इंडियन ऑयल कॉर्पोरेशन लिमिटेड
हल्दिया रिफाइनरी, डाकघर : हल्दिया ऑयल रिफाइनरी - 721606
जिला : पूर्व मेदिनीपुर (प० बं०)
Indian Oil Corporation Limited
Haldia Refinery, P.O. : Haldia Oil Refinery- 721606
District : Purba Medinipur, West Bengal
Website : www.iocl.com, E-mail : haldiarefinery@indianoil.in
Phone : 91-3224-223270
रिफाइनरीज प्रभाग
Refineries Division

Ref No.: HR/HSE/8D/2023-24/02 01.06.2024

To

MS. SOMA DAS, IFS
Inspector General of Forests
Deputy Director General of Forests (C)
Ministry of Env., Forest and Climate Change,
Integrated Regional Office, Kolkata IB – 198,
Sector-III, Salt Lake City, Kolkata - 700106

Sub: Half yearly compliance reports in respect of the stipulated conditions under Environmental Clearance for existing Projects at Haldia Refinery, IOCL for the period 01-10- 2023 to 31-03-2024

Sir,

Please find enclosed herewith the Half Yearly Compliance Reports of the stipulated terms and condition under Environment Clearance for existing projects at Haldia Refinery for the period **01-10- 2023 to 31-03-2024**.

Thanking you,

Yours faithfully,

01/06/2024
E Panthya
Dy. General Manager (HSE)
IOCL, Haldia Refinery

Enclosure: Half yearly compliance reports in respect of the stipulated condition under Environmental Clearance along with annexures.

ई पांथया, उप महाप्रबंधक (एच, एस एण्ड ई)
E Panthya, Dy. General Manager (H, S & E)
इंडियन ऑयल कॉर्पोरेशन लि०, हल्दिया रिफाइनरी
Indian Oil Corporation Ltd., Haldia Refinery

Copy to: Regional Officer, WBPCB, Haldia

HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE

HALDIA REFINERY
INDIAN OIL CORPORATION LIMITED

(Status for the period 1St October 2023 – 31st March 2024)

Haldia Refinery

SUB: SIX MONTHLY STATUS REPORT for the period **Oct'23 to Mar'24** Date: 01.06.2024

Index on Status of Compliance on past Environmental Clearance

			Distillate Yield Improvement Project (DYIP) for which EC was received on 4th March 2016.	
9	J-11011/299/2013-IA II(I) Date 04-Mar-2016	Proposed capacity expansion from 7.5 MTPA to 8.0 MTPA along with Distillate Yield Improvement Project (DYIP) and installation of Feed Processing Unit (FPU) at IOCL Haldia Refinery, Purba Medinipur, WB - EC reg	EC Compliance status enclosed.	27-33
10	J-11011/175/2016-IA-II(I) Date 28-Nov-2017	BS-VI Fuel Quality Up-gradation Project (Phase-I) at Haldia Refinery, Haldia West Bengal by M/s IOCL.	EC Compliance status enclosed.	34-38
11	J-11011/299/2013-IA II(I) Date 11-Dec-2019	Capacity expansion from 7.5 MTPA to 8.0 MTPA along with Distillate Yield Improvement Project (DYIP) and installation of Feed Processing Unit (FPU) at IOCL Haldia Refinery, Purba Medinipur, WB – EC-Amendment in EC dated 04-March-2016	Augmentation of VDU-II (2.4 to 2.6 MTPA) in place of VDU-I (1.5 to 1.7 MTPA) – As per Ministries notification dated 23rd Nov 2016, para 7 (ii) (b) , no requirement for amendment in the EC dated 4-March-2016	39
12	J-11011/175/2016-IA-II(I) Date 05-Jan-2021	Installation of 2nd Catalytic Iso-Dewaxing unit of capacity 270TMTPA by M/s Haldia Refinery of IOCL located at East Medinipur, West Bengal-EC regarding	EC Compliance status enclosed.	40-45
13	F.No.11/23/2023-IA.III dated 21.07.2023	Proposal for 'Sulphuric Acid Pipeline From IOCL, Haldia Refinery to Finger Jetty of Haldia Dock Complex, Shyama Prasad Mukherjee Port, Kolkata' at Haldia, Purba Medinipur District, West Bengal	CRZ Recommendation Compliance status enclosed.	46-50

INDEX

Haldia Refinery

SUB: SIX MONTHLY STATUS REPORT for the period **Oct'23 to Mar'24** Date: 01.06.2024

1.0 EC Reference No. & Issue date: J11011/34/88-IA; 16th MARCH 1989

Status of Conditions Imposed With Respect To Environmental Clearance: For Lube Oil Block at Haldia Refinery

Sl. No.	STIPULATION BY MoEF & CC	STATUS
i)	The project proponent must strictly adhere to the stipulations made by West Bengal Pollution Control Board.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control Board and submitting necessary compliance reports as per schedule.
ii)	The project authority will explore the possibility of either increasing the stack height or sulphur recovery or desulphurization of flue gases or use of LSHS to achieve total amount emission of SO_2 at 1.5 tonnes / hour. The quarterly report of the progress in this regard should be submitted to this Ministry till the installation of the unit. Efforts being made to obtain the necessary approvals should be clearly indicated.	Only Low Sulphur fuel gas & fuel oil are now fired in heaters. Old Sulphur Recovery Units (SRU) commissioned in April/May'94. New SRUs are commissioned in 2010 & SRU-V commissioned in 2020 Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H2SO4 from H2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up-linking of data to CPCB server have been followed. Six months average of SO2 emission from heater stacks of all Process Units during Oct'23 to Mar'24 was 846 Kg/hr and this is within the latest specified limits i.e. 980.0 Kg/hr.
iii)	Air quality monitoring network design should be made on the basis of model exercise and submitted to this Department within three months for review. A minimum of three air quality monitoring stations should be set up.	The ambient air quality within refinery is monitored twice every week at 5 Nos of locations inside refinery & 2 Nos locations inside township. Six-monthly ambient air quality monitored data is being submitted to the MoEF & CC Regional Office. Refer **Annexure-1**for six months data from Oct'23 to Mar'24. 03 no's Continuous Ambient Air Quality Monitoring Stations (CAAQMS) are also installed inside the Refinery whose data is linked and transmitted to CPCB server.
iv)	All the stacks should be provided with continuous stack monitoring facilities. The data should be furnished quarterly to State	Continuous stack monitoring facilities with SO_2, PM10, NOx and CO analyzers are installed to the furnaces having > 10 MM Kcal /Hr heat duty which is linked to CPCB server.

	Pollution Control Board and half yearly to this Ministry.	West Bengal Pollution Control Board also checks the stack emission by sampling on quarterly basis.
v)	The project authority should prepare a plan for implementation of disposal of solid waste generated during various process operations or in the treatment plant provided. They should ensure that no leaching of pollutants like sulphides take place from the solid wastes. The plan for disposal and management of solid wastes should be submitted to the competent authority for scrutiny and approval within six months.	Plan for disposal of solid waste submitted and Hazardous waste authorization obtained from WBPCB. WBPCB periodically visits the site for verification. Yearly Hazardous Waste return is submitted to WBPCB in the month of June every year.
vi)	No change in design of stack should be made without the prior approval of State Pollution Control Board. Alternate pollution control system and/or proper design (steam injection system) of the stack should be made to minimize hydrocarbon emission due to failure in the flare system in the plant.	No change in design of stack has been made. The emissions from stacks are within the stipulated limits. Flare gas recovery compressors are in operation to recover flare gas and recycle as fuel gas.
vii)	Additional area under the control of project which is not being used for the plant utilities should be afforested and funds for this purpose should be suitably provided.	As Haldia Refinery does not have enough land within the premise, Haldia Refinery entered into an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
viii)	Tree plantation program in the plant premises and in the periphery of the plant should be undertaken in consultation with State Forest Department. Plant species which are sensitive as well as resistant to Sulphur-dioxide emissions should be chosen for plantation purposes.	As per MOU terms, Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. • Total 20 lakh nos. of mangroves have been planted in Beliarychar island from Oct'2020 to Sept'2021 under consultation of DFO.

ix)	Project authority must set up laboratory facilities in the existing premises for testing air emissions and water quality.	Haldia Refinery has its own NABL accredited as well as WBPCB approved laboratory and all water quality is being tested daily. The ambient air quality within refinery is monitored at 5 Nos locations inside Refinery and 2 Nos locations in township through authorized agency approved by WBPCB and MoEF&CC. Also, a Continuous Ambient Air Quality Monitoring Station (CAAQMS) installed near the refinery main Gate whose data is transmitted to CPCB and WBPCB server.
x)	The clearance of Chief Inspector of Explosives must be taken before starting construction of the proposed plant and a copy of consent letter should be made available to this Ministry.	PESO approval obtained before starting construction of every Project. Consent from PESO is taken before commissioning of process units.
xi)	Project authority will establish five water quality monitoring stations in consultation with State Pollution Control Board to monitor the quality of stream water and to study the impact of treated effluent discharge and will submit its report quarterly to state Pollution Control Board and half yearly to this Ministry. Ground water quality also should be monitored.	Effluent water quality is monitored daily at IOCL own laboratory which is NABL accredited as well as approved by WBPCB. Water quality is monitored at the outlet of ETP-1, ETP-2 and TTP/RO outlet (Final River Discharge). Online analyzers are also installed at these three (03) locations to continuously monitor pH, TSS, COD & BOD. Additionally, two numbers of water quality monitoring stations have also been installed in storm water channel to check the quality. Refer monthly average data for six months of the final treated effluent discharged to Hooghly River is enclosed as **Annexure-2**. Ground water quality is monitored quarterly by WBPCB thru their authorized lab & also via external agency engaged by IOCL-HR. Report is enclosed as **Annexure-3**.
xii)	The project authority will explore the possibility of water recycling to the maximum possible extent. A plan in this regard should be prepared within the next one year and furnished to this Ministry.	As a part of resource conservation, treated effluents from ETPs are reused in Fire water, Cooling towers and also used as feed to Tertiary Treatment RO plant to produce Permeate water. The permeate water is used as feed to DMW Plant and make up to Cooling tower. Around 91-92% of treated water is being reused.
xiii)	The liquid effluent coming out of the plant premises should strictly conform to MINAS.	The liquid treated effluent coming out of the ETP premises conform to MINAS and being monitored by Online Effluent monitoring system.

xiv)	The project authority will submit a Disaster Management Plan duly approved by nodal agency.	Emergency Response and disaster management plan is certified by PNGRB approved agency, M/S EHS Integrated solution and it is valid till 31.08.2025.
xv)	A separate environmental management cell with suitably qualified people to carry out various functions related to environmental management should be set up under the control of a Senior Technical personnel who will report direct to the head of organization.	Health Safety & Environment (HS&E) department exists in Haldia Refinery with several qualified personnel with 15 - 35 years' experience in Refineries & Petrochemicals industries. Also, all activities are monitored by Refinery Head quarter HSE department. For any professional help such as Risk Assessment & EIA/ EMP study, Haldia Refinery is always appointing competent professional agency approved by MoEF&CC. Regular Environmental monitoring and Ambient air quality monitoring is done by WBPCB recognized laboratory.
xvi)	The fund provision of Rs.10 Crores which has been made should be utilized for implementation of all conditions stipulated herein and the budget so provided will not be delivered for any other purpose. The conditions stipulated above needs additional funds it should be so provided either from non-recurring or recurring budget of the unit.	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Expenditure for the year 2023-24 on environment monitoring job, tree plantation, operation & maintenance of ETP & TTP-RO, oil recovery from oily sludge, disposal of hazardous waste, awareness program, installation of new Solar PV power plant, Consent fees, EIA study and RA study job etc. are enclosed as **Annexure-4**.

2.0 EC Reference No. & Issue date: 11011/39/96-IA II (I); 18/12/1996

Status of Conditions Imposed With respect To Environmental Clearance: For DHDS unit at Crude Processing level for 4.6 MMTPA at Haldia Refinery, IOC

Sl. No.	STIPULATION BY MoEF & CC	STATUS
i)	The project authority must strictly adhere to the stipulations laid down by the West Bengal State Pollution Control Board and the State Govt.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control Board and submitting necessary compliance Reports as per schedule.
ii)	No expansion or modernization of the plant should be carried out without approval of the Ministry of Environment and Forest.	Environmental clearance from MoEF & CC always taken for all new projects as well as before any expansion or modernization in the plant.
iii)	The total SO_2 emission from Haldia Refinery including DHDS project should not exceed norms of 850 Kg/hr. after installing the new Crude Distillation unit (CDU).	Only Low Sulphur fuel gas & fuel oil are now fired in heaters. Old Sulphur Recovery Units (SRU) commissioned in April/May'94. New SRUs are commissioned in 2010 & SRU-V commissioned in 2020. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H2SO4 from H2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up-linking of data to CPCB server have been followed. Six months average of SO2 emission from heater stacks of all Process Units during Oct'23 to Mar'24 was 846 Kg/hr and this is within the latest specified limits i.e. 980.0 Kg/hr.
iv)	The existing ETP should be adequately augmented (if required) to accommodate the additional effluent from the DHDS project before commissioning the project so as ensure that the treated effluent meets the MINAS.	Old ETP revamped capacity is 650 m3/hr since 2003-04 and new ETP of capacity 600 m3/hr commissioned in 2010. The combined capacity of the two ETPs caters to the effluent load of the refinery.
v)	Time bound Action Plan for disposal of oily sludge / recovery of oil & design details of the solid waste disposal pit should be furnished to the Ministry within a period of three months. Hazardous waste should be handled as per Hazardous Waste	Haldia refinery has Hazardous Waste (HW) Authorization from WBPCB with validity up to 31-12-2025. Yearly Hazardous Waste return is being submitted to WBPCB in the month of June every year.

	(Management & Handling) rules, 1989 and necessary approval from SPCB must be obtained for its safe collection, treatment, storage and disposal.	
vi)	SRU having an efficiency of more than 99% should be installed.	New SRUs having efficiency >99.5% has been installed and commissioned.
vii)	Location of riverine outfall point showing the alignment of pipeline and outfall point with reference to the HTL and LTL should be submitted to this Ministry. IOC should also obtain the expert opinion of NIO or any other expert body on the best possible location of the outfall point and IOC should abide by the changes if any recommended by the expert body.	The job was carried out by National Institute of Oceanography (NIO), Goa. As per the study, the existing location of outfall point of treated effluent to river Hooghly is suitable and does not require change. The copy of final report sent to Joint Director (S), MOE&F, Bhubaneswar in Aug-99. The sketch on location of riverine outfall point has already been included in that report.
viii)	The IOC should commission a study by a competent technical expert to evaluate the effects of the existing effluents on aquatic life and on mangrove and submit to the Ministry the results of the study within one year.	A study was carried out by National Institute of Oceanography (NIO), Goa to evaluate the effects of effluents on aquatic life and on mangroves. As per the study report, the effect of treated effluent is insignificant. The copy of final report was sent to Joint Director (S), MOE&F, Eastern Regional Office, Bhubaneswar in Aug-99.
ix)	A detailed risk analysis study board on maximum credible accident analysis (MCA) and HAZOP study should be done to the Refinery including DHDS project facilities and submitted to this Ministry Board. On this, a Disaster Management Plan and off site plan be prepared and submitted after approval has been obtained from nodal agency.	• Risk Analysis Report submitted to Ministry for every project during obtaining EC. • Quantitative Risk Assessment study is done in every 5 years of interval. • HAZOP study being done at 5 years interval. • Emergency Response and Disaster Management Plan of Haldia Refinery is recertified at 3 years interval. • The ERDMP of Haldia Refinery is valid till 31.08.2025
x)	The project authority must strictly comply with the provisions made in MSIHC Rules, 1989 as amended in October, 1994 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission the project.	Safety Audit by Third party agency as per MSIHC Rules being done. PESO approval obtained before commissioning of the Project.

3.0 EC Reference No. & Issue Date: J.11011/99/96-IA II (I); 01/10/1997

Status of Conditions Imposed With Respect To Environmental Clearance of "Fluidized Catalytic Cracking Unit (FCCU) At Haldia Refinery of IOC"

Sl. No.	**CONDITIONS**	**STATUS**
i)	The project authority must strictly adhere to the stipulations laid down by the West Bengal State Pollution Control Board and the State Govt.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control and submitting necessary compliance Reports as per schedule.
ii)	No expansion or modernization of the plant should be carried out without approval of the Ministry of Environment and Forest	Environmental clearance from MoEF & CC is taken before any expansion or modernization in the plant.
iii)	The total SO_2 emission from the FCCU project should not exceed 390 kg/hr. Maximum SO_2 emission from the Refinery complex should be below 1500 kg/hr. (letter dated 16.03.89). However, efforts may be made to peg the SO_2 values at 1240 kg/hr. in the post DHDS and FCCU phase.	Low Sulphur fuel gas & Fuel oil are fired in Furnaces/heaters. Old Sulphur Recovery Units commissioned in April / May'94. SRU-IV and SRU-V are commissioned in the year 2010 & 2020 respectively. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H2SO4 from H2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up linking of data to CPCB server have been completed. The emissions from stacks are well within the prescribed limits. The six-monthly average of SO2 emission rate from heater stacks of all Process Units during Oct'23 to Mar'24 was 846 Kg/hr.
iv)	The studies on aquatic life and marine outfall for discharge of treated effluent into the river should be expedited. A time bound action plan to implement the conditions stipulated by the Ministry while according approval for the DHDS unit vide letter dated 18/12/96 should be submitted to the Ministry for review within a period of one month.	A study was carried out by National Institute of Oceanography (NIO), Goa on aquatic life & marine outfall for discharge of treated effluent into the river Hooghly. As per the study report, effect of treated effluent on aquatic life and marine outfall into the river Hooghly is insignificant. A copy of final report sent to joint Director (S), MoEF & CC, Eastern Regional Office, Bhubaneswar in Aug.-99.

4.0 EC Reference No. & Issue date: J.11011/28/2000-IA II ; 21/08/2000

Status of Conditions Imposed with Respect to Environmental Clearance Of "2nd Vacuum Distillation Unit (Capacity 2 MMMTPA) and Catalytic ISO-Dewaxing Unit (Capacity 0.2 MMMTPA) At 7.5 MMMTPA Crude Processing Level at Haldia Refinery of IOC"

SPECIFIC CONDITIONS:

Sl. No	STIPULATION BY MoE&F & CC	STATUS
1	The SO2 emission from the refinery unit including the proposed 2nd VDU and CIDW should not exceed 1340 kg/hr.	Low Sulphur fuel gas & Fuel oil are fired in Furnaces/heaters. Old Sulphur Recovery Units commissioned in April / May'94. New SRUs are commissioned in 2010. SRU-IV and SRU-V are commissioned in the year 2010 & 2020 respectively. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H2SO4 from H2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up linking of data to CPCB server have been completed. The emissions from stacks are well within the prescribed limits. The six-monthly average of SO2 emission rate from heater stacks of all Process Units during Oct'23 to Mar'24 was 846 Kg/hr.
2	The ETP load should be within the design capacity of 540 m^3/hr. The total quantity of effluent generation should not exceed 414 m^3/hr as indicated in the EMP of which 150 m^3/hr treated effluent should be recycled and rest 264 m^3/hr should be discharged after proper treatment. The treated effluent should comply with the prescribed standards.	Present ETP-1 revamped capacity is 650 m3/hr and New ETP-2 capacity is 600 m3/hr. The combined ETP load remains 900-1100 m3/hr. The treated water from ETP-1 & ETP-2 is reused in TTP-RO feed, Fire water & Cooling water make-up. Only TTP-RO reject is being discharged to Hooghly river after treatment. The monthly average data for six months of the Final treated effluent discharged to river Hooghly is attached as **Annexure-2**.
3	The oily sludge generated from the refinery operation should be subjected to melting pit treatment for recovery of oil. The recovered oil should be recycled. The residual oily sludge should be disposed off in the HDPE lined pits.	The methodology for recovery of oil as indicated is practiced. The tank bottom sludge is reprocessed using mechanized process for recovery of slop oil and recovered oil is recycled. The residual sludge after oil recovery is being disposed to authorized agency approved by WBPCB.

	The spent catalyst from CIDW unit should be sent to supplier for metal recovery.	The spent catalyst discharged from CIDW Unit after run life is sent to authorize metal recyclers for metal recovery through MSTC whenever requirement arises.
4	Oil spill response facilities should be in place, in accordance with OISD guidelines with regard to the likely risks associated with transportation of finished products by Hooghly-Sea route.	Facilities are in place to combat Tier-I spill situation in line with the guidelines of OISD & Coast Guard.
5	Green belt of adequate width and density should be provided to mitigate the effects of fugitive emission all around the plant in consultation with the local DFO. The bio-sludge from biotreater should be used as manure in the green belt development.	As Haldia Refinery does not have enough land within the premise, Haldia Refinery entered into an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery. Residual sludge is presently disposed through authorized Co-processing Cement Plant and TSDF agency.
6.	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act and the West Bengal Factories Rules.	Haldia Refinery has its own Occupational Health center with all facilities. Periodical health checkup schedule is being followed for target employees as per Factories Act and WB Factory Rules and records are being maintained.

GENERAL CONDITIONS:

Sl. No	STIPULATION BY MOE&F & CC	STATUS
1	The project authorities must strictly adhere to the stipulations made by the West Bengal State Pollution Control Board and the State Government.	Haldia Refinery has been adhering to the stipulations made by the WBPCB and submitting necessary compliance Reports as per schedule.
2	No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Environmental clearance from MoEF & CC is taken before any expansion or modernization in the plant.
3	At no time, the emissions should 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 should not be restarted until the desired efficiency has been achieved.	Low Sulphur fuel gas & Fuel oil are fired in Furnaces/heaters. Old Sulphur Recovery Units commissioned in April / May'94. New SRUs are commissioned in 2010. SRU-IV and SRU-V are commissioned in the year 2010 & 2020 respectively. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H_2SO_4 from H_2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up linking of data to CPCB server have been completed. The emissions from stacks are well within the prescribed limits. The six-monthly average of SO_2 emission rate from heater stacks of all Process Units during Oct'23 to Mar'24 is 846 Kg/hr. **Annexure-6.**
4	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules 1989 viz., 75 dBA (day time) and 70 dBA (night time).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-5. Proper Personal Protective Equipments (PPEs) are being used, if person is working in any high noise area.
5	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in October, 1994 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the project.	Safety Audit under MSIHC Rules is being done. PESO approval obtained before commissioning of the Project.

6	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Expenditure for the year 2023-24 on environment monitoring job, tree plantation, operation & maintenance of ETP & TTP-RO, oil recovery from oily sludge, disposal of hazardous waste, awareness program, installation of new Solar PV power plant, Consent fees, EIA study and RA study job etc. are enclosed as **Annexure-4**.
7	The stipulated conditions will be monitored by the Regional of this Ministry at Bhubaneswar/ Central Pollution Control Board / State Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly.	The compliance status is submitted to the MoEF & CC, Regional Office, Bhubaneswar & State Pollution Control Board every six months. Last report sent in June'23.
8	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 and Forests at http:/ WWW. envfor.nic.in. This should be advertised in at least two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned.	After receipt of Environmental clearance, application is being placed before State pollution control board to obtain consent to establish. Also, the news of EC was published in two local newspapers.
9.	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.	2nd VDU & CIDW unit commissioned on 15th March, 2002 and 25th March, 2003 respectively and the same was communicated to the authorities in time.

5.0 EC Reference No. & Issue Date: J11011/5/2002 IA II(I) ; 1st May 2002

Status of conditions imposed with respect to environmental clearance of installation of facilities for improvement of HSD quality and distillate yield (OHCU) and MS quality improvement (MSQI) at Haldia refinery of M/S. IOCL in district Midnapore (E), West Bengal.

A. SPECIFIC CONDITIONS:

Sl. No	STIPULATION BY MOE&F & CC	STATUS
I	The company shall ensure strict implementations / compliance of the terms and conditions mentioned vide Ministry's letters No. J-11011/39/96-IA.II(1) dated 18/12/96, J-11011/99/96-IA.II(1) dated 01/10/1997 AND J-11011/28/2000-IA.II(1) dated 21st August, 2000.	Terms and conditions as described in the respective letters are complied.
ii	The company shall also ensure that the total SO_2 emission from the Haldia Refinery (including expansion of OHCU & MS Quality Improvement Project) will not exceed 1466 kg/hr.	Low Sulphur fuel gas & Fuel oil are fired in heaters and boilers. Old Sulphur Recovery Units (SRU) commissioned in April/ May'94. New SRUs are commissioned in 2010. SRU-IV and SRU-V are commissioned in the year 2010 & 2020 respectively. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H2SO4 from H2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up linking of data to CPCB server have been completed. The average SO_2 emission from all Process Units heater stacks from Oct'23 to Mar'24 is 846 Kg/hr and SO_2 emission report is enclosed as Annexure-6.
iii	Additional water requirement should be met from the Geonkhali Water Supply Scheme. There should be no further drawl from ground.	Additional water requirement is met from Geonkhali Water Supply of Haldia development authority.
iv	The ETP load should be within the design capacity of 540m^3/hr. The total quantity of effluent generation should not exceed 446 m^3/hr as indicated in the EMP of which 150m^3/hr treated effluent should be recycled and rest 296 m^3/hr should be discharged after	At present, Old ETP-1 revamped capacity is 650 m3/hr and New ETP-2 capacity is 600 m3/hr. But the combined ETP load remains 900-1100 m3/hr. The treated water from ETP-1 & ETP-2 is reused in TTP-RO feed, Fire water & Cooling water make-up. Only TTP-RO reject is being discharged to Hooghly river.

	proper treatment. The treated effluent should comply with the prescribed standards.	All effluent water quality is monitored daily at IOCL owned NABL accredited laboratory. The treated effluents comply with the prescribed standards (MINAS).
v	The oily Sludge generated from the refinery operation should be subjected to melting pit treatment for recovery of oil. The recovered oil should be recycled. The residual oily sludge should be disposed off in the HDPE lined pits. The spent catalyst should be sent to supplier for metal recovery.	The methodology for recovery of oil as indicated is practiced. The tank bottom sludge is reprocessed using mechanized process for recovery of slop oil and recovered oil is recycled. Residual sludge is presently disposed through authorized Co-processing Cement Plant and TSDF agency, M/S WBWML. Spent catalyst from hydro-processing units containing metals is sold through e-auctioning by M/s MSTC. The catalysts containing noble metals are sent to recyclers for metal recovery.
vi	Oil spill response facilities should be in place, in accordance with OISD guidelines with regard to the likely risks associated with transportation of finished products by Hooghly-Sea route.	Facilities are in place to combat Tier-I spill situation in line with the guidelines of OISD & Coast Guard.
vii	Green belt of adequate width and density should be provided to mitigate the effects of fugitive emission all around the plant in consultation with the local DFO. The bio-sludge should be used as manure in the green belt development.	As Haldia Refinery does not have enough land within the premise, Haldia Refinery entered into an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery. The residual sludge is being disposed to authorized Co-processing agency approved by WBPCB/ SPCB.
viii	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act and the West Bengal Factories Rules.	Haldia Refinery has Occupational Health center with all facilities. Periodical health checkup schedule is being followed for target employees as per Factories Act and WB

		Factory Rules and records are being maintained.

B. GENERAL CONDITIONS:

Sl. No	STIPULATION BY MOE&F & CC	STATUS
I	The project authorities must strictly adhere to the stipulations made by the West Bengal State Pollution Control Board and the State Government.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control Board and State Govt. and submitting necessary compliance Reports as per schedule.
ii	No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Environmental clearance from MoEF & CC is always taken before any expansion or modernization in the plant.
iii	The company shall implement all recommendations made in the EMP and risk Analysis reports.	Recommendations from the EMP and Risk analysis reports are implemented at Haldia Refinery.
iv.	At no time, the emissions should 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 should not be restarted until the desired efficiency has been achieved.	Low Sulphur fuel gas & fuel oil are fired in heaters & boilers. Old Sulphur Recovery Units (SRU) commissioned in April/ May'94. New SRUs are commissioned in 2010. SRU-IV and SRU-V are commissioned in the year 2010 & 2020 respectively. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H_2SO_4 from H_2S rich gas generated from process units. The emissions from stacks are well within the prescribed limits. Online monitoring system and up-linking of data to CPCB server have been completed. The average SO_2 emission rate from heater stacks of all Process Units during Oct'23 to Mar'24 is 846 Kg/hr.
v.	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 vis. 75 dBA (day time) and 70 dBA (night time).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-5. Proper Personal Protective Equipment's (PPEs) are being used, if person is working in any high noise area.

vi	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous chemicals Rules, 1989 as amended in 1994 and 2000.	Safety Audit under MSIHC Rules is being done.
	Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained.	PESO approval obtained before commissioning of the Project.

6.0 EC Reference No. & Issue Date: J13011/14/2006 IA. II (T); 5TH JAN 2007

Status Of Conditions Imposed With Respect To Environmental Clearance Of Installation Of 3rd Gas Turbine (GT-3) With Heat Recovery Steam Generation (HRSG) At Haldia Refinery By M/S Indian Oil Corporation Ltd.

A. SPECIFIC CONDITIONS

Sl. No.	STIPULATION BY MOE&F &CC	STATUS
i	All the conditions stipulated by West Bengal Pollution Control Board vide their letter no. 334-2N-295/2005 dated 28th June 2006 shall be strictly implemented.	All the conditions stipulated by West Bengal Pollution Control Board have been taken care of during implementation of GT-3.
ii	No additional land shall be acquired for any activity/facility of the power project.	GT-3 is installed inside the existing Refinery premises.
iii	Water requirement will be met from existing water supply system. No additional facilities will be created as part of this project.	Water requirement is being met from existing water supply system.
iv	Sulphur content in the Naphtha to be used in the project shall not exceed 0.025%.	Sulphur content in Naphtha is less than 0.025%.
v	A single stack of 60 m with exit velocity of 20 m/sec shall be provided with continuous online monitoring equipment's.	Stack height is 60 M. Online monitoring system with SO2, NOx, PM10 and CO analyzers has been provided.
vi	NOx emission shall not exceed 100 ppm.	NOx emission level for GTs/HRSGs stacks is in the range of 25-40 ppm.
vii	The treated effluents conforming to the prescribed standards shall only be discharged in the river Hoogly.	Effluent water quality is monitored daily at IOCL owned laboratory which is NABL accredited and WBPCB approved. The treated effluents comply with the prescribed standards (MINAS). TTP-RO reject effluent is being discharged to river Hooghly after meeting the MINAS.
viii	Adequate measures shall be taken to avoid fire and explosion hazard.	Adequate measures taken to avoid fire and explosion hazard. Norms of OISD, PESO and other statutory norms are being followed.

ix	A greenbelt shall be developed all along the plant.	As Haldia Refinery does not have enough land within the premise, Haldia Refinery entered into an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, the Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
x	First aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	First Aid and sanitation arrangements are provided at worksite and are a part of the Contract Document.
xi	Leq of Noise level should be limited to 75 dBA and regular maintenance of equipment be undertaken. For people working in the high noise areas, personal protection devices should be provided.	Leq of noise level along boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. Proper Personal Protective equipment's (PPEs) are being used, if person is working in any high noise area.
xii	Regular monitoring of the ambient air quality shall be carried out in and around the power plant and records maintained. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry.	The ambient air quality within refinery is monitored twice every week at 5 Nos of locations in refinery & 2 Nos locations in township. Six-monthly ambient air quality monitored data is being submitted to the MoEF & CC Regional Office. Six monthly data from Oct'23 to Mar'24 is enclosed as **Annexure-1**. Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the refinery battery gate whose data is linked and transmitted to CPCB and WBPCB server.
xiii	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards should be submitted to this Ministry/ Regional Office/CPCB/SPCB.	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards Six monthly data are being submitted before June and December every year. Last report sent in the month of Dec'23.
xiv	Regional Office of the Ministry of Environment & Forests located at Bhubaneswar will monitor the implementation of the stipulated conditions.	The Regional Office of the Ministry of Environment, Forests and Climate change located at Bhubaneswar visits Haldia

	Complete set of Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring.	Refinery to monitor the implementation status of the stipulated conditions. As per the requirement, additional information is also submitted during the visit.
xv	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. This cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Expenditure for the year 2023-24 on environment monitoring job, tree plantation, operation & maintenance of ETP & TTP-RO, oil recovery from oily sludge, disposal of hazardous waste, awareness program, installation of new Solar PV power plant, Consent fees, EIA study and RA study job etc. are enclosed as **Annexure-4**.
xvi	Full cooperation should be extended to the Scientists/Officers from the Ministry/ Regional Office of the Ministry at Bhubaneswar/the CPCB/the SPCB who would be monitoring the compliance of environmental status.	Haldia Refinery is always extending full co-operation to the Scientists / Officers visiting the Refinery from the statutory bodies.

7.0 EC Reference No & Issue date; J11011/422/200 IA II(I): 6th March 2007

Status of conditions imposed with respect to environmental clearance for Crude Oil Refining Capacity by Revamping of RFCCU from 0.7 MMTPA to 1.0 MMTPA and installing a Gas Turbine of 20 MW capacity at Haldia refinery of M/S. IOCL in district Purba Medinipure (E), West Bengal.

A. SPECIFIC CONDITIONS:

B.

Sl.No	STIPULATION BY MOE&F & CC	STATUS
I	The gaseous emissions (SO2, NOx, HC, VOC and Benzene) from various process units shall be kept within limit as per standard prescribed by the concerned SPCB. All the measures detailed in the EMP shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, RFCCU, process and storage units etc. for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration levels and shall not exceed for the worst scenario predicted for SO2 (15.7 Micro gram/m3).	The revamping job of RFCCU was not pursued due to economic reasons. The emission level of SO2 remains unchanged.
II	There will be no increase in the pollution load of SO2 emission as augmentation of Flue Gas Scrubbing section will be undertaken to keep the SO2 emission levels within the existing levels. A new Sulphur Recovery Unit (SRU) with more than 99% of efficiency shall be installed under once through hydro-Cracker Unit to keep. SO2 emission levels within the existing levels.	Sulphur Recovery Units (SRUs) having efficiency >99.5% has been commissioned along with Once through hydrocracking unit in 2010 & SRU-V commissioned in 2020. Also, WSA (Wet Sulfuric Acid Plant-Capacity: 375 MTPD) 1st of its kind in IOCL was commissioned successfully at Haldia Refinery on 30th Sep'22 for production of H2SO4 from H2S rich gas generated from process units. The month wise data of SO2 emission is provided in Annexure-6 for the period of Oct'23 to Mar'24.
III	No additional stack is envisaged for the revamp of RFCCU. There will be no increase in emission levels of SO2 from the existing two stacks in the RFCCU of 100 and 60M attached to the regenerator and the heater.	There is no change in emission levels of SO_2 from existing RFCCU as revamping job was not done.
IV	The emission levels of the other pollutants shall also remain within the existing levels.	Emission level remains within limit and stack emission parameters is being monitored online.
V	Low Sulphur internal fuel oil will be fired in process heaters and boilers.	Low Sulphur fuel gas & low Sulphur fuel oil are fired in heaters and boilers.
VI	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of	The ambient air quality within refinery is monitored twice every week at 5 Nos of

	existing monitoring stations will be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required. It will be ensured that at least one monitoring station is set up in up-wind and in down-wind direction along with those in other directions.	locations in refinery & 2 Nos locations in township. Six-monthly ambient air quality monitored data is being submitted to the MoEF & CC Regional Office. Refer Annexure-1for six months data from Oct'23 to Mar'24.
VII	On-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters.	A Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the Refinery battery gate whose data is linked and transmitted to CPCB and WBPCB server. The analyzers are calibrated at regular intervals. Typical reading of CAAQMS data is shown as Annexure-7.
VIII	The practice of acoustic plant design shall be adapted to limit noise exposure for personnel to an 8 hr time weighted average of 90 db(A).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-5. Proper Personal Protective equipment's (PPEs) are being used, if person is working in any high noise area.
IX	For control of fugitive emissions, all unsaturated hydrocarbons will be routed to the flare system. The flare system shall be designed for smokeless burning.	Gaseous hydrocarbons are recovered in flare gas recovery system and recycled to fuel gas system. Refinery flare is designed for smoke less burning.
X	All the pumps and other equipment's where there is a likelihood of HC leakages shall be provided with LEL indicators. Provision for immediate isolation of such equipment, in case of a leakage will also be made. The company shall adopt Leak Detection and Repair (LDAR) program for quantification and control of fugitive emissions.	HC gas detectors are provided at specific locations within process units and it raises alarms at DCS in case if any HC leaks. Calibration of the HC detectors is being done at regular intervals.
XI	The product loading gantry shall be connected to the product sphere in closed circuit through the vapour arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records will be maintained.	The vapor line from tank trucks is connected to the product storage system during LPG loading to collect vapor. Fugitive emission is being monitored and recorded through authorized agency within units and offsite area.
XII	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present than the respective streams may be incinerated, if there are no technically feasible or economically viable reduction/ recovery options. Any stream	Flare gas recovery system is already in use to recover gases from flare header and to reuse as fuel. There is a separate flare system to incinerate if any acid gas is generated.

	containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.	
XIII	All new standards/ norms that are being proposed by the CPCB for petrochemical plants shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e. TOCs standard and process vent standards for top priority chemicals. The company shall install online monitors for VOC measurements. Regular monitoring will be carried out for VOC and HC.	The VOC and HC monitoring within refinery is carried out once in a quarter by WBPCB recognized laboratory. Online monitoring system for VOC measurements has been installed at ETP.
XIV	No additional fresh water will be used for the expansion project. The requirement of 40 m3/hr of additional fresh water will be met from the existing facilities.	The revamping of RFCCU job was not done and fresh water consumption remains unchanged.
XV	Additional waste water generation from the expansion project will be around 5 m3/hr which will be treated in the existing ETP. Part of the treated effluent shall be recycled and remaining shall be disposed into the river Hoogly through closed pipeline.	The revamping of RFCCU job was not done and effluent generation rate remain unchanged.
XVI	An additional generation of 1.5 T/day of Spent Catalyst (including filter cake), will be disposed off through the common hazardous waste disposal site of WBIDC at Haldia. Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE line pit for disposal through bioremediation inside the 'refinery premises. Bio sludge will be stored in drying pit for natural weathering and then used as manure inside refinery premises. Remaining sludge will be incinerated in their own incinerator.	The spent catalyst generated from existing RFCCU is being disposed to authorized CHWTSDF agency approved by WBPCB. Oily sludge is processed thru centrifuge to recover slop oil and the recovered slop oil is reprocessed in process units. The residual sludge with low oil content (less than 10 vol%) is being disposed through SPCB authorized CHWTSDF agency & also disposed through authorized Co-processing Cement plant.
XVII	Green belt shall be provided to mitigate the effects of fugitive emissions all around the plant in a minimum of 33% of the plant area in consultation with DFO as per CPCB guidelines.	As Haldia Refinery does not have enough land within the premise, Haldia Refinery entered an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation.

		❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
XVIII	The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	All recommendations mentioned in Charter on CREP are being followed by Haldia Refinery.
XIX	The Company must harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	At Haldia Refinery, 9 nos. rainwater harvesting projects installed since 2011-12 either for storage of rain water or for re-charging the ground water. The total catchment area for rain water harvesting is developed up to 12,005 Square meters.
XX	Occupational Health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Occupational Health check-up for the employees is being carried out at periodic intervals and records maintained at Occupational health center.
XXI	The company shall implement all the recommendations made in the EIA / EMP report and risk assessment report.	Recommendations made in the EIA, EMP and risk assessment report are implemented.

GENERAL CONDITIONS:

Sl.No	STIPULATION BY MOE&F & CC	STATUS
I	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control board and submitting necessary compliance Reports as per schedule.
II	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Environmental clearance from MoEF & CC shall be taken before any expansion or modernization in the plant.
III	At no time, the emissions should 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 should not be restarted until the desired efficiency has been achieved.	The emissions from stacks are well within the prescribed limits. Online monitoring system and up linking of data to CPCB server have been completed. The last six months average data of SO_2 emission from heater stacks of all Process Units during Oct'23 to Mar'24 is 846 Kg/hr (Refer Annexure-6).
IV	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters.	Water quality is monitored at the outlet of ETP-1, ETP-2 and TTP/RO outlet (Final River Discharge). Online analyzers are also installed at these three locations to continuously monitor pH, TSS, COD &

		BOD. Real time data of these analyzers are connected to CPCB server.
V	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Waste effluent water generated from process units are collected into Influent sump through Oily Water Sewer (OWS) closed pipelines. This waste effluent water is treated in ETP-1 & ETP-2. The treated water from ETP-1 & ETP-2 is being re-used in Tertiary Treatment-RO plant, Cooling water and Fire water service.
VI	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-5. Proper Personal Protective equipment's (PPEs) are being used, if person is working in any high noise area.
VII	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 expansion project.	Safety Audit under MSIHC Rules being done. PESO approval obtained before commissioning of the Project.
VIII	Authorization from the SPCB must be obtained for collections/ treatment/ storage /disposal of hazardous wastes.	Hazardous Waste (HW) authorization for generation, handling and disposal of hazardous wastes is accorded by WBPCB and it is valid up to 31-12-2025.
IX	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements.
X	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards should be submitted to this Ministry/ Regional Office/CPCB/SPCB.	Six monthly data are being submitted in the month of June and December every year to the MoEF & CC Regional Office & WBPCB. Last report submitted in Dec'23.
XI	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and	After receipt of Environmental clearance, application is being placed before State pollution control board to obtain Consent to

	copies of the clearance letter are available with the SPCB/ 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 concerned Regional office of this Ministry.	Establish (NOC). Also, the news of EC published in two local newspapers.
XII	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project will be informed to the Ministry and its Regional Office.	The revamping job of RFCCU was not pursued due to economic reasons.
XIII	Proper Housekeeping and adequate occupational health programs shall be taken up. Regular Occupational Health Surveillance Program for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	Proper housekeeping is done within refinery to maintain cleanliness. There is a dedicated Occupational health check-up centre at Haldia refinery and periodical OHC check-up is done for employees and records are maintained. Fugitive emission monitoring is being carried out by WBPCB recognized lab and exposure to emission and other hydrocarbons is utmost avoided.
XIV	A separate environment management cell with full fledge laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	Health Safety Environment (HSE) department exists in Haldia Refinery with several qualified personnel with 15 - 35 years' experience in Refineries & Petrochemicals industries. Also, all activities are monitored by Refinery Head quarter HSE department. For any professional help such as Risk Assessment & EIA/ EMP study, Haldia Refinery is always appointing competent professional agency. Regular Environmental monitoring and Ambient air quality monitoring is done by WBPCB recognized laboratory. A separate OHC center exists for periodic occupational health check-up for employees.

8.0 EC Reference No & Issue date J-11011/904/2007-IA II (I) Dated 17TH MARCH 2009

Sl No	EC Reference No and Date	Project name	Status
8.0	J-11011/904/2007-IA II (I) Dated 17TH MARCH,2009	Installation of Delayed Coking unit (DCU) at Haldia refinery Haldia WB by IOCL.	This project was clubbed with the next project of Feed Processing unit (FPU) & Capacity expansion projects and a fresh EC was granted. Name of 'DCU' project was changed as Distillate Yield Improvement Project (DYIP).

9.0 EC Reference No & Issue date; J-11011/299/2013-IA II (I) DATED 4TH MARCH 2016

Status of conditions imposed with respect to environmental clearance for "Capacity expansion from 7.5 MTPA to 8 MTPA along with Distillate Yield Improvement Project (DYIP) and Feed processing unit (FPU) at IOCL Haldia refinery, Purba Medinipur, WB.

Sl. No.	SPECIFIC CONDITIONS	STATUS
i)	Compliance to all the environmental conditions stipulated in the environmental clearance letter No. J-11011/39/96-IA II (I) dated 18th December, 1992, F. No. J-11011/99/96-IA II (I) dated 1st October, 1997 and J-11011/28/2000-IA (I) dated 21st August, 2000 shall be satisfactorily implemented and compliance reports submitted to the Ministry's Regional Office at Bhubaneswar.	Environmental conditions stipulated in the Environmental Clearance are compiled and half yearly compliance status report is being submitted in the month of June & December every year to the MoEF & CC Regional Office.
ii	M/s. IOCL shall comply with new standards/norms for Oil Refinery Industry notified under the Environment (Protection)Rules, 1986 vide G.S.R. 186(E) dated 18th March, 2008	New standards/ norms for Oil Refinery are being followed as per notification under the Environment (Protection) Rules, 1986 vide G.S.R. 186 (E) dated 18th March, 2008.
iii	Continuous on-line stack monitoring for SO_2, NOX and CO of all the stacks shall be carried out. Low NOX burners shall be installed.	New analyzers for stack emission monitoring (SO2, NOx, CO & PM) are installed & their online data linked to CPCB server. Low NOX burners are installed in new heaters under this project.
iv	The process emissions [SO_2, NOx, HC (Methane & Non-methane)], VOCs and Benzene from various units shall conform to the standards prescribed under the Environment (Protection) Act. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system (S) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency of the pollution control device has been achieved.	The process emissions [SO_2, NOx, HC (Methane & Non-methane)], VOCs and Benzene are being checked by WBPCB approved laboratory. The operation of all pollution control devices is closely being monitored and Standard operating Procedures (SOP) are developed for safe shutdown of the process units in case of any process related emergency.
v	Leak Detection and Repair program shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to. Fugitive	1) LDAR program is followed. VOC monitoring is being done at all critical locations. 2) Double mechanical seals are being provided for pumps handling hydrocarbon to avoid fugitive emission. 3) Floating roof storage tanks are used to store volatile hydrocarbon (HC) products.

	emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations.	4) Preventive maintenance is done for pumps, valves & pipelines. 5) HC gas detectors are provided at specific location within process units & tank farm area and their alarms are provided at control room in case of any HC leaks. Calibration of the HC detectors is being done as per planned schedule.
vi	SO_2 emissions after expansion from the refinery shall not exceed 941 Kg/hr. Sulphur recovery units shall be installed for control of H_2S emissions. The overall sulphur recovery efficiency of Sulphur recovery unit with tail gas treating shall not be less than 99.9%.	SO2 emission is being monitored by manual sampling on monthly basis for all heaters stacks. SO2 emission data is shared in half yearly compliance report to Regional office of MoEF & CC. Online analyzers of 03 nos. stacks under DYIP are linked with CPCB server. New Sulphur unit efficiency is being maintained more than 99.9%. The SO2 emission is being maintained within permissible limit.
vii	As proposed, record of sulphur balance shall be maintained at the Refinery as part of the environmental data on regular basis. The basic component of sulphur balance include sulphur input through feed (sulphur content in crude oil), sulphur output from Refinery through products, byproduct (elemental sulphur), atmospheric emissions etc.	Sulphur balance for Haldia refinery is prepared monthly based on material balance calculation of Sulphur content with Crude intake (feed) & Sulphur output with products, Sulphur production from SRUs and stacks emission w.r.t. fuels consumed in process heaters & boilers
viii	Ambient air quality monitoring stations, [PM_{10}, $PM_{2.5}$, SO_2, NO_X, H_2S, mercaptan, non-methane-HC and Benzene] shall be set up in complex in consultation with West Bengal Pollution Control Board, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs and trend analysis w.r.t. past monitoring results shall also be carried out. Adequate measures based on the trend analysis shall be taken to improve the ambient air quality in the project area.	A Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the Refinery Battery Gate whose data is linked and transmitted to CPCB and WBPCB server. New Ambient Air Quality Monitoring Stations are installed & commissioned in new DYIP project. Same has been linked with CPCB server. Total 03 nos. CAAQMS installed inside Refinery. Typical reading of CAAQMS data is shown as Annexure-7.
ix	The gaseous emissions from DG set shall be dispersed through adequate stack height as per CPCB standards. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution. Besides, acoustic enclosure / silencer shall be installed wherever noise levels exceed the limit.	No DG set installed in the subject DYIP project.

x	Fresh water requirement from Geonkhali Water Supply System and ground water sources (16 deep tube wells) will be 1270 m^3/hr.	Fresh water consumption is maintained within limit as per EC directives.
xi	Industrial effluent generation shall not exceed 1150 m^3/hr. after expansions. Industrial effluent shall be treated in effluent treatment plant. Treated effluent shall be recycled / reused as make up for the raw water cooling tower and remaining treated effluent (262.5 m^3/hr) shall be discharged into surface water bodies.	Effluent generation is kept within controlled. Treated effluent is being reused in Fire water make up, Cooling tower (CT) make up and also used as feed to Tertiary Treatment-RO plant to produce Permeate water. Permeate is used in CT make up & also used in DM Water production.
xii	All the effluents after treatment shall be routed to a properly lined guard pond for equalization and final control. In the guard pond, automatic monitoring system for flow rate, pH and TOC shall be provided.	All the effluent shall be treated in existing ETPs. Online analyzers are installed to check quality of treated water & final river discharge at ETP treated. Quality parameters like pH, COD, BOD & TSS of ETP treated water are being monitored.
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.	Periodic water audit is being carried out at Haldia Refinery. Some of the water conservation scheme implemented and some schemes are under implementation stage. Latest water consumption study was done by M/s EIL in Feb'20. Recommendations are partly implemented and some long term recommendations are under implementation with time bound manner to reduce fresh water intake by Refinery.
xiv	Automatic / online monitoring system (24 x 7) monitoring devices) for flow measurement and relevant pollutants in the treatment system to be installed. The data to be made available to the respective SPCB, Regional Office of MoEF&CC and in the Company's website.	OCEMS data are being transmitted to CPCB as well as WBPCB server.
xv	Oil catchers / oil traps shall be provided at all possible locations in rain / storm water drainage system inside the factory premises.	Oil catchers/ oil traps are already installed at all possible locations on rain/ storm water drainage system inside the Refinery.
xvi	As proposed, spent catalyst shall be sent to the authorize recycler/re-processors. Oily sludge shall be treated in the sludge Centrifuge provided in the ETP and the cake generated from the centrifuge is further sent to bioremediation for disposal.	Spent catalyst is being sent to authorize recyclers approved by SPCB. Residual sludge is disposed through SPCB authorized CHWTSDF and also through Co-processing in authorized Cement Plant.
xvii	The Company should strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals rules, 1989 as amended in October, 1994 and January, 2000. Hazardous waste should be	MSIHC Rules is compiled by Haldia Refinery. Hazardous waste is being disposed through WBPCB authorize CHWTSDF agency. Hydro-processing catalyst is being

	disposed of as per Hazardous Waste (management, Handling and Trans-boundary Movement) rules, 2008 and amended time to time.	disposed through SPCB authorized Recyclers.
xviii	The membership of common TSDF should be obtained for the disposal of hazardous waste. Copy of authorization or membership of TSDF should be submitted to Ministry's Regional Office at Bhubaneswar. Chemical/inorganic sludge shall be sent to treatment storage disposal facility (TSDF) for hazardous waste. Spent catalyst shall be sent to authorize recyclers/re-processors.	Authorization for Hazardous waste generation and disposal is accorded by WBPCB and it is valid up to 31.12.2025. WBWML Membership No. of CHW-TSDF at Haldia is **WBWML-HzZ/HLDA/I-001.**
xix	Proper oil spillage prevention management plan shall be prepared to avoid spillage/ leakage of oil/ petroleum products and ensure regular monitoring.	Oil spillage is prevented inside units & spilled oil is routed to oily water sewer (OWS) which is collected in Influent sump at ETP inlet. Slop oil skimming done from holding tanks and Slop oil is being processed in process units.
xx	Acoustic enclosure/ silencer shall be installed wherever it is possible.	Acoustic enclosure/ silencer are mostly installed at steam pressure reducing & de-super heater system (PRDS).
xxi	Occupational health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Occupational Health checkup for the employees is being carried out at periodic intervals and records are maintained at Occupational health centre.
xxii	The company should make the arrangement for protection of possible fire and explosion hazards during construction and operation phase. To prevent fire and explosion at oil and gas facility, potential ignition sources shall be kept to a minimum and adequate separation distance between potential ignition sources and flammable materials shall be in place.	Haldia Refinery has well established Fire & Safety department. There exist fire water network covering all units and tank farm area. Various types of fire tenders and firefighting equipment's are placed to control any fire emergency situation. Risk studies are done for every process units & recommendations are complied. OISD standard is followed for installation of different process equipment.
xxiii	The company shall strictly follow all the recommendation mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	All recommendations mentioned in Charter on CREP are being followed by Haldia Refinery.
xxiv	All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented.	Recommendations made in the rapid risk assessment & ERDMP are implemented. ERDMP is updated at 3 years of interval and certified by PNGRB approved agency. Present ERDMP is valid till 31.08.2025.
xxv	As proposed, spent catalyst shall be sent to the authorized recycler/re-processors. Oily sludge shall be treated in the sludge Centrifuge	Reply is already covered in point no. xvi.

	provided in the ETP and the cake generated from centrifuge is further sent for bioremediation for disposal.	
xxvi	Green belt over 19.5 acres land area should be developed within plant premises with at least 10 meter wide green belt on all sides along the periphery of the project area, in downward direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the DFO.	As Haldia Refinery does not have enough land within the premises, Haldia Refinery entered an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, the Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
xxvii	All the commitments made to the public during public hearing/public consultation meeting held on 12th September, 2014 shall be satisfactorily implemented and adequate budget provision shall be made accordingly.	All commitments made to the public during public hearing meeting held for subject project on 12.09.2014 are implemented.
xxviii	At least 2.5% of the total cost of the project should be earmarked towards the corporate social responsibility and item-wise details along with time bound action plan should be prepared and submitted to the Ministry's Regional Office at Bhubaneshwar. Implementation of such program should be ensured accordingly in a time bound manner.	The total expenditure of Haldia Refinery for CSR in FY 2023-24 is Rs 584.69 Lakhs.
xxix	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, Safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Provision of drinking water and toilets are made available at site. No temporary housing is developed near project site as labors are coming from nearest village area.
Sl. No.	**GENERAL CONTITIONS**	**STATUS**
i)	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.	Haldia Refinery has been adhering to the stipulations made by the WBPCB and submitting necessary compliance Reports as per schedule.

ii	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & forests. In case of deviations or alternations 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.	Environmental clearance from MoEF & CC is always taken before expansion or modernization of the existing plants.
iii	The project authorities must strictly comply with the rules and regulations under manufacture, Storage and Import of Hazardous chemicals rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety inspectorate etc. must be obtained, wherever applicable.	MSIHC rules- 2000 (amended) is being followed by Haldia Refinery. PESO approval obtained before commissioning of the Project.
iv	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).	The noise level in and around the plant area will be maintained as per norms. The ambient noise levels during day & night time monitoring is being done by authorized agency as per schedule. Refer day & night noise monitoring report is enclosed as **Annexure-5**.
v	A separate Environmental management Cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	1. Separate HSE department exists for all environment related monitoring. For any professional help such as Risk Assessment & EIA/ EMP study, Haldia Refinery is always appointing competent agencies. 2. The Quality Control laboratory of Haldia Refinery is well equipped, NABL accredited and approved by WBPCB for carrying out testing of water parameters. **NABL accreditation: TC10599 valid till 01.05.2026** 3. Authorized outsource laboratory is also employed for stack emission & ambient air quality monitoring.
vi	Adequate funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures and shall be used to implement the conditions stipulated by the Ministry of Environment and forests as well as the State government along with the implementation schedule for all the conditions stipulated herein. The funds so	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Environmental expenditure for the year 2023-24 is enclosed as **Annexure-4**.

	provided shall not be diverted for any other purposes.	
vii	The Regional Office of this Ministry/Central Pollution control Board / State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	The compliance status is submitted to the MoEF & CC, Regional Office, Bhubaneswar & Central Pollution Control Board every six months. Last report sent in Dec'23. Environment statement is submitted to CPCB & SPCB every year.
viii	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	The EC intimation is published in local two newspapers & also intimated to MoEF & CC regional office, SPCB, Factories Inspector & local Administration.
ix	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional office of the MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM_{10}, $PM_{2.5,}$ SO_2, NOX, HC (Methane & Non-methane) VOCs (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	The status of compliance of the stipulated environment clearance conditions including results of monitored data are being uploaded on IOCL website. The criteria pollutant levels namely; PM_{10}, $PM_{2.5,}$ SO_2, NOX, HC (Methane & Non-methane), VOCs (ambient levels as well as stack emissions) or critical sectorial parameters, indicated for the projects is being monitored and displayed at a convenient location near Refinery main gate.
x	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The Regional office of this Ministry / CPCB / SPCB shall monitor the stipulated conditions.	The EC compliance status report is submitted to the MoEF & CC, Regional Office, Bhubaneswar & State Pollution Control Board in every six months (June & Dec.)
xi	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 web side of the company along with the status of compliance of environmental conditions and	The environmental statement in Form-V is submitted to WBPCB for each financial year.

	shall also be sent to the respective Regional Offices of the MOEF by e-mail.	
xii	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional Office.	After receipt of Environmental clearance, application is being placed before State pollution control board and consent to establish is obtained. Also, the news of EC was published in two local newspapers. Consent to operate taken from WBPCB before commissioning of the project.
xiii	Project authorities shall inform the Regional as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	The subject project was approved on 20th Apr-2014.

10.0 EC Reference No. & Issue date: J11011/175/2016-IA -II (I) dated 28th November 2017

Status of conditions imposed with respect to environmental clearance for "BS-VI Fuel Quality Upgradation Project (Phase-I) at Haldia Refinery, Haldia (West Bengal) by M/S Indian Oil Corporation Limited –Environmental Clearance-reg".

Sl. No.	SPECIFIC CONDITIONS	STATUS
(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.	Consent to Establish obtained from WBPCB. **CTO No.: WBPCB/4890720/2024 valid till 27.05.2029**
(ii)	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises.	Treated water from ETP will be recycled for maximum reuse in Cooling tower make up and DM plant make up. As per directions issued in CTO (Consent to Operate) by WBPCB, IOCL-HR is allowed to discharge treated effluent @ 240 m3/hr meeting with MINAS.
(iii)	Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016 Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.	Hazardous Waste (HW) Authorization is accorded by WBPCB & it is valid till 31.12.2025. Yearly Hazardous Waste return is being submitted to WBPCB every year before 30th June.
(iv)	National Emission Standards for Organic Chemicals Manufacturing Industry issued by the Ministry vide G.S.R. 608(E) dated 21st July, 2010 and amended from time to time shall be followed.	The VOC and HC monitoring within refinery is carried out once in a quarter by authorized agency approved by WBPCB.
(v)	To control source and the fugitive emissions, suitable pollution control devices shall be installed with different stacks (attached to DHDT, HGU-II-Revamp, Prime G-Revamp and Sulphuric Acid Plant) to minimize the incremental concentrations (for PM_{10} & $PM_{2.5}$) in order to meet the prescribed norms/NAAQS. Sulphur content should not exceed 0.5% in the coal for use in coal fired boilers to control particulate emissions within permissible limits. The gaseous emissions shall be dispersed through of adequate height as per CPCB/SPCB guidelines.	1. SO2, NOx, CO & PM online monitoring in furnace stack is being done. 2. Stack emission manual sampling/testing is being done every month. WBPCB sampling done every quarter. 3. Low NOx burners used in new heaters. 4. No coal fired heaters in refinery.
(vi)	Total fresh water requirement shall not exceed 1395 cum/hr to be supplied by Haldia Development Authority. Necessary permission in this regard shall be obtained from the	Raw water consumption remains within stipulated limit.

	concerned regulatory authority. No ground water shall be used without prior permission from the CGWA.	
(vii)	Industrial/ trade effluent shall be segregated into High COD/TDS and Low COD/TDS effluent streams, if any. High TDS/COD shall be passed through stripper followed by MEE and ATFD (agitated thin film drier). Low TDS effluent stream shall be treated in ETP and then passed through RO system.	All effluent is treated in ETP-1 and ETP-2. COD of effluent remains within MINAS standards. Treated water from ETP is used in TTP-RO Plant to produce Permeate Water.
(viii)	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.	Process effluent routed through closed OWS piping to ETP inlet. Storm water is stored in guard pond to reprocess.
(ix)	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.	Hydrocarbon stored in Floating roof and fixed roof tanks. Flame arrestor fitted in fixed roof tanks.
(x)	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.	Residual sludge is presently disposed through authorized Co-processing Cement Plant and TSDF agency, M/S WBWML. Other hazardous waste disposed through TSDF agency.
(xi)	The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended the time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	MSIHC Rules, 1989 is being followed. Safety audit being done.
(xii)	Fly ash should be stored separately as per CPCB guidelines so that it should not adversely affect the air quality, becoming air borne by wind or water regime during rainy season by flowing along with the storm water. Direct exposure of workers to fly ash & dust should be avoided.	No fly ash generation in Haldia refinery. Heaters are oil and gas fired.
(xiii)	The company shall undertake waste minimization measures as below:-	
	(a) Metering and control of quantities of active ingredients to minimize waste.	Flow meters used for every stream for monitoring purpose.
	(b) Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.	There are no byproducts generated in refinery process. Oily sludge is reprocessed to recover slop oil to recycle.
	(c) Use of automated filling to minimize spillage.	Automated filling followed.
	(d) Use of Close Feed system into batch reactors.	Close feed system is practiced.

	(e) Venting equipment through vapor recovery system.	No venting equipment used in refinery. Any purge gas goes to flare and flare gas is recovered in the flare gas recovery system to reuse as fuel.
	(f) Use of high pressure hoses for equipment clearing to reduce wastewater generation.	Being followed.
(xiv)	The green belt of at least 10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downwards wind direction, and along roadsides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	As Haldia Refinery does not have enough land within the premises, Haldia Refinery entered an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, the Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
(xv)	At least 5% of the total project cost shall be allocated for Enterprise Social Commitment. The item-wise details in this regard along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	The total expenditure of Haldia Refinery for CSR in the year FY 2023-24 is Rs 584.69 Lakhs.
(xvi)	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.	No DG set shall be installed in the project. Refinery will use power from existing GTs and TGs and also will import power from external source.
(xvii)	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.	All measures have been taken to avoid Fire hazards. Refinery have its own Fire & safety department and having full-fledged firefighting facilities.
(xviii)	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	Continuous online monitoring system for stack emissions installed for measurement of SO2, NOx, PM & CO level. Online monitoring is done for ETP outlet water quality. The data

	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 irrigtation/ gardening, real time monitoring system shall be installed at the ETP outlet.	is transmitted to the CPCB and SPCB server.
(xix)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Haldia Refinery has its own Occupational Health center with all facilities. Periodical health checkup schedule is being followed for target employees as per Factories Act and WB Factory Rules and records are being maintained.
(xx)	Wetland habitat shall be provided for migratory birds, at the reservoir and green belt areas.	Green belt is developed in area nearby and township. As CER project, initiative taken at Digha to build a 'Biodiversity Park' to preserve wetland habitat.
(xxi)	Natural surface water bodies within 10 km study area shall be rejuvenated and developed as complete eco-system with the tree plantation development and growth using satellite imageries.	As Haldia Refinery does not have enough land within the premises, Haldia Refinery entered an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, the Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
12.1	The grant of environmental clearance is subject to compliance of other general conditions, as under:-	
(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.	Statutory stipulations are being 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.	Permission always taken from MoEF & CC and State pollution control board for every projects.
(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.	A Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the Refinery Battery Gate whose data is linked and transmitted to CPCB and WBPCB server. New Ambient Air Quality Monitoring Station installed in new DYIP project. All necessary jobs for integration has been already carried out by IOCL-HR.
(iv)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed.	Manual AAQ monitoring is being done through WBPCB recognized lab and analysis results are submitted in six monthly compliance report to MoEF&CC.
(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 be conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA(day time) and 70 dBA (night time).	Noise monitoring done within refinery as well as boundary area. The noise monitoring report is enclosed as **Annexure-5**. Noise level conforms the statutory limits.

11.0 EC Reference No. & Issue date: J11011/299/2013-IA -II (I) dated 11th December 2019

Status of conditions imposed with respect to environmental clearance for "Capacity expansion from 7.5 MTPA to 8 MTPA along with Distillate Yield Improvement Project (DYIP) and Feed processing unit (FPU) at IOCL Haldia refinery- **Amendment in Environmental Clearance-reg**.

Sl. No.	EC detail	Existing EC conditions	Amendment in EC
11	J-11011/299/2013-IA II(I) Date 11-Dec-2019	Capacity expansion from 7.5 MTPA to 8.0 MTPA along with Distillate Yield Improvement Project (DYIP) and installation of Feed Processing Unit (FPU) at IOCL Haldia Refinery, Purba Medinipur, WB – EC-Amendment in EC dated 04-March-2016	Augmentation of VDU-II (2.4 to 2.6 MTPA) in place of VDU-I (1.5 to 1.7 MTPA) – As per Ministries notification dated 23rd Nov 2016, para 7 (ii) (b) , no requirement for amendment in the EC dated 4th-March-2016

12.0 EC Reference No. & Issue date: J11011/175/2016-IA -II (I) dated 05th January 2021

Status of conditions imposed with respect to environmental clearance for "Installation of 2nd Catalytic Iso-Dewaxing unit of capacity 270.0 TMTPA by M/s Haldia Refinery of IOCL located at East Medinipur, West Bengal- EC regarding".

Sl. No.	Specific Condition	Status
I	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 earlier EIA/EMP report and updated in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	All environmental protection measures and safeguards proposed in the documents submitted to the Ministry shall be complied & actual status will be submitted to MoEF&CC.
II	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises. Treated effluent shall be reused in the process/ utilities. Treated industrial effluent shall not be used for gardening/greenbelt development/horticulture	Treated water from ETP will be recycled for maximum reuse in Cooling tower make up and DM plant make up. As per directions issued in CTO (Consent to Operate) by WBPCB, IOCL-HR is allowed to discharge treated effluent @240 m3/hr meeting with MINAS.
III	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.	Continuous online (24x7) monitoring system for stack emissions for existing Refinery is in place. Same shall be implemented for CIDW-II. Web camera with night vision capability has been installed at ETP for continuous monitoring.
IV	The National Emission Standards for Petroleum Oil Refinery issued by the Ministry vide G.S.R. 186(E) dated 18th March, 2008 and G.S.R. 595(E) dated 21st August, 2009 as amended from time to time, shall be followed.	Manual AAQ monitoring is being done through WBPCB recognized lab and analysis results are submitted in six monthly compliance report to MoEF&CC.
v	Volatile organic compounds (VOCs)/Fugitive emissions controlled at 99.997% with effective chillers/modern technology. For emission control and management, use of FG/NG in heater as fuel, adequate stack height, use of Low NOX burners in heater & boiler, continuous stack monitoring, Sulphur recovery plant, etc. shall be installed/ensured.	• Adequate stack height for new heaters will be provided. • Low NOx burners are installed in new heaters. • Same shall be implemented for CIDW-II • Continuous stack monitoring shall be done for heater's stack.

		• Four nos. of Sulphur Recovery units with design capacity of 360 TPD are already installed at Haldia Refinery. • In addition to that, WSA plant with capacity@ 375 MTPD has been installed for production of H2SO4 from H2S rich gas generated from process units.
vi	Occupational health center for surveillance of the worker's heath shall be set up. The heath 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.	Haldia Refinery has its own Occupational Health center with all facilities. Periodical health checkup schedule is being followed for target employees as per Factories Act and WB Factory Rules and records are being maintained.
Vii	Process safety and risk assessment studies shall be carried out using advanced models in repeated intervals, and the mitigating measures shall be undertaken/ implemented accordingly.	Risk Analysis Report submitted to Ministry for every project during obtaining EC. - QRA study being done for the whole refinery at 5 years interval.
viii	The storage of toxic/hazardous raw material/products shall follow all the safety norms and best practices to avoid any leakage/explosion/emissions. The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire-fighting system shall be as per the norms.	• Lighter hydrocarbon is stored in internal floating roof tank with rim seal fire protection system. • Norms of OISD, PESO and other statutory norms are strictly being followed. • Adequate measures taken to avoid fire and explosion hazard.
ix	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Safety and visual reality training shall be provided to employees	Training is being given to all employees on safety and health aspects of chemicals handling. Safety videos are also displayed on company's web portal.
X	Total additional fresh water requirement shall not exceed 408 KLD proposed to be met from Haldia Development Authority. Necessary permission in this regard shall be obtained from the concerned regulatory authorities, and renewed from time to time.	Shall be complied. Present water consumption for entire Refinery is ~940 m3/hr.
xi	Storm water from the roof top shall be channelized through pipes to the storage tank constructed for harvesting of rain water in the premises and harvested water shall be used for various industrial processes in the unit. No recharge shall be permitted within the premises. Process effluent/any wastewater shall not be allowed to mix with storm water.	At Haldia Refinery, 9 nos. rainwater harvesting projects installed since 2011-12 either for storage of rain water. No ground water recharge will be done inside the refinery premises.

xii	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.	(a) All raw material and products are carried in closed pipes and leak free system. Pipe line leakages are attended on top priority. (b) Slop oil is recovered by processing oily sludge. The recovered slop oil is further recycled as a feed to process units. (c) Flare gas recovery compressors are continuously in operation to reduce excess gas flaring.
xiii	The green belt of at least 5-10 m width shall be developed in nearly 33% of the total project area, mainly along the plant periphery. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department. Records of tree canopy shall be monitored through remote sensing map. The greenbelt shall be developed/planted within in 6 months and a compliance report needs to be submitted to RO MoEFCC.	As Haldia Refinery does not have enough land within the premises, Haldia Refinery entered an MOU with Department of Forest, Govt. of WB and Haldia Development Authority (HDA) for development of 28 acre (approx.) of land owned by HDA. As per MOU terms, the Department of Forest has undertaken tree plantation of selective variety and thereafter maintenance of the plant for five years after plantation. ❖ In FY 2021-22, approximately 20 lakh Mangrove plantation was completed in Beliarychar island. ❖ In FY 2022-23, 20,800 trees were planted by Haldia Refinery. ❖ In FY 2023-24, 661 trees were planted by Haldia Refinery.
xiv	The activities and the action plan proposed by the project proponent to address the public hearing and socio-economic issues in the study area, shall be completed as per the schedule presented before the committee and as described in the EMP report in letter and spirit. All the commitments made during public hearing shall be satisfactorily implemented. Preference shall be given to local villagers for employment in the unit.	The activities and the action plan proposed by IOCL Haldia Refinery to address the public hearing and socio-economic issues in the study area, shall be completed as per timeline shared to EAC. Local villagers are employed in various jobs in refinery such as office jobs, maintenance & project jobs etc.
xv	A separate Environmental Management Cell (having qualified person with Environmental Science/Environmental Engineering/specialization in the project area) equipped with full-fledge laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Health Safety Environment (HSE) department exists in Haldia Refinery with several qualified personnel with 15 - 35 years' experience in Refineries & Petrochemicals industries. Also, all activities are monitored by Refinery Head quarter HSE department. For any professional help such as Risk Assessment & EIA/ EMP study, Haldia

		Refinery is always appointing competent professional agency. Regular Environmental monitoring and Ambient air quality monitoring is done by authorized agency approved by WBPCB. QC Lab of Haldia refinery is recognized by WBPCB and NABL accredited for testing & analysis of ETP treated effluent.
B	**General Conditions**	**Status**
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 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.	Environmental clearance from MoEF& CC is always taken before expansion or modernization of the existing plants.
(ii)	The energy source for lighting purpose shall be preferable LED based, or advanced having preference in energy conservation and environment betterment.	Haldia Refinery has already been converted all conventional lights in refinery and township into LED.
iii)	The overall noise levels in and around the plant area shall be kept well within the standards by providing nose 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).	The noise level in and around the plant area will be maintained as per norms. The ambient noise levels for day & night time monitoring is being done by authorized agency as per schedule.
(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.	Various CSR activities are being carried out by IOCL to improve 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.
(vi)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayet, 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.	Not received any suggestions/ representations while processing the project.
(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 reports shall be posted on the website of the company.	Last report submitted to Eastern office, MoEF&CC in Dec'2023.
(viii)	The environmental statement of 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 Officers of MoEF&CC by e-mail.	Environmental statement of each financial year submitted to WBPCB every year before 30th Sept. Status report of all conditions stipulated in ECs is submitted to Eastern region office, MoEF&CC in every six months before 1st June & 1st Dec.
(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	After receipt of Environmental clearance, the news of EC receipt is published in two local newspapers.

	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.	
(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.	Shall be complied.
(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.	Accepted.

13.0. EC Reference No. & Issue date: F.No.11/23/2023-IA.III dated 21.07.2023

Status of CRZ recommendation for the Proposal 'Sulphuric Acid Pipeline From IOCL, Haldia Refinery to Finger Jetty of Haldia Dock Complex, Shyama Prasad Mukherjee Port, Kolkata' at Haldia, Purba Medinipur District, West Bengal.

PART-A -SPECIFIC CONDITIONS:

S.l	Recommendations	Compliance
1	All construction shall be strictly in accordance with the provisions of the CRZ Notification, 2011, as amended from time to time	Noted for Compliance
2	The pipeline where crossing of water body/ river/ creek areas should be laid through Horizontal Directional Drilling (HDD) method.	Shall be complied
3	Any temporary physical infrastructure setup and excavated material during laying of pipelines shall not be dumped in water bodies or adjacent areas and the site shall be restored to its original condition after completion of construction of work.	Shall be complied
4	No storage reservoir for sea water shall be permitted and only pipelines conveyance system shall be installed.	Noted for Compliance
5	No groundwater shall be extracted within the CRZ area to meet the water requirements during the construction and / or operation phase of the project.	Shall be complied
6	Permanent labour camp, machinery and material storage shall not be set up in the CRZ area	Shall be complied
7	The project proponents will certify that there is no legal restriction on the proposed project activities at the proposed site	Noted for Compliance
8	The Project Proponent shall comply order/direction, if any, issued by Hon"b1e Court/tribunal on the project	Shall be complied
9	There will be no construction activity during the turtle nesting season, if any from 1st January to 30th April of every year	Shall be complied
10	All the conditions stipulated by the West Bengal State Coastal Zone Management Authority for CRZ clearance under CRZ Notification, 2011 vide letter no.	Shall be complied

S.l	Recommendations	Compliance
	103 EN/T-II-4/ 17/ 2022 dated 08/ 02/ 2023 and commitments made by the PP before the WBSCMA and EAC shall be followed in letter and spirit.	
11	As a part of EMP, Indian Institute of Science Education and Research (IISER) — Kolkata or Zoological Survey of India any such nationally and internationally reputed government or academic institute will be provided with state of art laboratory equipment that can be used for high quality academic and research purpose.	-
12	All necessary clearance from the concerns authority, as may be applicable should be obtained prior to commencement of project or activity	Shall be complied

PART-B-GENERAL CONDITIONS:

S.l	Recommendations	Compliance
1	Management of solid waste in accordance with the Solid Waste Management Rules, 2016 shall be strictly implem ented.	Noted for Compliance
2	'Consent to Establish' and/ or 'Consent to Operate' shall be obtained from State Pollution Control Board under the provisons of Air (Prevention and Control of Pollution) Act, 1981 and /or the Water (Prevention and Control of Pollution) Act, 1974, as may be applicable.	Shall be complied
3	Disposal of muck during construction phase should not create any adverse effect on the neighboring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of Competent Authority.	Shall be complied
4	All liquid waste arising from the proposed development will be disposed of as per the norms prescribed by Central/ State Pollution Control Board. There shall not be any disposal of untreated effluent into the sea/ coastal water bodies. It shall be ensured that	Not applicable as the proposed project is only pipe laying job.

S.l	Recommendations	Compliance
	the waste water generated is treated in the STP as committed by the project proponent. The treated waste water shall be reused for landscaping, flushing and 'or HVAC cooling purposes etc. within the development. The project proponent should also make alternate arrangement for situation arising due to malfunctioning of STP. There shall be regular monitoring of standard parameters of the effluent discharge from STP under intimation to the SPCB.	
5	Any hazardous waste generated during com traction phase, shall be disposed off as per applicable rules and norms with necessary approvals of the State Pollution Control Board	Shall be complied
6	A copy of the clearance letter shall be uploaded on the website of the concerned State Coastal Zone Management Authority/ State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries Centre and Collector's Office/Tehsildar's office for 30 days.	Copy of the CRZ letter is available with the mentioned authorities.
7	A six-monthly monitoring report shall need to be submitted by the project proponent to the concerned Regional Office of this Ministry regarding the implementation of the stipulated conditions	Being be complied
8	The Ministry of Environment, Forest & Climate Change 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.	Noted for Compliance
9	Full co-operation shall be extended to the officials from the Regional Office of MoEF&CC, during monitoring of implementation of environmental safeguards stipulated. It shall be ensured that documents / data sought pertinent is made available to the monitoring team. A complete set of all the documents submitted to MoEF&CC shall be forwarded to the concerned Regional	Noted for Compliance

S.l	Recommendations	Compliance
	Office of MoEF&CC.	
10	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry	Noted for Compliance
11	The Ministry reserves the right to add additional safeguard measures subsequently, if considered necessary, and to take action to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner, including revoking of the environment clearance under the provisions of the Environmental (Protection) Act, 1986, for non-compliance	Agreed
12	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 proponent from the respective Competent Authorities	Shall be Complied
13	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 (SPCB) and may also be seen on the website of the Ministry of Environment, Forest and Climate Change at https:/ /parivesh.nic .in/ . The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the concerned Regional Office of this Ministry.	Complied
14	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	Not received any suggestions/ representations while processing the project.

S.l	Recommendations	Compliance
	suggestions / representations, if any, were received while processing the proposal	
15	The proponent shall upload the status of compliance of the stipulated 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&CC, the respective Zonal Office of CPCB and the SPCB.	Shall be Complied
16	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 project proponent along with the status of compliance of clearance conditions and shall also be sent to the respective Regional Office of the Ministry by e-mail.	Shall be Complied

Compliance of Statutory Stipulations - Ambient Air Quality
Haldia Refinery

ANNEXURE-1

Period: October-2023

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
IOCL MAIN GATE	PM10	µg/m3	9	100	60	43	48	45	41	50	47	55	49	52
	PM2.5	µg/m3	9	60	40	20	24	23	20	23	25	29	24	26
	SO2	µg/m3	9	80	50	13	15	14	12	16	15	14	16	17
	NO2	µg/m3	9	80	40	25	33	32	28	33	36	40	37	35
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	18	15	15	14	16	17	20	22	19
	Lead (Pb)	µg/m3	9	1	0.5	0.06	0.08	0.07	0.06	0.09	0.08	0.13	0.1	0.08
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.6	0.8	0.7	0.6	0.7	0.6	0.7	0.9	0.8
	Ammonia(NH3)	µg/m3	9	400	100	16	19	20	18	20	17	23	16	20
	Benzene	µg/m3	9	-	5	0.3	0.2	0.2	0.4	0.2	0.4	0.6	0.4	0.5
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
QUALITY CONTROL LAB	PM10	µg/m3	9	100	60	35	40	37	34	40	37	48	40	43
	PM2.5	µg/m3	9	60	40	18	21	18	18	20	19	23	19	20
	SO2	µg/m3	9	80	50	11	13	12	10	13	12	14	11	14
	NO2	µg/m3	9	80	40	20	28	27	24	26	29	32	31	29
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	15	13	12	12	13	14	16	15	16
	Lead (Pb)	µg/m3	9	1	0.5	BDL	0.05	0.05	BDL	0.05	0.06	0.09	0.05	0.05
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.5	0.7	0.6	0.5	0.6	0.5	0.8	0.8	0.7
	Ammonia(NH3)	µg/m3	9	400	100	13	16	17	15	16	14	16	13	16
	Benzene	µg/m3	9	-	5	BDL	BDL	0.2	0.3	BDL	0.3	0.4	0.3	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
OM & S BLOCK	PM10	µg/m3	9	100	60	41	46	43	39	47	44	53	45	49
	PM2.5	µg/m3	9	60	40	19	23	22	20	21	21	28	22	23
	SO2	µg/m3	9	80	50	12	14	13	12	15	14	13	12	16
	NO2	µg/m3	9	80	40	24	32	31	27	31	34	38	33	37
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	17	14	14	13	15	16	19	17	18
	Lead (Pb)	µg/m3	9	1	0.5	BDL	0.05	0.06	BDL	0.07	0.07	0.1	0.08	0.09
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.6	0.8	0.7	0.6	0.7	0.8	1.1	0.9	0.8
	Ammonia(NH3)	µg/m3	9	400	100	15	18	19	17	19	16	20	18	21
	Benzene	µg/m3	9	-	5	BDL	0.2	0.2	0.3	BDL	0.3	0.4	0.3	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
BITUMEN FILLING STATION	PM10	µg/m3	9	100	60	32	36	34	31	39	36	42	39	41
	PM2.5	µg/m3	9	60	40	17	18	16	16	21	16	20	18	22
	SO2	µg/m3	9	80	50	9	11	11	9	12	11	11	10	13
	NO2	µg/m3	9	80	40	19	22	24	21	27	25	33	30	28
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	14	11	11	10	12	13	15	14	15
	Lead (Pb)	µg/m3	9	1	0.5	BDL	BDL	0.05	BDL	0.05	0.05	0.08	0.06	0.05
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.5	0.6	0.6	0.5	0.7	0.6	0.7	0.6	0.6
	Ammonia(NH3)	µg/m3	9	400	100	12	14	15	14	16	13	13	11	15
	Benzene	µg/m3	9	-	5	BDL	BDL	BDL	BDL	0.2	0.2	0.3	BDL	0.3
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
TUBE WELL 4A, NEAR MCO TANK	PM10	µg/m3	9	100	60	36	41	33	37	42	40	48	45	42
	PM2.5	µg/m3	9	60	40	18	19	15	17	20	20	26	22	20
	SO2	µg/m3	9	80	50	11	12	11	10	13	12	12	14	14
	NO2	µg/m3	9	80	40	21	28	25	27	28	31	34	36	29
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	16	12	12	14	13	14	18	17	16
	Lead (Pb)	µg/m3	9	1	0.5	BDL	BDL	BDL	0.04	0.05	0.07	0.09	0.08	0.06
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.6	0.7	0.5	0.6	0.7	0.7	0.8	0.7	0.7
	Ammonia(NH3)	µg/m3	9	400	100	13	16	16	16	17	14	14	18	17
	Benzene	µg/m3	9	-	5	BDL	0.2	BDL	0.2	0.3	0.2	0.2	0.3	0.2
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
SECTOR - 21	PM10	µg/m3	9	100	60	28	34	31	26	32	44	38	42	36
	PM2.5	µg/m3	9	60	40	14	17	16	13	16	21	18	20	16
	SO2	µg/m3	9	80	50	BDL	4	4	BDL	4	6	7	7	4
	NO2	µg/m3	9	80	40	16	22	21	17	20	29	24	27	24
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	15	15	13	14	15	18	19	16	18
	Lead (Pb)	µg/m3	9	1	0.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.4	0.5	0.6	0.5	0.5	0.7	0.6	0.7	0.6
	Ammonia(NH3)	µg/m3	9	400	100	10	14	13	13	14	14	11	15	13
	Benzene	µg/m3	9	-	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						03.10.23	06.10.23	09.10.23	12.10.23	16.10.23	19.10.23	25.10.23	27.10.23	30.10.23
REFINERY HOSPITAL	PM10	µg/m3	9	100	60	26	27	29	24	29	31	26	32	30
	PM2.5	µg/m3	9	60	40	12	13	14	13	14	15	14	17	16
	SO2	µg/m3	9	80	50	BDL	BDL	4	BDL	4	4	BDL	BDL	4
	NO2	µg/m3	9	80	40	14	19	20	17	19	22	23	24	21
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	14	11	11	10	12	13	15	14	14
	Lead (Pb)	µg/m3	9	1	0.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.6	0.5
	Ammonia(NH3)	µg/m3	9	400	100	BDL	BDL	12	11	12	10	10	12	12
	Benzene	µg/m3	9	-	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

N.B.- * BDL- Below Detectable Limit

Compliance of Statutory Stipulations - Ambient Air Quality
Haldia Refinery

ANNEXURE-1

Period: November-2023

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
IOCL MAIN GATE	PM10	µg/m3	9	**100**	**60**	49	58	61	76	67	61	87	79	90
	PM2.5	µg/m3	9	**60**	**40**	24	31	32	39	31	32	43	41	44
	SO2	µg/m3	9	**80**	**50**	15	18	19	22	21	19	25	22	25
	NO2	µg/m3	9	**80**	**40**	29	40	44	52	44	46	63	54	61
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	23	20	19	25	20	24	27	29	24
	Lead (Pb)	µg/m3	9	**1**	**0.5**	0.07	0.10	0.11	0.19	0.12	0.11	0.17	0.15	0.18
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.7	1.0	1.0	1.1	0.9	0.8	1.1	1.5	1.4
	Ammonia(NH3)	µg/m3	9	**400**	**100**	23	29	27	33	27	27	33	26	32
	Benzene	µg/m3	9	-	**5**	0.5	0.3	0.4	0.8	0.4	0.7	1.4	0.9	1.2
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
QUALITY CONTROL LAB	PM10	µg/m3	9	**100**	**60**	39	47	51	59	52	50	69	66	73
	PM2.5	µg/m3	9	**60**	**40**	21	23	24	32	27	25	34	36	37
	SO2	µg/m3	9	**80**	**50**	12	15	16	17	16	15	20	18	20
	NO2	µg/m3	9	**80**	**40**	23	32	37	41	34	38	50	45	49
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	18	16	16	20	16	20	22	24	19
	Lead (Pb)	µg/m3	9	**1**	**0.5**	0.06	0.07	0.08	0.1	0.09	0.08	0.11	0.08	0.11
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.8	0.8	0.9	0.7	0.7	0.9	0.8	1.1
	Ammonia(NH3)	µg/m3	9	**400**	**100**	18	23	22	26	21	22	26	22	26
	Benzene	µg/m3	9	-	**5**	0.4	0.2	0.3	0.6	0.3	0.5	0.8	0.5	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
OM & S BLOCK	PM10	µg/m3	9	**100**	**60**	46	56	57	73	63	57	82	74	86
	PM2.5	µg/m3	9	**60**	**40**	23	27	29	40	29	27	45	40	44
	SO2	µg/m3	9	**80**	**50**	14	17	18	21	20	18	24	21	24
	NO2	µg/m3	9	**80**	**40**	27	38	41	50	41	43	60	51	59
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	21	19	18	24	19	23	26	27	23
	Lead (Pb)	µg/m3	9	**1**	**0.5**	0.07	0.09	0.1	0.19	0.1	0.09	0.18	0.17	0.2
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.7	1	0.9	1.1	0.8	0.8	1.1	1.4	1.3
	Ammonia(NH3)	µg/m3	9	**400**	**100**	21	28	25	32	25	23	29	24	27
	Benzene	µg/m3	9	-	**5**	0.4	0.2	0.3	0.6	0.3	0.5	1.1	0.7	0.9
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
BITUMEN FILLING STATION	PM10	µg/m3	9	**100**	**60**	38	45	48	59	49	47	64	59	66
	PM2.5	µg/m3	9	**60**	**40**	18	25	24	28	26	24	32	27	36
	SO2	µg/m3	9	**80**	**50**	11	14	15	17	16	15	19	16	18
	NO2	µg/m3	9	**80**	**40**	23	31	34	40	32	35	48	41	45
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	18	16	15	20	15	19	21	22	17
	Lead (Pb)	µg/m3	9	**1**	**0.5**	BDL	BDL	0.07	0.12	0.08	BDL	0.09	0.08	0.11
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.7	0.8	0.8	0.8	0.8	1	1.1	1
	Ammonia(NH3)	µg/m3	9	**400**	**100**	18	22	21	25	20	21	25	20	24
	Benzene	µg/m3	9	-	**5**	0.3	0.2	0.2	0.5	0.2	0.4	0.4	0.3	0.5
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
TUBE WELL 4A, NEAR MCO TANK	PM10	µg/m3	9	**100**	**60**	40	50	49	64	54	49	75	64	73
	PM2.5	µg/m3	9	**60**	**40**	19	23	26	35	30	26	34	33	37
	SO2	µg/m3	9	**80**	**50**	12	16	15	19	17	15	21	18	20
	NO2	µg/m3	9	**80**	**40**	24	34	35	44	35	36	54	44	49
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	19	17	15	22	16	19	24	24	19
	Lead (Pb)	µg/m3	9	**1**	**0.5**	BDL	0.07	0.08	0.15	0.08	0.07	0.12	0.13	0.16
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.9	0.8	0.9	0.8	0.7	1.2	1.2	1.1
	Ammonia(NH3)	µg/m3	9	**400**	**100**	19	26	22	28	21	21	29	21	26
	Benzene	µg/m3	9	-	**5**	0.3	0.2	0.2	0.6	0.2	0.4	0.6	0.4	0.5
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
SECTOR - 21	PM10	µg/m3	9	**100**	**60**	37	46	43	50	48	41	57	48	54
	PM2.5	µg/m3	9	**60**	**40**	18	22	19	24	24	20	28	23	29
	SO2	µg/m3	9	**80**	**50**	7	8	9	10	11	9	12	10	11
	NO2	µg/m3	9	**80**	**40**	26	29	27	32	35	30	37	31	35
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	17	18	15	21	18	21	23	20	20
	Lead (Pb)	µg/m3	9	**1**	**0.5**	BDL	BDL	BDL	0.07	BDL	0.05	0.09	BDL	0.09
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.4	0.7	0.6	0.8	0.7	0.7	0.9	0.8	0.9
	Ammonia(NH3)	µg/m3	9	**400**	**100**	15	19	18	24	22	21	21	15	19
	Benzene	µg/m3	9	-	**5**	BDL	0.2	BDL	0.4	0.2	BDL	0.4	0.3	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						02.11.23	06.11.23	09.11.23	13.11.23	16.11.23	20.11.23	23.11.23	27.11.23	30.11.23
REFINERY HOSPITAL	PM10	µg/m3	9	**100**	**60**	33	39	35	46	38	42	51	46	49
	PM2.5	µg/m3	9	**60**	**40**	15	19	17	22	18	20	25	22	24
	SO2	µg/m3	9	**80**	**50**	4	5	4	5	4	5	6	5	6
	NO2	µg/m3	9	**80**	**40**	24	27	25	31	25	28	33	29	34
	Ozone	µg/m3	9	**180 (1 hr)**	**100 (8 hrs)**	17	16	14	18	15	16	18	16	17
	Lead (Pb)	µg/m3	9	**1**	**0.5**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	CO	mg/m3	9	**4 (1 hr)**	**2 (8 hrs)**	0.4	0.7	0.6	0.6	0.5	0.5	0.6	0.5	0.7
	Ammonia(NH3)	µg/m3	9	**400**	**100**	11	13	10	15	13	17	14	15	12
	Benzene	µg/m3	9	-	**5**	BDL	BDL	BDL	BDL	BDL	BDL	0.2	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

N.B.- * BDL- Below Detectable Limit

Compliance of Statutory Stipulations - Ambient Air Quality
Haldia Refinery

ANNEXURE-1

Period: December-2023

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
IOCL MAIN GATE	PM10	µg/m3	8	**100**	**60**	66	43	72	79	91	87	81	76
	PM2.5	µg/m3	8	**60**	**40**	30	23	39	41	47	44	38	40
	SO2	µg/m3	8	**80**	**50**	20	7	23	23	29	28	23	21
	NO2	µg/m3	8	**80**	**40**	39	29	51	54	60	67	59	57
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	23	13	22	25	26	29	27	31
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.12	BDL	0.16	0.20	0.22	0.21	0.14	0.16
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.9	0.6	1.1	1.2	1.3	1.1	1.0	1.4
	Ammonia(NH3)	µg/m3	8	**400**	**100**	25	17	32	35	36	32	34	25
	Benzene	µg/m3	8	-	**5**	0.7	BDL	0.5	0.9	0.5	1.1	1.3	0.9
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
QUALITY CONTROL LAB	PM10	µg/m3	8	**100**	**60**	53	34	59	64	71	69	66	60
	PM2.5	µg/m3	8	**60**	**40**	27	16	29	32	34	33	31	28
	SO2	µg/m3	8	**80**	**50**	16	6	19	19	23	22	19	17
	NO2	µg/m3	8	**80**	**40**	31	23	43	44	47	53	48	45
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	18	10	18	20	20	23	22	24
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.09	BDL	0.09	0.15	0.12	0.15	0.1	0.09
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.7	0.5	0.9	0.8	1	0.9	0.8	1.1
	Ammonia(NH3)	µg/m3	8	**400**	**100**	20	14	26	26	29	25	28	20
	Benzene	µg/m3	8	-	**5**	0.5	BDL	0.4	0.7	0.4	0.8	0.9	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
OM & S BLOCK	PM10	µg/m3	8	**100**	**60**	61	40	67	74	86	81	78	72
	PM2.5	µg/m3	8	**60**	**40**	32	19	34	36	42	43	40	34
	SO2	µg/m3	8	**80**	**50**	19	9	21	22	28	26	22	20
	NO2	µg/m3	8	**80**	**40**	36	27	48	51	57	62	57	54
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	21	12	20	24	25	27	26	29
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.12	BDL	0.14	0.18	0.22	0.19	0.15	0.13
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.8	0.6	0.9	1.1	1.2	1.1	1	1.3
	Ammonia(NH3)	µg/m3	8	**400**	**100**	23	16	30	33	36	30	33	24
	Benzene	µg/m3	8	-	**5**	0.5	BDL	0.4	0.7	0.4	0.8	1	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
BITUMEN FILLING STATION	PM10	µg/m3	8	**100**	**60**	51	33	55	62	70	66	62	57
	PM2.5	µg/m3	8	**60**	**40**	26	15	27	30	39	33	30	27
	SO2	µg/m3	8	**80**	**50**	14	7	17	18	22	22	18	16
	NO2	µg/m3	8	**80**	**40**	30	22	40	43	46	51	45	42
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	18	10	17	20	20	22	21	23
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.09	BDL	0.09	0.13	0.16	0.15	0.1	0.09
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.7	0.4	0.9	1	1.1	0.9	0.8	0.9
	Ammonia(NH3)	µg/m3	8	**400**	**100**	20	BDL	24	28	27	24	26	18
	Benzene	µg/m3	8	-	**5**	0.4	BDL	0.3	0.6	0.3	0.6	0.8	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
TUBE WELL 4A, NEAR MCO TANK	PM10	µg/m3	8	**100**	**60**	53	35	60	65	73	69	66	62
	PM2.5	µg/m3	8	**60**	**40**	28	17	33	30	35	37	36	33
	SO2	µg/m3	8	**80**	**50**	17	8	19	21	23	22	19	17
	NO2	µg/m3	8	**80**	**40**	32	23	43	45	49	52	48	47
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	19	11	18	21	20	23	22	25
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.1	BDL	0.13	0.14	0.16	0.15	0.13	0.12
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.7	0.5	0.9	1	1.3	1.1	1	1.1
	Ammonia(NH3)	µg/m3	8	**400**	**100**	21	14	27	29	29	25	28	21
	Benzene	µg/m3	8	-	**5**	0.4	BDL	0.3	0.6	0.3	0.7	0.9	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
SECTOR - 21	PM10	µg/m3	8	**100**	**60**	42	33	44	56	62	65	60	51
	PM2.5	µg/m3	8	**60**	**40**	22	16	22	30	34	32	28	25
	SO2	µg/m3	8	**80**	**50**	9	BDL	10	11	14	15	12	11
	NO2	µg/m3	8	**80**	**40**	24	19	30	35	39	46	42	37
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	14	BDL	16	19	22	24	26	21
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.07	BDL	0.06	0.13	0.12	0.11	0.08	0.07
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.5	0.3	0.7	0.8	1	1.1	0.8	0.8
	Ammonia(NH3)	µg/m3	8	**400**	**100**	16	BDL	20	27	28	26	25	17
	Benzene	µg/m3	8	-	**5**	BDL	BDL	BDL	0.3	0.2	0.3	0.3	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.12.23	07.12.23	11.12.23	14.12.23	18.12.23	21.12.23	26.12.23	29.12.23
REFINERY HOSPITAL	PM10	µg/m3	8	**100**	**60**	41	26	43	48	56	49	51	45
	PM2.5	µg/m3	8	**60**	**40**	20	13	21	26	29	26	24	24
	SO2	µg/m3	8	**80**	**50**	5	BDL	6	6	8	7	6	5
	NO2	µg/m3	8	**80**	**40**	22	17	28	30	32	29	33	31
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	18	BDL	17	19	20	18	21	19
	Lead (Pb)	µg/m3	8	**1**	**0.5**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.2	0.5	0.7	0.8	0.6	0.7	0.6
	Ammonia(NH3)	µg/m3	8	**400**	**100**	14	BDL	17	19	20	16	19	17
	Benzene	µg/m3	8	-	**5**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

N.B.- * BDL- Below Detectable Limit

Compliance of Statutory Stipulations - Ambient Air Quality
Haldia Refinery

ANNEXURE-1

Period: January-2024

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
IOCL MAIN GATE	PM10	µg/m3	9	100	60	77	96	81	87	106	72	79	102	86
	PM2.5	µg/m3	9	60	40	40	49	43	42	48	37	42	56	43
	SO2	µg/m3	9	80	50	25	28	24	28	31	22	23	28	26
	NO2	µg/m3	9	80	40	56	64	52	60	67	47	52	65	60
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	29	24	28	25	26	26	31	29	25
	Lead (Pb)	µg/m3	9	1	0.5	0.14	0.18	0.16	0.13	0.18	0.10	0.15	0.23	0.14
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1.2	1.4	1.2	1.4	1.5	0.9	1.1	1.3	1.2
	Ammonia(NH3)	µg/m3	9	400	100	26	31	33	31	34	25	30	29	32
	Benzene	µg/m3	9	-	5	0.9	1.2	0.7	0.8	1.5	0.7	1.1	1.3	0.9
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	0.8	BDL	BDL	1.1	BDL	BDL	0.9	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
QUALITY CONTROL LAB	PM10	µg/m3	9	100	60	60	74	63	68	77	58	62	81	69
	PM2.5	µg/m3	9	60	40	29	36	34	31	37	27	33	41	38
	SO2	µg/m3	9	80	50	18	22	19	22	24	13	19	23	21
	NO2	µg/m3	9	80	40	34	50	41	47	52	38	41	53	48
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	24	19	23	20	21	19	24	25	21
	Lead (Pb)	µg/m3	9	1	0.5	0.09	0.11	0.09	0.09	0.13	0.07	0.11	0.14	0.12
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.9	1.1	0.8	0.9	1.1	0.6	0.8	1.1	0.9
	Ammonia(NH3)	µg/m3	9	400	100	21	24	27	25	27	17	24	24	26
	Benzene	µg/m3	9	-	5	0.7	0.9	0.5	0.6	1.1	0.4	0.8	1	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
OM & S BLOCK	PM10	µg/m3	9	100	60	74	91	77	104	83	69	75	96	79
	PM2.5	µg/m3	9	60	40	40	44	41	53	45	35	41	48	40
	SO2	µg/m3	9	80	50	21	26	23	29	27	17	22	26	24
	NO2	µg/m3	9	80	40	55	60	51	63	57	41	50	61	56
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	29	23	27	25	24	22	29	28	23
	Lead (Pb)	µg/m3	9	1	0.5	0.13	0.17	0.14	0.21	0.15	0.08	0.13	0.19	0.16
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1.2	1.3	1.1	1.4	1.3	0.8	1.1	1.2	1.2
	Ammonia(NH3)	µg/m3	9	400	100	25	29	32	32	30	17	29	27	30
	Benzene	µg/m3	9	-	5	0.7	0.9	0.5	1.1	0.6	0.5	0.8	1	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	0.6	BDL	0.8	BDL	BDL	BDL	0.7	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
BITUMEN FILLING STATION	PM10	µg/m3	9	100	60	56	69	61	59	78	51	56	73	64
	PM2.5	µg/m3	9	60	40	28	34	34	32	40	28	32	35	31
	SO2	µg/m3	9	80	50	17	21	19	20	25	13	17	21	20
	NO2	µg/m3	9	80	40	32	46	40	43	52	34	37	48	45
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	23	18	22	18	21	16	23	23	20
	Lead (Pb)	µg/m3	9	1	0.5	0.1	0.12	0.11	0.09	0.14	0.05	0.09	0.14	0.1
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.9	1	1.1	0.9	1.2	0.6	0.8	1.1	0.9
	Ammonia(NH3)	µg/m3	9	400	100	20	23	26	23	27	15	23	22	25
	Benzene	µg/m3	9	-	5	0.6	0.7	0.4	0.5	0.9	0.3	0.5	0.8	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
TUBE WELL 4A, NEAR MCO TANK	PM10	µg/m3	9	100	60	64	79	62	73	84	55	67	82	68
	PM2.5	µg/m3	9	60	40	35	42	32	36	40	29	33	38	34
	SO2	µg/m3	9	80	50	19	23	19	24	25	16	20	24	21
	NO2	µg/m3	9	80	40	36	52	40	50	54	33	44	54	48
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	26	20	22	21	23	19	26	26	21
	Lead (Pb)	µg/m3	9	1	0.5	0.12	0.14	0.11	0.1	0.14	0.06	0.1	0.14	0.1
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1	1.1	1.1	1.4	1.5	0.6	1.1	1.1	1.1
	Ammonia(NH3)	µg/m3	9	400	100	22	26	24	28	27	15	24	26	22
	Benzene	µg/m3	9	-	5	0.7	0.8	0.4	0.6	1	0.4	0.8	0.9	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
SECTOR - 21	PM10	µg/m3	9	100	60	51	59	48	57	64	42	46	64	53
	PM2.5	µg/m3	9	60	40	25	29	25	28	31	19	22	32	27
	SO2	µg/m3	9	80	50	9	12	8	14	12	5	10	13	12
	NO2	µg/m3	9	80	40	28	43	34	42	43	28	33	45	40
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	22	19	22	23	19	16	18	20	19
	Lead (Pb)	µg/m3	9	1	0.5	0.08	0.08	0.06	0.07	0.09	0.05	0.06	0.08	0.06
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.7	0.9	0.9	1.1	1.2	0.5	0.8	0.7	0.8
	Ammonia(NH3)	µg/m3	9	400	100	16	21	20	24	25	14	19	20	21
	Benzene	µg/m3	9	-	5	0.2	0.4	0.2	0.3	0.6	BDL	BDL	0.7	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.01.24	04.01.24	08.01.24	11.01.24	15.01.24	18.01.24	22.01.24	24.01.24	29.01.24
REFINERY HOSPITAL	PM10	µg/m3	9	100	60	43	51	42	47	58	36	43	55	50
	PM2.5	µg/m3	9	60	40	20	25	22	25	28	17	20	28	26
	SO2	µg/m3	9	80	50	6	7	6	7	8	4	6	7	7
	NO2	µg/m3	9	80	40	22	35	28	32	36	23	29	37	33
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	23	17	21	19	23	15	19	22	20
	Lead (Pb)	µg/m3	9	1	0.5	BDL	0.07	BDL	0.06	0.08	BDL	BDL	0.08	0.06
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.7	0.8	0.6	0.6	0.9	0.4	0.7	0.8	0.6
	Ammonia(NH3)	µg/m3	9	400	100	14	18	16	18	19	BDL	12	16	13
	Benzene	µg/m3	9	-	5	BDL	BDL	BDL	BDL	0.2	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

N.B.- * BDL- Below Detectable Limit

Compliance of Statutory Stipulations - Ambient Air Quality
Haldia Refinery

ANNEXURE-1

Period: February-2024

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
IOCL MAIN GATE	PM10	µg/m3	9	100	60	93	85	104	91	86	79	70	66	59
	PM2.5	µg/m3	9	60	40	51	43	51	50	46	40	37	35	31
	SO2	µg/m3	9	80	50	26	23	28	25	22	24	20	23	19
	NO2	µg/m3	9	80	40	56	47	58	53	45	52	46	42	41
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	33	27	30	30	26	38	31	23	33
	Lead (Pb)	µg/m3	9	1	0.5	0.16	0.10	0.17	0.13	0.10	0.11	0.1	0.08	0.07
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1.3	1.2	1.5	1.3	1.2	1.0	0.9	0.8	1.0
	Ammonia(NH3)	µg/m3	9	400	100	29	25	35	30	28	25	24	27	20
	Benzene	µg/m3	9	-	5	1.1	1.1	0.9	0.8	1.2	0.8	1	0.8	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	0.8	BDL	1.2	0.7	0.5	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
QUALITY CONTROL LAB	PM10	µg/m3	9	100	60	70	65	78	69	67	60	56	49	52
	PM2.5	µg/m3	9	60	40	37	32	40	36	32	28	27	22	25
	SO2	µg/m3	9	80	50	20	18	22	20	18	19	17	18	17
	NO2	µg/m3	9	80	40	43	38	45	42	36	41	39	35	38
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	28	22	28	24	21	27	25	22	27
	Lead (Pb)	µg/m3	9	1	0.5	0.11	0.07	0.13	0.09	0.07	0.07	0.08	0.05	0.06
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1.1	0.9	1.2	1.1	0.9	0.9	0.8	0.6	0.8
	Ammonia(NH3)	µg/m3	9	400	100	23	20	28	24	23	21	20	21	17
	Benzene	µg/m3	9	-	5	0.8	0.6	0.9	0.6	0.8	0.5	0.8	0.5	0.7
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
OM & S BLOCK	PM10	µg/m3	9	100	60	86	80	95	84	80	73	65	61	53
	PM2.5	µg/m3	9	60	40	43	39	49	41	43	39	32	31	28
	SO2	µg/m3	9	80	50	25	22	26	24	21	23	19	22	18
	NO2	µg/m3	9	80	40	53	45	54	50	43	49	44	40	38
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	36	29	33	29	25	36	35	25	26
	Lead (Pb)	µg/m3	9	1	0.5	0.13	0.1	0.17	0.11	0.09	0.11	0.09	0.08	0.07
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1.2	1.1	1.4	1.2	1.1	1	0.9	0.8	0.9
	Ammonia(NH3)	µg/m3	9	400	100	28	24	33	29	27	24	23	26	19
	Benzene	µg/m3	9	-	5	0.8	0.6	0.8	0.6	0.9	0.6	0.8	0.6	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	0.6	BDL	0.8	0.5	0.5	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
BITUMEN FILLING STATION	PM10	µg/m3	9	100	60	66	62	73	66	60	54	50	43	49
	PM2.5	µg/m3	9	60	40	32	33	38	34	27	25	27	19	23
	SO2	µg/m3	9	80	50	20	18	21	20	16	18	16	14	17
	NO2	µg/m3	9	80	40	43	37	44	42	34	38	36	31	33
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	29	22	24	22	16	24	25	21	24
	Lead (Pb)	µg/m3	9	1	0.5	0.1	0.07	0.13	0.09	0.06	0.07	0.09	0.05	0.05
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.9	1.1	1.1	0.9	1.1	0.7	0.9	0.6	0.7
	Ammonia(NH3)	µg/m3	9	400	100	22	20	26	24	22	21	19	15	20
	Benzene	µg/m3	9	-	5	0.7	0.7	0.6	0.5	0.7	0.5	0.7	0.5	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
TUBE WELL 4A, NEAR MCO TANK	PM10	µg/m3	9	100	60	75	66	78	61	68	63	55	48	56
	PM2.5	µg/m3	9	60	40	34	31	38	29	33	31	25	26	27
	SO2	µg/m3	9	80	50	22	19	22	18	19	20	17	16	19
	NO2	µg/m3	9	80	40	48	39	46	37	38	41	40	34	37
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	30	24	27	21	22	26	28	23	26
	Lead (Pb)	µg/m3	9	1	0.5	0.1	0.06	0.13	0.08	0.08	0.09	0.08	0.06	0.06
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	1.1	0.9	1.2	1.1	1.3	0.9	1.1	0.7	0.9
	Ammonia(NH3)	µg/m3	9	400	100	25	21	28	22	24	20	21	17	22
	Benzene	µg/m3	9	-	5	0.8	0.7	0.6	0.5	0.8	0.5	0.7	0.4	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
SECTOR - 21	PM10	µg/m3	9	100	60	53	51	61	55	58	49	41	44	48
	PM2.5	µg/m3	9	60	40	26	28	30	29	32	25	21	19	22
	SO2	µg/m3	9	80	50	10	8	11	10	9	10	7	8	7
	NO2	µg/m3	9	80	40	33	30	34	33	31	34	28	31	29
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	20	20	18	20	21	23	23	18	21
	Lead (Pb)	µg/m3	9	1	0.5	0.07	0.05	0.07	0.07	0.06	BDL	0.06	BDL	BDL
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.7	0.8	0.9	0.9	1	0.9	0.8	0.5	0.6
	Ammonia(NH3)	µg/m3	9	400	100	18	17	22	19	22	19	16	18	13
	Benzene	µg/m3	9	-	5	0.5	0.5	0.5	0.4	0.7	0.4	0.5	0.5	0.3
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring								
						01.02.24	05.02.24	08.02.24	12.02.24	15.02.24	19.02.24	22.02.24	26.02.24	29.02.24
REFINERY HOSPITAL	PM10	µg/m3	9	100	60	51	46	54	47	45	39	44	36	39
	PM2.5	µg/m3	9	60	40	26	23	26	25	23	18	20	15	17
	SO2	µg/m3	9	80	50	7	6	7	6	5	6	5	6	5
	NO2	µg/m3	9	80	40	31	29	34	31	28	29	28	26	29
	Ozone	µg/m3	9	180 (1 hr)	100 (8 hrs)	22	18	17	16	17	24	20	14	21
	Lead (Pb)	µg/m3	9	1	0.5	0.06	0.05	0.07	0.05	BDL	BDL	BDL	BDL	BDL
	CO	mg/m3	9	4 (1 hr)	2 (8 hrs)	0.8	0.8	0.9	0.7	0.7	0.5	0.6	0.5	0.6
	Ammonia(NH3)	µg/m3	9	400	100	18	15	20	19	18	14	16	10	12
	Benzene	µg/m3	9	-	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	9	-	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	9	-	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	9	-	20	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

N.B.- * BDL- Below Detectable Limit

Compliance of Statutory Stipulations - Ambient Air Quality
Haldia Refinery

ANNEXURE-1

Period: March-2024

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
IOCL MAIN GATE	PM10	µg/m3	8	**100**	**60**	59	74	64	72	74	66	58	55
	PM2.5	µg/m3	8	**60**	**40**	27	41	34	38	41	34	27	30
	SO2	µg/m3	8	**80**	**50**	18	24	20	21	23	20	16	15
	NO2	µg/m3	8	**80**	**40**	49	56	45	51	53	49	48	44
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	23	27	21	23	26	24	21	24
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.08	0.13	0.10	0.12	0.11	0.09	0.06	0.07
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	1.1	1.2	0.9	1.1	1.2	0.8	0.9	1.1
	Ammonia(NH3)	µg/m3	8	**400**	**100**	24	28	29	33	30	24	25	19
	Benzene	µg/m3	8	-	**5**	0.6	0.7	0.4	0.8	0.4	0.8	0.9	0.6
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	0.9	BDL	0.6	0.8	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
QUALITY CONTROL LAB	PM10	µg/m3	8	**100**	**60**	46	59	51	58	59	52	47	45
	PM2.5	µg/m3	8	**60**	**40**	25	28	25	31	28	27	23	24
	SO2	µg/m3	8	**80**	**50**	14	19	16	17	19	17	14	12
	NO2	µg/m3	8	**80**	**40**	37	44	36	39	39	41	34	33
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	18	22	18	20	23	21	18	20
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.07	0.08	0.07	0.09	0.07	0.06	0.05	0.05
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.9	0.8	0.9	0.9	0.6	0.6	0.8
	Ammonia(NH3)	µg/m3	8	**400**	**100**	19	23	24	27	25	20	21	16
	Benzene	µg/m3	8	-	**5**	0.4	0.5	0.4	0.4	0.3	0.6	0.7	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
OM & S BLOCK	PM10	µg/m3	8	**100**	**60**	58	69	61	66	68	61	56	53
	PM2.5	µg/m3	8	**60**	**40**	29	36	32	34	32	29	28	26
	SO2	µg/m3	8	**80**	**50**	17	22	20	19	21	19	16	14
	NO2	µg/m3	8	**80**	**40**	44	53	44	45	46	47	41	39
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	22	25	21	23	25	22	21	23
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.09	0.11	0.09	0.1	0.08	0.08	0.07	0.06
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.8	1.1	0.9	0.9	1.1	0.8	0.7	0.9
	Ammonia(NH3)	µg/m3	8	**400**	**100**	23	26	28	30	28	23	24	18
	Benzene	µg/m3	8	-	**5**	0.5	0.5	0.4	0.6	0.8	0.6	0.7	0.5
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
BITUMEN FILLING STATION	PM10	µg/m3	8	**100**	**60**	51	55	47	62	55	49	45	42
	PM2.5	µg/m3	8	**60**	**40**	23	27	23	30	29	27	22	22
	SO2	µg/m3	8	**80**	**50**	13	17	15	18	17	16	13	11
	NO2	µg/m3	8	**80**	**40**	35	42	33	38	34	39	33	31
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	19	24	18	21	22	19	18	20
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.06	0.07	0.06	0.09	0.07	0.07	0.06	0.05
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.8	0.7	1.1	0.9	0.8	0.7	0.7
	Ammonia(NH3)	µg/m3	8	**400**	**100**	20	23	22	27	26	22	20	17
	Benzene	µg/m3	8	-	**5**	0.4	0.4	0.3	0.5	0.4	0.5	0.6	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
TUBE WELL 4A, NEAR MCO TANK	PM10	µg/m3	8	**100**	**60**	50	60	55	59	64	51	55	46
	PM2.5	µg/m3	8	**60**	**40**	25	28	26	30	35	25	27	22
	SO2	µg/m3	8	**80**	**50**	14	19	18	18	20	16	15	12
	NO2	µg/m3	8	**80**	**40**	41	46	39	41	43	40	35	34
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	20	23	20	22	23	20	18	22
	Lead (Pb)	µg/m3	8	**1**	**0.5**	0.08	0.09	0.07	0.08	0.09	0.05	0.06	0.05
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.6	0.7	0.8	0.9	1.1	0.9	0.8	0.9
	Ammonia(NH3)	µg/m3	8	**400**	**100**	21	24	27	30	29	22	23	17
	Benzene	µg/m3	8	-	**5**	0.4	0.4	0.3	0.6	0.5	0.4	0.5	0.4
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
SECTOR - 21	PM10	µg/m3	8	**100**	**60**	41	49	44	50	48	44	40	46
	PM2.5	µg/m3	8	**60**	**40**	22	27	21	24	26	22	21	24
	SO2	µg/m3	8	**80**	**50**	9	11	9	11	8	9	6	7
	NO2	µg/m3	8	**80**	**40**	32	36	31	34	30	32	29	31
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	17	21	15	22	18	20	19	17
	Lead (Pb)	µg/m3	8	**1**	**0.5**	BDL	0.08	BDL	0.09	0.06	BDL	BDL	0.05
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.5	0.7	0.5	0.8	0.9	0.8	0.7	0.6
	Ammonia(NH3)	µg/m3	8	**400**	**100**	16	18	17	25	22	18	17	12
	Benzene	µg/m3	8	-	**5**	BDL	0.3	BDL	BDL	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Location	Pollutants Monitored	Unit	No. of Samples analysed	Statutory Stipulation (24 hrs)	Statutory Stipulation (Annual)	Date of Monitoring							
						04.03.2024	07.03.2024	11.03.2024	14.03.2024	18.03.2024	21.03.2024	26.03.2024	28.03.2024
REFINERY HOSPITAL	PM10	µg/m3	8	**100**	**60**	39	44	40	43	48	41	39	37
	PM2.5	µg/m3	8	**60**	**40**	18	21	17	20	25	21	18	17
	SO2	µg/m3	8	**80**	**50**	5	6	5	5	6	5	4	4
	NO2	µg/m3	8	**80**	**40**	31	33	28	27	32	28	25	27
	Ozone	µg/m3	8	**180 (1 hr)**	**100 (8 hrs)**	16	18	15	17	18	16	14	17
	Lead (Pb)	µg/m3	8	**1**	**0.5**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	CO	mg/m3	8	**4 (1 hr)**	**2 (8 hrs)**	0.5	0.7	0.6	0.6	0.7	0.5	0.4	0.6
	Ammonia(NH3)	µg/m3	8	**400**	**100**	14	16	18	14	12	13	14	11
	Benzene	µg/m3	8	-	**5**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Benzo(a)Pyrene (BaP)	ng/m3	8	-	**1**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Arsenic(As)	ng/m3	8	-	**6**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Nickel (Ni)	ng/m3	8	-	**20**	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

N.B.- * BDL- Below Detectable Limit

Annexure-2

Final Treated Effluent Discharge Quality- Average (Monthwise anaysis report)								
Test Parameters	**UOM**	**MINAS limits**	**Oct'2023**	**Nov'2023**	**Dec'2023**	**Jan'2024**	**Feb'2024**	**Mar'2024**
pH	**-**	**6-8.5**	7.32	7.48	7.43	7.43	7.42	7.24
Phenol	**ppm**	**0.35 ppm**	0.169	0.190	0.192	0.200	0.222	0.220
Sulphide	**ppm**	**0.5 ppm**	0.240	0.200	<0.1	<0.1	<0.1	<0.1
Oil Cont	**ppm**	**5.0 ppm**	<0.2	<0.2	<0.2	<0.2	3.043	<0.2
TSS	**ppm**	**20 ppm**	12.48	11.84	10.96	10.04	11.08	7.48
COD	**ppm**	**125 ppm**	75.84	92.64	88.32	87.38	86.36	87.20
BOD	**ppm**	**15 ppm**	6.33	5.92	6.13	5.95	6.44	7.07
CN	**ppm**	**0.2 ppm**	0.018	0.035	0.040	0.037	0.034	0.034
NH3	**ppm**	**15 ppm**	2.24	1.96	1.80	1.58	1.00	1.27

TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005639
Date: :11.03.2024
Sample No. MSKGL/ED/2023-24/02/00940
Sample Description : Ground Water
Sampling Location : IOCL Township Quater Cluster/Sector-17
Sample Drawn on : 21.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	7.64	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	5.0	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	1040	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	72	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	396	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.18	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	0.45	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	50	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	2.5	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	3.3	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	388	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	320	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

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Report Prepared By

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005640
Date: :11.03.2024
Sample No. MSKGL/ED/2023-24/02/00941
Sample Description : Ground Water
Sampling Location : IOCL Township Quater Sector-21
Sample Drawn on : 21.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	7.85	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	3.0	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	1788	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	80	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	872	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.21	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	0.29	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	47	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	2.7	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	2.9	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	396	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	308	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005641
Date: :11.03.2024
Sample No. MSKGL/ED/2023-24/02/00942
Sample Description : Ground Water
Sampling Location : IOCL Township Quater Sector-11
Sample Drawn on : 21.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	7.86	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	3.5	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	1534	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	64	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	704	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.28	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	0.32	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	32	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	2.9	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	1.8	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	292	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	324	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005642
Date: :11.03.2024
Sample No. MSKGL/ED/2023-24/02/00943
Sample Description : Ground Water
Sampling Location : Durga Chak Coloni Market
Sample Drawn on : 21.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	8.03	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	<1.0	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	840	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	48	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	316	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.17	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	<0.05	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	34	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	4.7	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	49	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	260	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	148	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005643
Date: :12.03.2024
Sample No. MSKGL/ED/2023-24/02/01062
Sample Description : Ground Water
Sampling Location : TW No-04
Sample Drawn on : 22.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	7.96	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	10	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	1014	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	56	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	410	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.17	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	0.76	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	41	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	2.4	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	26	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	312	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	160	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005644
Date: :12.03.2024
Sample No. MSKGL/ED/2023-24/02/01063
Sample Description : Ground Water
Sampling Location : TW No- 09
Sample Drawn on : 22.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	7.70	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	45	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	1092	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	69	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	458	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.15	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	3.5	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	40	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	1.9	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	9.8	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	340	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	224	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

for Mitra S. K. Private Limited

Report Prepared By

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005645
Date: :12.03.2024
Sample No. MSKGL/ED/2023-24/02/01064
Sample Description : Ground Water
Sampling Location : TW No-14
Sample Drawn on : 22.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 ^{0}C	---	8.04	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	40	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	792	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	22	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	192	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.31	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	3.4	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	21	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	2.0	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	6.4	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	144	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	304	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

for Mitra S. K. Private Limited

Report Prepared By

Authorised Signatory

- *The results relate only to the item(s) tested.*
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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/005646
Date: :12.03.2024
Sample No. MSKGL/ED/2023-24/02/01065
Sample Description : Ground Water
Sampling Location : TW No-16
Sample Drawn on : 22.02.2024

Reference No.& Date: 29376997

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Result	Test Method
1	Colour	Hazen	<5.0	APHA (23rd Edition) 2120B 2017
2	Odour	---	Agreeable	APHA(23rd Edition)2150B
3	pH value at 25 °C	---	7.78	APHA(23rd Edition) 4500-H-B
4	Turbidity	N.T.U.	35	APHA (23rd Edition) 2130B
5	Total Dissolved Solids	mg/l	1090	APHA(23rd Edition) 2540C
6	Aluminium (as Al)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
7	Boron (as B)	mg/l	<0.5	APHA (23rd Edition)3120B 2017 (ICP OES)
8	Calcium (as Ca)	mg/l	61	APHA (23rd Edition) 3500 Ca B,2017
9	Chloride (as Cl)	mg/l	510	APHA (23rd Edition)4500-Cl B 2017
10	Copper (as Cu)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
11	Fluoride (as F)	mg/l	0.20	APHA (23rd Edition)4500 - F C/D, 2017
12	Free Residual Chlorine	mg/l	<0.1	IS 3025 (Part 26)-1986 Rffm:2014
13	Iron (as Fe)	mg/l	3.2	APHA (23rd Edition)3500 Fe B 2017
14	Magnesium (as Mg)	mg/l	48	APHA (23rd Edition) 3500 Mg B,2017
15	Manganese (as Mn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017 (ICP OES)
16	Mineral Oil	mg/l	<0.01	IS 3025 (Part 39)1991, Partition Infrared Method
17	Nitrate (as NO_3)	mg/l	1.3	APHA (23rd Edition) 4500- NO3-E, 2017
18	Phenolic Compounds (as C_6H_5OH)	mg/l	<0.001	APHA (23rd Edition)5530C 2017 (Chloroform Extraction)
19	Selenium (as Se)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
20	Sulphate (as SO_4)	mg/l	7.5	APHA (23rd Edition) 4500-SO4 E 2017
21	Total Hardness (as $CaCO_3$)	mg/l	352	APHA (23rd Edition) 2340 C 2017
22	Cadmium (as Cd)	mg/l	<0.001	APHA (23rd Edition)3120B 2017
23	Cyanide (as CN)	mg/l	<0.02	APHA (23rd Edition)4500 CN- F 2017
24	Lead (as Pb)	mg/l	<0.005	APHA (23rd Edition)3120B 2017
25	Mercury (as Hg)	mg/l	<0.001	IS 3025(Part 48)-1994; Rffm:2014
26	Arsenic(as As)	mg/l	<0.005	APHA (23rd Edition)3120B 2017 (ICP OES)
27	Total Chromium (as Cr)	mg/l	<0.01	APHA (23rd Edition)3120B 2017 (ICP OES)
28	Zinc (as Zn)	mg/l	<0.02	APHA (23rd Edition)3120B 2017
29	Hexavalent Chromium (as Cr^{+6})	mg/l	<0.01	APHA 23rd Edtn-2017, 3500 Cr B
30	Total Alkalinity (as $CaCO_3$)	mg/l	240	APHA 23rd Edtn-2017, 2320B
31	Total coliform	MPN/100ml	<1.8	IS 1622 : 1981 (RA 2019)

for Mitra S. K. Private Limited

Report Prepared By

Authorised Signatory

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Annexure-4

2023-24	HR

Environmental expenditure incurred in FY-2023-24 by Haldia Refinery

S No	Item description	2023-24 Expenditure (Rs. Lakhs)				
		Quarter-1	Quarter-2	Quarter-3	Quarter-4	Annual
Revenue						
O&M contracts (Operation of ETP/STP/RO/TSDF/Oily Sludge Treatment/Biomethanation plant/Mobile Ambient Air/ Bio Medical Waste Handling etc.						
1	Operation of ETP	75.00	75.00	75.00	75.0	300.00
2	O & M Contracts for TTP-RO	49.40	47.60	49.40	51.4	197.78
3	Oily Sludge Treatment for recovery of Slop Oil	174.85	145.90	155.00	218.94	694.69
One Time Expenditure (ETP Chemicals, activated Carbon etc./ Bioremediation of oily Sludge/Disposal of Haz. Wastes, Spent Catalyst						
1	ETP Chemicals like ACF & PSF	5.00	5.21	4.84	4.74	19.79
2	Disposal of Hazardous waste to TSDF through authorized agency	50.0	64.2	54.0	17.0	185.21
3	Disposal of Residual Oily Sludge to TSDF through authorized agency	56.41	54.66	64.21	75.04	250.32
4	Tree Plantation	8.50	10.00	8.50	12.00	39.00
Fees payable towards Statutoty authorities (for Consents, Authorisation/Water Cess/ Effluent Discharge etc.)						
1	Consent to Operate for Refinery	0.00	0.00	0.00	0	0.00
2	Pubic Hearing fees for New projects	0.00	0.00	0.00	0	0.00
3	Consent to Operate/ Establishment for before commissioning of new project plants	0.00	0.00	0.00	0	0.00
4	Pre-Commissioning Safety Audit by OISD	0.00	0.00	0.00	0	0.00
5	ETP Treated effluent & Effluent discharge monitoring by WBPCB	0.21	0.23	0.19	0.2	0.83
6	Quarterly Stack emission monitoring by WBPCB	0.23	0.24	0.21	0.26	0.94
AMC jobs (Online Stack/Treated Effluent / Ambient Air Monitoring)						
1	Chemical Treatment of ETP treated effluent water for using at Cooling tower & Fire water	17.56	15.69	16.54	14.55	64.34
Audit / Study / Consultancy jobs (Water Pinch Study/Audits; ISO Audits; Audits by External Agencies etc.						
1	ISO Audit + ISO Document updation job	0	0	0	0	0.00
2	QRA Study	0.00	0.00	0.00	0	0.00
5	Safety Audit as per MSIHC rules	0.00	0.00	0.00	0	0.00
6	ETP Adequacy Study Job by EIL	0.00	0.00	0.00	0	0.00
Monitoring jobs (Ground water, soil, stack emissions, ambient air, fugitive emissions (LDAR) etc.						
1	Environmental Monitoring job	2.90	2.59	2.84	2.0	10.33
2	Ambient Air Quality Monitoring	3.77	3.48	3.81	5.1	16.16
Other Jobs (WED Celebrations/ Awareness & Training Programs/ Process Modifications/ Green Belt Development						
1	WED Celebration/ Awareness program	5.00	0.00	0.00	0.0	5.00
A	**Total Revenue expenditure**	**448.8**	**424.8**	**434.5**	**476.2**	**1784.4**
Capital Expenditure						
(ETP Modernisation/RO Plant/EIA&RA Studies/ Rainwater						
1	LED Lights & Solar PV system	0	0	0		0.00
2	EIA & RA study for new projects	0	0	0		0.00
B	**Total Capital expenditure**	**0**	**0**	**0**	**0**	**0**
		Q1	**Q2**	**Q3**	**Q4**	**Annual**
	Total Expenditure Rs lakhs	**448.8**	**424.81**	**434.54**	**476.21**	**1784.39**
	Amounts in Rs. Crore	4.49	4.25	4.35	4.76	17.84

Mitra S. K. Private Limited

MSK TESTING • INSPECTION

TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/001304
Date: :09.10.2023
Sample No. MSKGL/ED/2023-24/09/01062-MSKGL/ED/2023-24/09/01068
Sample Description : Noise

Reference No.& Date: 26525063, Dtd:12.08.2020

ANALYSIS RESULT

Sl No.	Sampling Location	Sampling Date	Leq dB(A) day	Leq dB(A) night
1	Near DYIP Cooling Tower	15.09.2023	65.7	59.4
2	East of SRU-5 Unit	15.09.2023	67.9	62.2
3	Delayed Coker Unit South Side	15.09.2023	69.8	60.6
4	North of Tank No-111	16.09.2023	64.9	61.4
5	East of Tank No-113	16.09.2023	69.5	64.8
6	DHDS Cooling Tower	16.09.2023	72.5	68.0
7	East of Tank No-109	19.09.2023	68.0	63.4
8	East of LPG Horton Sphere	19.09.2023	71.3	65.9
9	South East of LPG Balk Loading Area	19.09.2023	72.9	64.0

Report Prepared By

for Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :
'INDIAN OIL CORPORATION LIMITED'
P.O.- Haldia Oil Refinery ,
Pin - 721606

Report No. : MSKGL/ED/2023-24/001309
Date: :09.10.2023
Sample No. MSKGL/ED/2023-24/10/00165-MSKGL/ED/2023-24/10/00170
Sample Description : Noise

Reference No.& Date: 26525063, Dtd:12.08.2020

ANALYSIS RESULT

Sl No.	Sampling Location	Sampling Date	Leq dB(A) day	Leq dB(A) night
1	Near TTLOut Gate No-4, Road-A	23.09.2023	62.8	58.1
2	South Corner of TTL Out Gate No-4	23.09.2023	68.9	64.4
3	Near Lube Oil Dram Storage Area	23.09.2023	67.2	59.8
4	West of ETP Control Road-A	25.09.2023	66.9	62.5
5	Near New Flare Area	25.09.2023	70.2	65.0
6	North West Corner of OHCU Plant Area Road-A	25.09.2023	64.0	55.1

Report Prepared By

for Mitra S. K. Private Limited

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Month-wise Total SO2 emission

MONTH	SO2 in kg/hr
Oct-23	804
Nov-23	826
Dec-23	868
Jan-24	887
Feb-24	811
Mar-24	880
Average	**846.00**

ANNEXURE-7

Average Report	
Industry(ies)	IOCL HALDIA
Station(s)	AAQMS_1
Parameter(s)	(SO2), (NOX), (CO), (NO2), (PM10), (NH3), (PM2.5), (O3), (Benzene)
Avg Period	Daily Avg
Date	From: 01-Oct-2023 To: 31-Oct-2023

Continuous Ambient Air Quality Monitoring Data

	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1
Date & Time	(SO2(ug/m3)	(NOX(ug/m3)	(CO(mg/m3)	(NO2(ug/m3)	(PM10(ug/m3)	(NH3(ug/m3)	(PM2.5(ug/m3)	(O3(ug/m3)	(Benzene(ug/m3)
01/10/2023	5.96	8.59	0.51	3.35	32.78	8.08	12.88	0	3.31
02/10/2023	6.66	8.65	0.47	3.43	31.52	8.04	10	10.67	3.79
03/10/2023	5.94	8.37	0.47	3.19	22.43	7.97	6.35	0	3.23
04/10/2023	6.86	9.05	0.59	3.76	26.09	8.3	8.11	11	6.96
05/10/2023	6.14	9.28	0.51	4.11	57.42	8.59	22.33	11.97	4.75
06/10/2023	5.85	9.35	0.56	4.11	36.27	8.49	14.43	10.14	2.15
07/10/2023	6.24	9.94	0.52	4.54	56.1	8.51	16.39	9.85	1.7
08/10/2023	6.55	9.21	0.44	3.87	71.6	8.25	22.85	11.04	3.15
09/10/2023	6.2	10.63	0.57	5.36	85.8	8.9	34.99	11.36	2.9
10/10/2023	5.83	11.8	0.44	6.12	142.39	9.25	41.1	11.01	1.97
11/10/2023	6.07	12.17	0.49	6.09	128.02	9.21	38.53	10.55	1.9
12/10/2023	4.61	11.44	0.49	6	97.48	8.93	30.87	10.43	2.33
13/10/2023	5.51	11.74	0.55	6.07	87.09	8.88	30.23	10.13	1.96
14/10/2023	5.52	11.42	0.51	5.8	69.18	8.93	38.15	11.17	3.66
15/10/2023	5.34	9.78	0.48	4.66	69.34	8.38	39.88	12.18	2.66
16/10/2023	6.08	11.72	0.47	6.36	83.44	8.95	44.09	12.23	4.81
17/10/2023	6.76	11.49	0.5	6.27	78.9	8.85	44.46	10.8	3.82
18/10/2023	6.19	11.53	0.57	6.06	86.93	8.77	46.64	8.83	3.14
19/10/2023	0	0	0	0	0	0	0	0	0
20/10/2023	6.97	11.63	0.55	6.1	47.84	8.67	28.99	11.88	4.23
21/10/2023	5.54	11.27	0.49	5.84	50.61	8.44	25.84	10.86	3.44
22/10/2023	7.3	10.95	0.58	5.5	49.87	8.54	26.08	11.06	3.59
23/10/2023	8.47	11.55	0.54	5.9	48.44	8.8	25.36	9.51	5.17
24/10/2023	6.36	10.19	0.57	4.69	42.83	8.31	22.41	9.83	3.51
25/10/2023	5.11	11.69	0.64	5.91	48.72	8.75	25.21	9.83	2.2
26/10/2023	6.36	12.08	0.49	6.39	53.63	8.87	27.63	9.97	3.07
27/10/2023	7.41	12.65	0.49	6.72	54.76	8.94	28.41	9.71	4.58
28/10/2023	6.06	11.73	0.74	6.31	56.32	8.68	30.27	10.6	5.7
29/10/2023	6.65	11.38	0.57	6.04	56.02	8.67	29.61	10.66	2.61
30/10/2023	5.35	12.59	1.09	7.17	54.94	8.9	29.12	10.67	4.67
31/10/2023	6.65	14.09	0.61	7.98	54.91	9.35	28.22	9.53	1.4
AVERAGE	**6.017**	**10.579**	**0.532**	**5.281**	**60.699**	**8.394**	**26.756**	**9.596**	**3.302**
LIMIT	**80**	**80**	**2 (8 hrs)**	**80**	**100**	**400**	**60**	**100 (8 hrs)**	**5**

ANNEXURE-7

Average Report	
Industry(ies)	IOCL HALDIA
Station(s)	AAQMS_1
Parameter(s)	(SO2), (NOX), (CO), (NO2), (PM10), (NH3), (PM2.5), (O3), (Benzene)
Avg Period	Daily Avg
Date	From: 01-Nov-2023 To: 30-Nov-2023

Continuous Ambient Air Quality Monitoring Data

	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1
Date & Time	(SO2(ug/m3)	(NOX(ug/m3)	(CO(mg/m3)	(NO2(ug/m3)	(PM10(ug/m3)	(NH3(ug/m3)	(PM2.5(ug/m3)	(O3(ug/m3)	(Benzene(ug/m3)
01/11/2023	7.48	13	0.52	7.4	55.53	9.04	28.16	9.84	1.48
02/11/2023	6.76	13.71	0.5	8.05	58.39	9.34	29.51	10.73	2.43
03/11/2023	7.01	12.38	0.46	6.92	56.77	9.11	29.43	10.88	1.55
04/11/2023	7.27	12.22	0.48	6.14	49.02	8.84	25.13	9.28	0.92
05/11/2023	6.37	10.23	0.67	4.87	52.32	8.34	28	11.2	1.25
06/11/2023	6.72	11.75	0.58	6.3	54.51	8.78	30.3	11.73	2.04
07/11/2023	6.15	13.14	0.68	7.38	59.72	9.02	30.33	10.05	1.32
08/11/2023	7.81	12.09	0.35	6.7	58.72	8.81	30.57	11.42	1.16
09/11/2023	8.91	16.32	0.65	9.51	66.33	9.98	33.82	10.3	1.45
10/11/2023	7.12	13.83	0.47	8.11	79.23	9.35	32.97	11.27	1.83
11/11/2023	7.48	12.73	0.32	7.33	67.96	8.9	33.8	11.41	1.8
12/11/2023	7.34	11.74	0.49	6.31	61.22	8.63	33.16	12.09	2.03
14/11/2023	7.39	12	0.38	6.59	54.54	8.67	28.77	11.06	1.35
15/11/2023	7.57	11.79	0.4	6.31	51.9	8.59	26.99	12.02	1.66
16/11/2023	11.21	13.53	0.67	7.83	51.42	9.02	27.16	22.05	2.53
17/11/2023	14.17	10.74	0.64	5.19	44.96	8.48	23.12	25.6	1.48
20/11/2023	14.31	13.09	0.39	7.26	53.24	9	26.1	25.51	1.83
21/11/2023	14.57	13.53	0.33	7.71	56.44	9.11	27.13	25.52	0.9
22/11/2023	14.63	14.53	0.44	8.56	63.72	9.38	32.66	25.59	1.68
23/11/2023	15.09	13.9	0.58	8.26	64.04	9.19	32.91	25.59	1.53
24/11/2023	14.58	16.86	0.53	9.84	64.71	9.93	32.39	25.55	1.6
25/11/2023	14.9	13.11	0.54	7.59	59.87	9	30.72	25.52	1.72
26/11/2023	14.49	13.23	0.53	7.32	56.37	9.04	29.6	25.47	1.24
27/11/2023	14.65	13.99	0.55	7.83	59.28	9.4	29.19	25.58	1.51
28/11/2023	9.95	10.12	0.56	5.53	53.17	7.53	25.42	21.75	1.77
30/11/2023	15.46	13.99	0.44	8.07	60.38	9.2	31.23	25.46	2.66
AVERAGE	**10.361**	**12.983**	**0.506**	**7.266**	**58.222**	**8.988**	**29.560**	**17.403**	**1.643**
LIMIT	**80**	**80**	**2 (8 hrs)**	**80**	**100**	**400**	**60**	**100 (8 hrs)**	**5**

ANNEXURE-7

Average Report	
Industry(ies)	IOCL HALDIA
Station(s)	AAQMS_1
Parameter(s)	(SO2), (NOX), (CO), (NO2), (PM10), (NH3), (PM2.5), (O3), (Benzene)
Avg Period	Daily Avg
Date	From: 01-Dec-2023 To: 31-Dec-2023

Continuous Ambient Air Quality Monitoring Data

	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1
Date & Time	(SO2(ug/m3)	(NOX(ug/m3)	(CO(mg/m3)	(NO2(ug/m3)	(PM10(ug/m3)	(NH3(ug/m3)	(PM2.5(ug/m3)	(O3(ug/m3)	(Benzene(ug/m3)
01/12/2023	15.15	13.42	0.35	7.76	54.27	9.1	28.48	25.55	2.9
02/12/2023	15.63	13.8	0.53	8.14	55.49	9.36	29.67	25.44	3.7
03/12/2023	15.2	12.43	0.59	7.12	60.1	9.07	31.99	25.62	3.27
04/12/2023	15.79	13.5	0.45	8.15	58.97	9.5	30.89	25.54	3.45
05/12/2023	14.57	11.84	0.39	6.23	53.75	9.09	27.25	25.54	2.04
06/12/2023	14.31	12.59	0.58	6.81	66.3	9.21	26.48	25.45	2.01
07/12/2023	15.06	11.28	0.63	5.43	46.24	8.63	24.4	25.46	1.59
08/12/2023	14.03	11.41	0.6	5.71	44.87	8.6	23.2	25.42	0.69
09/12/2023	14.6	12.87	0.72	7.1	52.83	9.09	27.33	25.52	1.04
10/12/2023	15.42	12.25	0.69	6.35	55.72	9.2	28.18	25.57	1.06
11/12/2023	16.12	12.31	0.66	6.66	56.84	9.45	27.92	25.56	1.1
12/12/2023	15.78	15.46	0.48	8.9	64.53	10.17	30.02	16.97	1.09
13/12/2023	15.3	14.28	0.55	8.35	59.79	9.52	28.96	7.13	1.21
14/12/2023	15.29	13.27	0.43	7.62	56.74	9.17	28.59	8.18	1.28
15/12/2023	15.42	13.4	0.73	7.92	59.87	9.27	31.19	7.48	1.77
16/12/2023	14.76	14.15	0.67	8.26	64.12	9.47	32.2	6.19	1.59
17/12/2023	0	0	0	0	0	0	0	0	0
18/12/2023	0	0	0	0	0	0	0	0	0
19/12/2023	0	0	0	0	0	0	0	0	0
20/12/2023	0	0	0	0	0	0	0	0	0
21/12/2023	0	0	0	0	0	0	0	0	0
22/12/2023	0	0	0	0	0	0	0	0	0
23/12/2023	0	0	0	0	0	0	0	0	0
24/12/2023	0	0	0	0	0	0	0	0	0
25/12/2023	0	0	0	0	0	0	0	0	0
26/12/2023	0	0	0	0	0	0	0	0	0
27/12/2023	14.29	17.51	0.37	10.71	58.55	9.81	29.71	7.32	1.46
28/12/2023	15.81	14.8	0.43	8.65	59.69	9.12	30.68	7.02	1.62
29/12/2023	14.58	14.71	0	8.69	59.71	8.86	30.86	7.15	1.42
30/12/2023	15.19	13.53	0	7.94	60.12	8.74	30.71	7.08	1.21
31/12/2023	14.91	13.02	0	7.19	58.82	8.42	29.77	7.62	2.72
AVERAGE	**15.105**	**13.420**	**0.469**	**7.604**	**57.491**	**9.183**	**28.975**	**17.277**	**1.820**
LIMIT	**80**	**80**	**2 (8 hrs)**	**80**	**100**	**400**	**60**	**100 (8 hrs)**	**5**

** CAAQMS-1 DATA WAS OFFLINE DURING 17-12-2023 TO 26-12-2023.

ANNEXURE-7

Average Report	
Industry(ies)	IOCL HALDIA
Station(s)	AAQMS_1
Parameter(s)	(SO2), (NOX), (CO), (NO2), (PM10), (NH3), (PM2.5), (O3), (Benzene)
Avg Period	Daily Avg
Date	From: 01-Jan-2024 To: 31-Jan-2024

Continuous Ambient Air Quality Monitoring Data

	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1
Date & Time	(SO2(ug/m3)	(NOX(ug/m3)	(CO(mg/m3)	(NO2(ug/m3)	(PM10(ug/m3)	(NH3(ug/m3)	(PM2.5(ug/m3)	(O3(ug/m3)	(Benzene(ug/m3)
02/01/2024	14.86	13.14	0.46	7.65	57.65	8.33	29.82	6.98	1.73
03/01/2024	14.9	16.79	0.54	10.02	56.11	8.85	29.03	7.19	2.96
04/01/2024	15.29	17.08	0.48	10.27	59.71	8.94	30.31	6.96	4.06
05/01/2024	15.44	17.13	0.5	10.84	61.02	8.81	31.89	7.49	3.8
06/01/2024	15.07	18.6	0.43	12.09	62.87	9.11	31.84	7.09	3.82
07/01/2024	15.37	15.48	0.47	9.58	60.87	8.64	32.65	7.9	3.72
08/01/2024	15.87	14.32	0.47	8.79	61.94	8.55	33.59	7.61	2.35
11/01/2024	15.19	15.14	0.45	9.66	61.53	8.69	32.8	7.88	2.16
12/01/2024	15.02	13.81	0.51	8.22	58.51	8.48	31.77	8.44	2.27
13/01/2024	15.15	15.1	0.52	9.51	58.62	8.58	31.62	7.38	2.2
14/01/2024	15.35	15.36	0.5	9.58	61.97	8.59	34.28	8.15	2.64
15/01/2024	15.41	14.79	0.57	9.09	63.25	8.57	34.87	7.35	2.72
16/01/2024	15.43	14.43	0.59	8.87	61.41	8.46	33.21	7.45	2.6
17/01/2024	20.13	12.67	0.64	7.37	59.31	8.26	34.15	7.34	2.25
18/01/2024	19.49	14.48	0.59	8.2	57.51	8.66	32.45	8.49	2.08
21/01/2024	16.48	15.19	0.54	9.53	61.96	8.69	34.4	12.97	2.08
22/01/2024	16.33	13.57	0.5	7.96	62.01	8.56	33.96	13.26	2.08
23/01/2024	17.31	17.98	0.37	11.75	62.74	9.15	33.33	13.32	2.08
24/01/2024	17.7	13.63	0.46	8.2	61.46	8.48	32.32	14.02	2.08
25/01/2024	17.54	14.47	0.56	8.79	55.22	8.59	29.99	13.41	2.08
26/01/2024	16.57	15.23	0.41	9.44	61.82	8.69	33.56	13.59	2.08
27/01/2024	17.28	15.28	0.52	9.29	58.02	8.75	30.84	13.43	2.08
28/01/2024	18.8	16.33	0.62	10.56	59.13	8.82	31.61	13.56	2.08
29/01/2024	17.42	13.29	0.4	8.02	56.75	8.51	30.46	18.27	2.08
30/01/2024	15.79	11.21	0.47	5.76	56.5	8.2	26.91	23.98	2.08
31/01/2024	15.77	11.91	0.41	6.35	51.59	8.29	26.56	16.64	2.08
AVERAGE	**16.345**	**14.862**	**0.499**	**9.053**	**59.595**	**8.625**	**31.855**	**10.775**	**2.471**
LIMIT	**80**	**80**	**2 (8 hrs)**	**80**	**100**	**400**	**60**	**100 (8 hrs)**	**5**

ANNEXURE-7

Average Report	
Industry(ies)	IOCL HALDIA
Station(s)	AAQMS_1
Parameter(s)	(SO2), (NOX), (CO), (NO2), (PM10), (NH3), (PM2.5), (O3), (Benzene)
Avg Period	Daily Avg
Date	From: 01-Feb-2024 To: 29-Feb-2024

Continuous Ambient Air Quality Monitoring Data

	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1
Date & Time	(SO2(ug/m3)	(NOX(ug/m3)	(CO(mg/m3)	(NO2(ug/m3)	(PM10(ug/m3)	(NH3(ug/m3)	(PM2.5(ug/m3)	(O3(ug/m3)	(Benzene(ug/m3)
01/02/2024	15.38	11.13	0.53	5.64	50.06	8.36	25.22	15.82	2.08
02/02/2024	15.02	11.7	0.53	6.06	48.57	8.55	25.51	13.86	2.07
03/02/2024	15.67	14.22	0.66	7.83	51.87	9.09	27.26	14.17	2.08
04/02/2024	15.22	11.52	0.48	6.26	51.61	8.38	28.01	14.51	2.08
05/02/2024	15.28	12.46	0.54	6.93	53.88	8.67	29.04	14.78	2.08
06/02/2024	14.97	12.16	0.48	6.44	51.57	8.83	27.61	13.7	2.08
07/02/2024	14.81	12.28	0.4	6.63	54.43	8.76	28.84	13.71	2.08
08/02/2024	14.93	13.56	0.5	7.67	55.5	9	27.89	13.9	2.07
09/02/2024	14.32	12.82	0.41	7.4	53.02	8.65	27.31	14.57	2.06
10/02/2024	14.43	13.87	0.38	8.37	55.53	8.84	28.99	14.46	2.09
11/02/2024	13.93	14.43	0.44	9.03	57.32	8.84	30.29	14.28	2.08
12/02/2024	13.96	15.22	0.48	9.23	61.04	9.08	30.89	14.57	2.08
13/02/2024	14.04	17.02	0.49	10.9	58.26	9.31	29.87	13.99	2.07
14/02/2024	13.79	14.07	0.54	8.37	61.94	8.84	32.72	15.68	2.08
15/02/2024	13.74	17.25	0.43	10.88	60.72	9.53	31.79	14.16	2.08
16/02/2024	13.38	13.42	0.58	7.88	56.53	8.88	30.16	14.57	2.09
17/02/2024	14.21	14.54	0.36	8.7	61.3	9.07	31.94	14.97	2.08
18/02/2024	13.75	12.5	0.4	6.77	53.61	8.77	28.66	15.65	2.07
19/02/2024	13.8	11.43	0.53	5.8	50.7	8.58	27.07	14.57	2.08
20/02/2024	13.4	10.05	0.52	4.72	49.58	8.35	25.7	16.03	2.08
21/02/2024	13.57	11.39	0.53	5.85	50.95	8.64	25.87	15.14	2.08
22/02/2024	13.69	11.05	0.5	5.41	50.29	8.59	25.34	14.7	2.09
25/02/2024	13.22	14.02	0.45	8.13	54.61	9.06	28.72	13.07	2.08
26/02/2024	13.54	13.51	0.54	7.69	53.09	8.93	27.76	13.87	2.08
27/02/2024	17.95	14.38	0.34	9.03	56.7	9	29.79	14.46	2.08
28/02/2024	16.19	14.6	0.63	8.55	53.67	9.26	27.93	14.54	1.87
29/02/2024	19.29	15.45	0.73	9.6	55.74	9.44	29.1	14.71	1.37
AVERAGE	**14.647**	**13.335**	**0.496**	**7.621**	**54.522**	**8.863**	**28.492**	**14.535**	**2.045**
LIMIT	**80**	**80**	**2 (8 hrs)**	**80**	**100**	**400**	**60**	**100 (8 hrs)**	**5**

ANNEXURE-7

Average Report	
Industry(ies)	IOCL HALDIA
Station(s)	AAQMS_1
Parameter(s)	(SO2), (NOX), (CO), (NO2), (PM10), (NH3), (PM2.5), (O3), (Benzene)
Avg Period	Daily Avg
Date	From: 01-Mar-2024 To: 31-Mar-2024

Continuous Ambient Air Quality Monitoring Data

	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1	AAQMS_1
Date & Time	(SO2(ug/m3)	(NOX(ug/m3)	(CO(mg/m3)	(NO2(ug/m3)	(PM10(ug/m3)	(NH3(ug/m3)	(PM2.5(ug/m3)	(O3(ug/m3)	(Benzene(ug/m3)
01/03/2024	20.63	15.69	0.66	9.51	56.64	9.39	30.43	14.15	1.11
02/03/2024	18.73	12.67	0.68	6.88	51.61	8.78	28.51	13.93	0.71
03/03/2024	17.66	11.68	0.75	6.07	50.9	8.6	26.99	14.49	0.69
04/03/2024	18.61	13.21	0.71	7.36	53.68	8.93	28.67	14.86	0.87
05/03/2024	16.56	12.95	0.84	7.42	52.27	8.85	27.94	14.6	0.76
06/03/2024	18.23	13.46	0.66	7.82	52.57	8.87	27.67	14.73	0.85
07/03/2024	20.43	17.3	0.81	10.75	56.99	9.66	29.81	13.15	1.1
08/03/2024	0	14.49	0.62	8.79	57.07	8.95	28.05	13.52	0.84
09/03/2024	0	14.73	0.6	8.83	55.02	9.01	26.97	13.9	0.87
10/03/2024	17.57	14.72	0.71	9.07	56.95	8.92	27.44	14.45	0.94
11/03/2024	15.34	14.45	0.78	8.8	57.49	8.82	28.97	14.63	2.6
12/03/2024	0	12.06	0.72	6.46	48.95	8.67	25.54	14.21	0.84
13/03/2024	13.72	11.13	0.83	5.39	47.28	8.54	24.72	14.02	0.69
14/03/2024	13.96	9.59	0.6	4.25	46.63	8.36	24.45	14.04	0.74
15/03/2024	12.96	9.11	0.85	3.99	48.86	8.51	25.3	13.84	0.66
16/03/2024	13.82	8.27	0.89	3.35	46.88	8.31	23.87	14	0.53
17/03/2024	13.75	8.24	0.54	3.1	48.15	8.49	25.41	14.5	0.57
18/03/2024	13.69	7.57	0.78	2.44	49.3	56.92	25.6	17.93	0.65
19/03/2024	13.2	7.33	0	2.4	50.48	93.3	25.57	19.81	0.48
20/03/2024	13.83	7.46	0.94	2.41	44.87	55.26	16.09	20.59	1.94
21/03/2024	14.07	7.38	0.71	2.37	47.05	54.37	0	19.97	1.98
22/03/2024	14.18	7.33	0.58	2.41	52.94	69.02	12.11	19.06	1.97
23/03/2024	13.62	7.62	0.68	2.53	47.22	82.84	24.79	18.36	1.49
24/03/2024	13.82	7.46	0.67	2.45	45.37	50.63	23.39	17.95	0.89
25/03/2024	13.09	7.38	0.74	2.4	45.65	40.14	23.32	19.25	0.71
26/03/2024	13.87	7.5	0.43	2.48	45.44	33.74	22.83	19.81	0.49
27/03/2024	12.71	9.13	0.76	4.35	45.59	29.36	23.19	18.33	0.8
28/03/2024	12.74	14.51	0.81	9.29	46.86	22.51	23.34	18.24	1.17
29/03/2024	14.64	35.15	0.88	29.17	46.14	11.32	23.24	18.2	0.77
30/03/2024	12.3	73.5	0.83	66.42	45.75	8.56	23.02	17.99	0.78
31/03/2024	13.62	118.12	0.81	109.35	46.77	5.52	23.18	18.96	0.78
AVERAGE	**13.592**	**17.135**	**0.705**	**11.558**	**49.915**	**24.618**	**24.207**	**16.305**	**0.976**
LIMIT	**80**	**80**	**2 (8 hrs)**	**80**	**100**	**400**	**60**	**100 (8 hrs)**	**5**