
		Bitumen Loading station	15	115	98.9
		72m CDS	15	115	79.9
		030-F-001	15	115	85.6
		030-F-002	15	115	83.5

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NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
9	FCCU	Reactor Resior	15	115	96.3
		Near J-Bend & CKN CV (Coke Naphtha)	15	115	105.3
		Bottom Pump P 10A/B/C (A,C - Run)	15	115	96.1
		Furnace Area (Inline)	15	115	89.2
		ID Fan Area (Run)	15	115	85.2
		FD Fan Area (Run)	15	115	82.7
		023 P 14 (Run)	15	115	94.5
		023 P 18 (Run)	15	115	103.2
		023 P 02 Back of P18	15	115	106.4
		023 P 001 A (Run)	15	115	100.8
		023 P 28A (Run)	15	115	95.8
		V 10,11,13	15	115	92.3
		WGC KOD V12 Vessel GF	15	115	93.1
		WGC Compressor PF	15	115	100.3
		WGC Near Surface Condenser	15	115	96.0
		MAB GF NEAR Turbine Valve	15	115	104.0
		MAB PF (Compressor) Turning Gear	15	115	106.0
		PRT Turbine LO Pump	15	115	92.8
		PRT Expander Area	15	115	91.5
		Seal Air Blower 23-KM-2131A (Run)	15	115	97.3
		Flue Gas Cooler (23-FGC-001) Area	15	115	96.3
		PRU-VRC(70-K-1001) Compressor platform	15	115	104.7
		LPG Treatment unit (26-K-001(A/B/C) air compressor house	15	115	106.5

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
10	CPP	GT 1	15	115	95.7
		GT 3	15	115	97.2
		Boiler 2	15	115	88.1
		Pump House	15	115	95.9
		BFP Building	15	115	102.6
		CPP Building Entrance	15	115	79.3
		HRSG 3	15	115	81.4
		UB Operator Cabin	15	115	66.4
		UB-1 & 2 Area	15	115	86.3
		New GIS (Outside)	15	115	83.8
		HHP Steam line spectacle blind Area	15	115	104.5
		UB-5 HHP Steam Header	15	115	81.6

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NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
11	Polypropylene Area	72-KM-901 A/B/C	15	115	75.9
		73-KM-901 A/B/C	15	115	78.6
		72-KM-804 A/B	15	115	93.5
		72-KM-801 A/B	15	115	88.6
		73-KM-801 A/B	15	115	75.3
		73-KM-804 A/B	15	115	76.8
		72-KM-301	15	115	86.9
		73-KM-301	15	115	89.3
		71-KM-601	15	115	82.7
		Extruder Area ground floor	15	115	85.3
		Powder conveying comp. line-1	15	115	87.9
		Powder conveying comp. line-2	15	115	90.1
		Pellet conveying comp. Area	15	115	87.6
		Dryer blower Area in PP line-1	15	115	81.2
		Dryer blower Area in PP line-1	15	115	89.5

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
12	MEG/ERU	RGC Compressor House	15	115	89.9
		RGC Discharge piping	15	115	94.1
		RGC Motor (061-KM-115)	15	115	91.2
		RGC Suction & Discharge piping	15	115	92.6
		EO Reactor	15	115	86.4
		Carbonate Solution pump (061-PM-2204)	15	115	91.6
		BFW Pump (061-PM-920A)	15	115	98.2
		Cycle water Pump (061-PM-312A)	15	115	94.8
		C-531 Column	15	115	89.1
		LP Condensate line near E-930	15	115	91.4
		061-KM-320	15	115	88.9
		OH gas line near V-101	15	115	96.9
		BRC Compressor House	15	115	95.2
		FGC Motor	15	115	93.2
		BRC Turbine	15	115	96.5
		V-104	15	115	92.4
		Cold Box First floor	15	115	89.5
		P-550	15	115	94.5

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NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
13	Alkylation_Butamer	24K001 COMPRESSOR	15	115	103.5
		24/P15/PV200	15	115	89.3
		24 P109 B	15	115	101.9
		24R101 Reactor Area	15	115	92.1
		DIOS AREA 24P1A	15	115	94.1
		Product pump area 24 P11A	15	115	90.4
		Butamer feed pump 25-P-1A	15	115	98.3

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
14	KHDS	P-001A	15	115	71.4
		F-001	15	115	72.2
		K-001B	15	115	70.0
		P-002A	15	115	73.4
		P-004A	15	115	72.6
		Steam Vent	15	115	95.2
		AC-001	15	115	82.4
		AC-002	15	115	82.6
		Compressor Area	15	115	71.3
		Furnace Area(Inline)	15	115	72.2
		In between TS-1 & Compressor shed area	15	115	74.9
		TS-1 area ground floor	15	115	75.2
		TS-2 area ground floor	15	115	70.1

NOISE MONITORING DATA DECEMBER 2024					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
15	SARU	SARU Blower 28K05 Area	15	115	96.2
		SARU Strong Acid area 28P05	15	115	85.8
		SARU Weak Acid area 28P01	15	115	82.7
		025-k-001B	15	115	100.3

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TOXIC GAS MONITORING DATA FOR MONTH OF DECEMBER 2024

AVU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL (%)	N/A	N/A	0.1
OXY (%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.2

SRU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.2
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.5

ETP			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	1.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	3.1

DCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.2
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.2
CO(ppm)	100	35	0.1
VOC(ppm)	25	10	1.5

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DHDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.4
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.6
CO(ppm)	100	35	0.4
VOC(ppm)	25	10	1.5

VGO-HDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0.3
VOC(ppm)	25	10	0.6

Alk_Butamer			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.5
CO(ppm)	100	35	1.3
VOC(ppm)	25	10	0

FCCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.2

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NHT-CCR			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.5

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NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
1	AVU	P3 A/B	15	115	96.2
		P22 A/B	15	115	101.5
		P25 A/B	15	115	99.2
		KM 04 A/B	15	115	87.8
		P7 A/B	15	115	97.3
		P2 A/B	15	115	94.2
		Compressor House	15	115	90.3
		P13 A/B	15	115	96.5
		P10 A/B	15	115	98.5
		P30 A/B	15	115	100.2
		F 101	15	115	90.7
		F-002	15	115	88.5
		KM 01A/B	15	115	89.2
		P7 C	15	115	96.2

NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
2	SRU	089 KM 1	15	115	99.5
		089 PM 003 B	15	115	95.3
		088 K 001	15	115	95.2
		087 V 001	15	115	87.4
		087 WHB 001	15	115	94.7
		087 Sulphur Pit	15	115	89.7
		087 E 003	15	115	83.2
		086 E 003	15	115	80.8
		086 K 001	15	115	85.9
		085 Pump	15	115	99.5
		84P01 A	15	115	87.5
		83P01 B	15	115	91.7
		087 K 001	15	115	100.1

NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
3	ETP	Aeration Blower	15	115	93.2
		230 Air Compressor	15	115	91.4
		231 Air Compressor	15	115	101.1

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NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
4	DHDT	RGC AREA	15	115	98.2
		HCDS Compressor Area	15	115	100.3

NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
5	ROG-PSA	ROG COMPRESSOR AREA	15	115	93.6
		FG COMPRESSOR AREA	15	115	99.8

NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
6	VGO-HDT	RGC AREA	15	115	99.8
		Atmospheric Column bottom Pump P12 RESIDUE	15	115	92.3
		MHC Feed Pumps-020 P1 A/B	15	115	90.1
		Wash Water Pumps-020 P2 A/B	15	115	90.5
		VGO Wash Pumps- 020 P3 A/B	15	115	95.4
		HDT Feed Pumps-020 P16 A/B	15	115	102.3
		Atmospheric Column Furnace FD Fans-020 KM 2A	15	115	90.2
		HP Amine Pump-020 P19 B	15	115	93.5
		Atmospheric Column Furnace-020 F 001	15	115	93.2

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NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
7	NHT-CCR	RU Compressor	15	115	91.7
		42 K4 Compressor	15	115	100.1
		42 K2 Compressor	15	115	98.7
		42 K3 Compressor	15	115	100.8
		42 K1 Compressor	15	115	94.7
		42 K2 Discharge	15	115	98.7
		42 AC 4C	15	115	95.2
		42 AC 4B	15	115	87.3
		42 AC 3A	15	115	92.2
		42 AC 1H	15	115	89.8
		42 AC 1A	15	115	100.2
		42 AC 7	15	115	88.5
		Near 041-P-05A/B & 041-P-03A/B	15	115	94.7

NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
8	DCU	30 P45 B	15	115	86.7
		30 P7 A	15	115	96.6
		30 P13 A/B	15	115	90.2
		30 P1 A/B	15	115	92.6
		30 P11 A	15	115	92.9
		Compressor House GF	15	115	99.9
		30 C 008	15	115	84.2
		CHS Coke Yard	15	115	90.1
		RRLS Silo Building	15	115	102.6
		Bitumen Loading station	15	115	98.8
		72m CDS	15	115	80.1
		030-F-001	15	115	86.8
		030-F-002	15	115	82.6

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NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
9	CPP	GT 1	15	115	92.8
		GT 3	15	115	96.3
		Boiler 2	15	115	89.9
		Pump House	15	115	96.7
		BFP Building	15	115	103.5
		CPP Building Entrance	15	115	79.9
		HRSG 3	15	115	81.2
		UB Operator Cabin	15	115	65.2
		UB-1 & 2 Area	15	115	87.4
		New GIS (Outside)	15	115	82.9
		HHP Steam line spectacle blind Area	15	115	105.6
		UB-5 HHP Steam Header	15	115	83.8

NOISE MONITORING DATA JANUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
10	Polypropylene Area	72-KM-901 A/B/C	15	115	96.2
		73-KM-901 A/B/C	15	115	98.6
		72-KM-804 A/B	15	115	92.4
		72-KM-801 A/B	15	115	99.4
		73-KM-801 A/B	15	115	95.3
		73-KM-804 A/B	15	115	93.4
		72-KM-301	15	115	89.8
		73-KM-301	15	115	90.1
		71-KM-601	15	115	88.5
		Extruder Area ground floor	15	115	97.6
		Powder conveying comp. line-1	15	115	92.9
		Powder conveying comp. line-2	15	115	90.2
		Pellet conveying comp. Area	15	115	91.5
		Dryer blower Area in PP line-1	15	115	86.7
		Dryer blower Area in PP line-1	15	115	90.2

Occupational Health Physician

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TOXIC GAS MONITORING DATA FOR MONTH OF JANUARY 2025

AVU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL (%)	N/A	N/A	0.3
OXY (%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.3

SRU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.2
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.4

ETP			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.3
CO(ppm)	100	35	0.1
VOC(ppm)	25	10	3.2

DCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.5
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.2

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DHDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.5
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.3
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.3

VGO-HDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.1

NHT-CCR			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.3

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NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
1	AVU	P3 A/B	15	115	98.5
		P22 A/B	15	115	100.5
		P25 A/B	15	115	102.3
		KM 04 A/B	15	115	86.5
		P7 A/B	15	115	99.1
		P2 A/B	15	115	90.6
		Compressor House	15	115	94.3
		P13 A/B	15	115	91.8
		P10 A/B	15	115	93.2
		P30 A/B	15	115	100.2
		F 101	15	115	88.1
		F-002	15	115	87.5
		KM 01A/B	15	115	89.6
		P7 C	15	115	99.7

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
2	SRU	089 KM 1	15	115	98.3
		089 PM 003 B	15	115	96.4
		088 K 001	15	115	95.1
		087 V 001	15	115	88.3
		087 WHB 001	15	115	93.8
		087 Sulphur Pit	15	115	89.5
		087 E 003	15	115	83.5
		086 E 003	15	115	82.9
		086 K 001	15	115	83.9
		085 Pump	15	115	99.1
		84P01 A	15	115	88.3
		83P01 B	15	115	92.8
		087 K 001	15	115	99.8

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
3	ETP	Aeration Blower	15	115	92.5
		230 Air Compressor	15	115	92.3
		231 Air Compressor	15	115	100.1

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NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
4	DHDT	RGC AREA	15	115	99.1
		HCDS Compressor Area	15	115	100.2

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
5	ROG-PSA	ROG COMPRESSOR AREA	15	115	95.7
		FG COMPRESSOR AREA	15	115	99.6

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
6	VGO-HDT	RGC AREA	15	115	98.7
		Atmospheric Column bottom Pump P12 RESIDUE	15	115	91.4
		MHC Feed Pumps-020 P1 A/B	15	115	92.2
		Wash Water Pumps-020 P2 A/B	15	115	91.3
		VGO Wash Pumps- 020 P3 A/B	15	115	95.2
		HDT Feed Pumps-020 P16 A/B	15	115	101.1
		Atmospheric Column Furnace FD Fans-020 KM 2A	15	115	90.1
		HP Amine Pump-020 P19 B	15	115	94.6
		Atmospheric Column Furnace-020 F 001	15	115	95.5

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NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
7	DCU	30 P45 B	15	115	87.8
		30 P7 A	15	115	94.2
		30 P13 A/B	15	115	90.1
		30 P1 A/B	15	115	92.8
		30 P11 A	15	115	95.7
		Compressor House GF	15	115	98.8
		30 C 008	15	115	85.5
		CHS Coke Yard	15	115	90.3
		RRLS Silo Building	15	115	101.9
		Bitumen Loading station	15	115	97.5
		72m CDS	15	115	81.1
		030-F-001	15	115	87.9
		030-F-002	15	115	83.3

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
8	CPP	GT 1	15	115	95.6
		GT 3	15	115	94.2
		Boiler 2	15	115	88.9
		Pump House	15	115	97.8
		BFP Building	15	115	104.9
		CPP Building Entrance	15	115	79.1
		HRSG 3	15	115	81.6
		UB Operator Cabin	15	115	64.5
		UB-1 & 2 Area	15	115	88.1
		New GIS (Outside)	15	115	81.4
		HHP Steam line spectacle blind Area	15	115	102.5
		UB-5 HHP Steam Header	15	115	83.6

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NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
9	Polypropylene Area	72-KM-901 A/B/C	15	115	89.9
		73-KM-901 A/B/C	15	115	98.5
		72-KM-804 A/B	15	115	95.3
		72-KM-801 A/B	15	115	96.1
		73-KM-801 A/B	15	115	95.5
		73-KM-804 A/B	15	115	90.4
		72-KM-301	15	115	88.4
		73-KM-301	15	115	89.8
		71-KM-601	15	115	89.7
		Extruder Area ground floor	15	115	95.5
		Powder conveying comp. line-1	15	115	93.8
		Powder conveying comp. line-2	15	115	94.3
		Pellet conveying comp. Area	15	115	90.6
		Dryer blower Area in PP line-1	15	115	87.5
		Dryer blower Area in PP line-1	15	115	91.3

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
10	MEG/ERU	RGC Compressor House	15	115	75.5
		RGC Discharge piping	15	115	69.8
		RGC Motor (061-KM-115)	15	115	72.2
		RGC Suction & Discharge piping	15	115	70.1
		EO Reactor	15	115	65.5
		Carbonate Solution pump (061-PM-2204)	15	115	60.4
		BFW Pump (061-PM-920A)	15	115	72.3
		Cycle water Pump (061-PM-312A)	15	115	67.8
		C-531 Column	15	115	90.2
		LP Condensate line near E-930	15	115	68.8
		061-KM-320	15	115	62.3
		OH gas line near V-101	15	115	75.7
		BRC Compressor House	15	115	68.6
		FGC Motor	15	115	67.3
		BRC Turbine	15	115	74.9
		V-104	15	115	78.7
		Cold Box First floor	15	115	69.7
		P-550	15	115	75.2

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NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
11	Alkylation_Butamer	24K001 COMPRESSOR	15	115	101.7
		24/P15/PV200	15	115	87.3
		24 P109 B	15	115	96.5
		24R101 Reactor Area	15	115	86.6
		DIOS AREA 24P1A	15	115	95.3
		Product pump area 24 P11A	15	115	96.2
		Butamer feed pump 25-P-1A	15	115	99.5

NOISE MONITORING DATA FEBRUARY 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
12	KHDS	P-001A	15	115	93.1
		F-001	15	115	73.4
		K-001B	15	115	76.8
		P-002A	15	115	90.2
		P-004A	15	115	91.3
		Steam Vent	15	115	96.2
		AC-001	15	115	81.5
		AC-002	15	115	82.3
		Compressor Area	15	115	78.3
		Furnace Area(Inline)	15	115	73.4
		In between TS-1 & Compressor shed area	15	115	72.4
		TS-1 area ground floor	15	115	74.6
		TS-2 area ground floor	15	115	75.5

AIR COMPRESSOR HOUSE NOISE MONITORING DATA					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
13	UCR (U-122)	Dryer-1	15	115	124.6
		Dryer-2	15	115	112.0
		Dryer-3	15	115	112.4
		Dryer-4	15	115	114.1
		Compressor-1	15	115	93.7
		Compressor-3	15	115	98.2
		Compressor-5 (Drain point)	15	115	116.0

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TOXIC GAS MONITORING DATA FOR MONTH OF FEBRUARY 2025

AVU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL (%)	N/A	N/A	0.3
OXY (%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.5

SRU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.2
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.3
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.5

ETP			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	1.2
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0.3
VOC(ppm)	25	10	3.1

DCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0.3
VOC(ppm)	25	10	1.5

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DHDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.3
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.3

VGO-HDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.5
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	0.3

Alk_Butamer			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.5
CO(ppm)	100	35	1.3
VOC(ppm)	25	10	0

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NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
1	AVU	P3 A/B	15	115	99.1
		P22 A/B	15	115	101.6
		P25 A/B	15	115	102.4
		KM 04 A/B	15	115	85.5
		P7 A/B	15	115	98.2
		P2 A/B	15	115	90.5
		Compressor House	15	115	96.7
		P13 A/B	15	115	90.6
		P10 A/B	15	115	94.5
		P30 A/B	15	115	100.1
		F 101	15	115	88.5
		F-002	15	115	89.2
		KM 01A/B	15	115	90.3
		P7 C	15	115	98.9

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
2	SRU	089 KM 1	15	115	99.4
		089 PM 003 B	15	115	98.7
		088 K 001	15	115	94.1
		087 V 001	15	115	90.7
		087 WHB 001	15	115	93.6
		087 Sulphur Pit	15	115	100.5
		087 E 003	15	115	89.6
		086 E 003	15	115	84.5
		086 K 001	15	115	87.3
		085 Pump	15	115	100.2
		84P01 A	15	115	89.4
		83P01 B	15	115	99.8
		087 K 001	15	115	103.4

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
3	ETP	Aeration Blower	15	115	94.7
		230 Air Compressor	15	115	92.8
		231 Air Compressor	15	115	100.0

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NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
4	DHDT	RGC AREA	15	115	99.5
		HCDS Compressor Area	15	115	101.7

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
5	ROG-PSA	ROG COMPRESSOR AREA	15	115	97.6
		FG COMPRESSOR AREA	15	115	98.5

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
6	VGO-HDT	RGC AREA	15	115	99.5
		Atmospheric Column bottom Pump P12 RESIDUE	15	115	90.3
		MHC Feed Pumps-020 P1 A/B	15	115	92.7
		Wash Water Pumps-020 P2 A/B	15	115	90.7
		VGO Wash Pumps- 020 P3 A/B	15	115	95.1
		HDT Feed Pumps-020 P16 A/B	15	115	100.4
		Atmospheric Column Furnace FD Fans-020 KM 2A	15	115	90.0
		HP Amine Pump-020 P19 B	15	115	95.8
		Atmospheric Column Furnace-020 F 001	15	115	98.3

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VKPRMS HOSPITAL
Paradip Refinery.

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
7	DCU	30 P45 B	15	115	92.7
		30 P7 A	15	115	85.3
		30 P13 A/B	15	115	90.3
		30 P1 A/B	15	115	93.2
		30 P11 A	15	115	95.8
		Compressor House GF	15	115	98.9
		30 C 008	15	115	86.3
		CHS Coke Yard	15	115	90.2
		RRLS Silo Building	15	115	75.6
		Bitumen Loading station	15	115	98.3
		72m CDS	15	115	85.6
		030-F-001	15	115	88.5
		030-F-002	15	115	85.7

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
8	CPP	GT 1	15	115	94.3
		GT 3	15	115	98.1
		Boiler 2	15	115	87.8
		Pump House	15	115	96.5
		BFP Building	15	115	100.1
		CPP Building Entrance	15	115	78.7
		HRSG 3	15	115	80.4
		UB Operator Cabin	15	115	65.5
		UB-1 & 2 Area	15	115	89.2
		New GIS (Outside)	15	115	85.1
		HHP Steam line spectacle blind Area	15	115	99.5
		UB-5 HHP Steam Header	15	115	84.6

Dr. ASHOK KUMAR
Occupational Health Physician
अतिरिक्त मुख्य चिकित्सा अधिकारी
Additional Chief Medical Offcer
पारादीप रिफाइनरी (इंडियनऑयल)
Paradip Refinery (IndianOil)
पारादीप / Paradip - 754141 (Odisha)

Nibedita Nayak
Industrial Hygienist
INDUSTRIAL HYGIENIST
VKPRMS HOSPITAL
Paradip Refinery.

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
9	Polypropylene Area	72-KM-901 A/B/C	15	115	92.4
		73-KM-901 A/B/C	15	115	95.7
		72-KM-804 A/B	15	115	89.9
		72-KM-801 A/B	15	115	95.4
		73-KM-801 A/B	15	115	95.5
		73-KM-804 A/B	15	115	90.2
		72-KM-301	15	115	87.1
		73-KM-301	15	115	92.5
		71-KM-601	15	115	87.8
		Extruder Area ground floor	15	115	96.2
		Powder conveying comp. line-1	15	115	93.5
		Powder conveying comp. line-2	15	115	97.4
		Pellet conveying comp. Area	15	115	90.3
		Dryer blower Area in PP line-1	15	115	89.5
		Dryer blower Area in PP line-1	15	115	92.3

NOISE MONITORING DATA MARCH 2025					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
10	MEG/ERU	RGC Compressor House	15	115	95.3
		RGC Discharge piping	15	115	91.2
		RGC Motor (061-KM-115)	15	115	93.1
		RGC Suction & Discharge piping	15	115	89.8
		EO Reactor	15	115	83.5
		Carbonate Solution pump (061-PM-2204)	15	115	90.4
		BFW Pump (061-PM-920A)	15	115	89.5
		Cycle water Pump (061-PM-312A)	15	115	96.6
		C-531 Column	15	115	90.3
		LP Condensate line near E-930	15	115	85.9
		061-KM-320	15	115	95.7
		OH gas line near V-101	15	115	93.2
		BRC Compressor House	15	115	88.6
		FGC Motor	15	115	94.8
		BRC Turbine	15	115	92.2
		V-104	15	115	87.1
		Cold Box First floor	15	115	93.3
		P-550	15	115	85.6

Occupational Health Physician
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Paradip Refinery (IndianOil)
(Odisha)

Nibedita Nayak
Industrial Hygienist
INDUSTRIAL HYGIENIST
VKPRMS HOSPITAL
Paradip Refinery.

AIR COMPRESSOR HOUSE NOISE MONITORING DATA					
Sl. No.	Area	Location	Avg. Time of Reading (min)	Standard for 15 min duration as per OISD	Readings in dBA
11	UCR (U-122)	Dryer-1	15	115	111.2
		Dryer-2	15	115	112.0
		Dryer-3	15	115	110.6
		Dryer-4	15	115	111.3

Occupational Health Physician
DR. ASHOK KUMAR
युक्त मुख्य चिकित्सा अधिकारी
ditional Chief Medical Offcer
दीप रिफाइनरी (इंडियनऑयल)
dip Refinery (IndianOil)
754141 (Odisha)

Nibedita Nayak
Industrial Hygienist

INDUSTRIAL HYGIENIST
VKPRMS HOSPITAL
Paradip Refinery.

TOXIC GAS MONITORING DATA FOR MONTH OF MARCH 2025

AVU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL (%)	N/A	N/A	0.1
OXY (%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.3
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.6

SRU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.1
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.4

ETP			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	1.5
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0.1
VOC(ppm)	25	10	3.1

DCU			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.1
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.3
CO(ppm)	100	35	0.2
VOC(ppm)	25	10	1.5

Occupational Health Physician

डॉ. अशोक कुमार
Dr. ASHOK KUMAR
अतिरिक्त मुख्य चिकित्सा अधिकारी
Additional Chief Medical Offcer
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Paradip Refinery (IndianOil)
Paradip - 754141 (Odisha)

Nibedita Nayak.
Industrial Hygienist

INDUSTRIAL HYGIENE
VKPRMS HOSPITAL
Paradip Refinery.

DHDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	1.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0.2
CO(ppm)	100	35	0.3
VOC(ppm)	25	10	0.5

VGO-HDT			
Toxic Gas	STEL_Alarm_Std.	TWA Alarm_Std.	REAL_Peak_Obs.
LEL(%)	N/A	N/A	0.3
OXY(%)	N/A	N/A	20.9
H2S(ppm)	15	10	0
CO(ppm)	100	35	0
VOC(ppm)	25	10	1.3

Occupational Health Physician
डॉ. अशोक कुमार
Dr. ASHOK KUMAR
अतिरिक्त मुख्य चिकित्सा अधिकारी
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Paradip Refinery (IndianOil)

Nibedita Nayak
Industrial Hygienist

INDUSTRIAL HYGIENIST
VKPRMS HOSPITAL
Paradip Refinery.

Annexure-13

Soil Analysis Report

Nitya
Work for Quality

Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt.
Jagatsinghpur Odisha, India

ULR No.: TC148142500001151F-1153F
Test Report Date: 10/03/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Soil &Three No s**
Sample Quantity & Packaging	:	1.0Kg Each in Poly Pack
Sample Received at Lab	:	28/02/2025
Test Started On	:	28/02/2025
Test Completed On	:	06/03/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	25/02/2025
Monitoring Conducted By	:	Mr. Munaraj
Sampling Location	:	S1-ETP-1
		S2-South Pond-01
		S3-North Pond-01

Analysis Report

Sr. No.	Parameters	Unit	Test Results			Protocol
			S1	S2	S3	
1	pH(at25°C) (1:5)	-	7.62	7.74	7.92	IS:2720(P-26)
2	Electrical Conductivity	ms/cm	1804	1820	1710	IS:2720(P-21)
3	Organic Matter	%	0.70	0.50	0.60	IS:2720(P-22)
4	Total Phosphorous	mg/kg	ND(DL-5)	ND(DL-5)	ND(DL-5)	NL/SOP/Soil/12
5	Available Nitrogen as N	mg/kg	80	64	72	NL/SOP/Soil/08
6	Cation Exchange Capacity(CEC)	Meq/100gm	12.20	14.00	13.20	IS2720(P-24)

TC-14814

AUTHORISED SIGNATORY
RAVINDER MITTAL

Nitya
Work for Quality

Issued To **M/s Indian Oil Corporation Limited**
Paradip Refinery
PO Jhimani, Via: Kujang, Distt.
Jagatsinghpur Odisha, India

Test Report No.: 202502250120-122
Test Report Date: 10/03/2025

Sample Particulars

Nature of the Sample & No. of Samples	:	**Soil &Three No s**
Sample Quantity & Packaging	:	1.0Kg Each in Poly Pack
Sample Received at Lab	:	28/02/2025
Test Started On	:	28/02/2025
Test Completed On	:	06/03/2025
Method of Sampling	:	SOP/B/D-3
Date of Sampling	:	25/02/2025
Monitoring Conducted By	:	Mr. Munaraj
Sampling Location	:	S1-ETP-1
		S2-South Pond-01
		S3-North Pond-01

Analysis Report

Sr. No.	Parameters	Unit	Test Results			Protocol
			S1	S2	S3	
1	Available Potassium as K	mg/kg	60	50	40	NL/SOP/Soil/17
2	Available Calcium as Ca	mg/kg	380	290	320	Ministry of Agriculture Manual
3	Available Magnesium as Mg	mg/kg	210	180	200	Ministry of Agriculture Manual
4	Available Sodium	mg/kg	130	150	142	Ministry of Agriculture Manual
5	Oil& Grease	mg/kg	ND(DL-5)	6.0	ND(DL-5)	Ministry of Agriculture Manual
6	Phenolic Compound	mg/kg	ND(DL-5)	1.60	ND(DL-5)	Ministry of Agriculture Manual
7	Sulphur as S	mg/kg	ND(DL-5)	5.40	ND(DL-5)	Ministry of Agriculture Manual

AUTHORISED SIGNATORY

RAVINDER MITTAL

Annexure-14

Forest Clearance

MD, IDCO 26-5-2000 Sri A.K. Mukhia DGM (EIA) Comp: BBSR

No. 8-64/98 – FC
Government of India
Ministry of Environment and Forests
(F.C. Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003.

Dated, the 23rd May, 2000

To

The Secretary (Forests)
Government of Orissa,
Bhubaneshwar.

Subject: Diversion of 36.5 ha of forest land for Eastern India Refinery project at Paradeep under Mangrove Forest Division, Rajnagar in Jagatsingpur of Orissa

Sir,

I am directed to refer to the State Government, Forest and Environment Department's letters no.10F(Cons)13/97.14241/F&E dated 18.7.98, no.10F(Cons.)-3/99(PL.) 5905/F&E dtd. 17.4.2000 and 10F(Cons.)-3/99 (PL.).7463 dt. 16.5.2000 on the above mentioned subject seeking prior approval of the Central Government in accordance with Section-2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Advisory Committee constituted by the Central Government under Section-3 of the aforesaid Act.

[illegible] of the proposal of the State Government and on the basis of the recommendations of the above mentioned Advisory Committee, the Central Government hereby conveys its approval under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 36.5 ha of forest land for Eastern India Refinery project at Paradeep under Mangrove forest division, Rajnagar in Jagatsingpur of Orissa subject to the following conditions -

i Legal status of forest land shall remain unchanged.

ii Compensatory afforestation will be carried out over 183 ha. of degraded forest land at the project cost.

iii While carrying out afforestation for creation of green belt, efforts should be made to plant local floral species and also the species yielding more of non wood timber products. Such plantation should be carried out in consultation with the concerned Division Forest officer.

iv. No forest land shall be used for rehabilitation of oustees.

Contd. page 2

v. The user agency will make arrangements for free supply of fuelwood preferably alternate energy source to labourers and staff working on the project site so as to avoid any pressure on the adjacent forest areas.

vi The scheme submitted by the State Govt. for studies on the "Population dynamics of the nesting Olive Ridley Turtles" at Gahirmatha coast of Orissa shall be finalised by the State Govt. in consultation with Wildlife Institute of India and shall be sent to this Ministry for approval.

vii The approval under the Forest (Conservation) Act, 1980 is subject to the clearance under Environmental Protection Act, 1986

viii. Any other condition that the State Govt. or the Chief Conservator of Forests (Central), Regional Office, Bhubaneshwar may impose from time to time in the interest of afforestation and protection & improvement of the flora and fauna in the area.

Yours faithfully,

(J.P. Misra)
Assistant Inspector General of Forests

Copy to.

1. The Principal Chief Conservator of Forests, Government of Orissa, Bhubaneshwar.
2. The Nodal Officer, Office of the PCCF, Government of Orissa, Bhubaneshwar
3. The Chief Conservator of Forests (Central), Regional Office, Bhubaneshwar
4. Regional Office (Hq), New Delhi.
5. The Managing Director, Eastern India Refinery Projects, IDCO, IDCO Towers, Janpath, Bhubaneshwar, ORISSA.
6. Guard File

(J.P. Misra) 23/5/2000
Assistant Inspector General of Forests