



इंडियन ऑयल कॉर्पोरेशन लिमिटेड

पानीपत रिफ़ाइनरी एवं पेट्रोकेमिकल कॉम्प्लेक्स  
पानीपत, हरियाणा - 132140

Indian Oil Corporation Limited

Panipat Refinery & Petrochemical Complex  
Panipat, Haryana - 132140

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रिफ़ाइनरीज़ प्रभाग  
Refineries Division

Ref No: PR/HSE/2022/EC Compliance/1

Date: 14.07.2022

To,  
The Additional Director(S),  
Ministry of Environment, Forest & Climate Change, Govt. of India,  
Regional Office (NR), Bays No. 24-25, Sector 31-A, Dakshin Marg,  
Chandigarh- 160047

**Subject: Six Monthly Environmental Clearances Compliance Report (Jan'2022 to June'2022)- Panipat Refinery and Petrochemical Complex.**

Dear Sir,  
Enclosed please find herewith the Six Monthly Environmental Clearances (ECs) Compliance Report- Panipat Refinery and Petrochemical Complex for the period of Jan'2022 to Jun'2022 of the MoEF&CC stipulations w.r.t. following EC letters;

1. EC Letter No. J-11011/27/91-IA II(I) dated 16.07.1992 for setting up of a grass root refinery at Karnal district by Indian Oil Corporation Limited.
2. EC Letter No. J.11011/60/2000-IA.II dated 09.04.2001 for Expansion of Panipat Refinery (PREP) from 6 MMTPA to 12 MMTPA.
3. EC Letter No. J.11011/52/2000-IA.II dated 30.04.2001 for Integrated Paraxylene and Purified Terephthalic Acid Projects at Panipat by M/s IOCL.
4. EC Letter No. J.11011/9/2001-IA II (I) dated 06.12.2001 for MS Quality Up-gradation Project at Panipat Refinery by IOCL.
5. EC Letter No. J.11011/52/2000-IA II (I) dated 20.01.2003 for Modification In Plant layout of Paraxylene and Purified Terephthalic Acid (PX/PTA) Project within Panipat Refinery Complex and Integrated with Panipat Refinery (PR) and Panipat Refinery Expansion Project (PREP).
6. EC Letter No. J.11011/7/2004-IA II (I) dated 09.08.2004 for expansion of Panipat Refinery (From 12 MMTPA to 15 MMTPA) and Setting up of Indalin+ unit at Panipat Refinery Complex of IOCL, Panipat Refinery Haryana.
7. EC Letter No. J.11011/177/2016-IA II (I) dated 26<sup>th</sup> March, 2018 for BS-VI Fuel Quality up-gradation and expansion of PX/PTA plant at Panipat Refinery & Petrochemical Complex (PRPC), Panipat (Haryana) by M/s Indian Oil Corporation Limited.
8. EC Letter No. IA-J-11011/43/2018-IA- II (I) dated 13.11.2019 for installation of 100 KLPD Ligno-Cellulosic 2G Ethanol Plant at Baholi, Block Madlauda, Panipat Refinery road, District Panipat (Haryana) By M/S Indian Oil Corporation Limited.
9. EC Letter No. J-11011/78/2018-IA- II (I) dated 25.11.2019 for setting up 128 KL per day Ethanol Production Plant by M/s Indian Oil Corporation Ltd. (IOCL) In Panipat Refinery & Petrochemical Complex at Panipat, Haryana.
10. EC Letter No. J-11011/177/2016- IA II(I) dated. 03.12.2021 for Panipat Refinery capacity expansion from existing 15 MMTPA to 25 MMTPA within the existing refinery complex.

Thanking you,

Yours faithfully,

  
(P. V. RAMAKRISHNA) 141722

General Manager (HS&E)

For and on behalf of IOCL,

Panipat Refinery & Petrochemical Complex

पी. वी. रामकृष्णा  
P. V. Ramakrishna

जनरल मैनेजर (हेल्थ, सेफ्टी & एन्वायरमेंट)

पानीपत रिफ़ाइनरी एवं पेट्रोकेमिकल कॉम्प्लेक्स (आई.ओ.सी.एल.)

Panipat Refinery & Petrochemical Complex (I.O.C.L)

पानीपत, पानीपत-132140

Copy To:

The Regional Officer, HSPCB, Panipat

The Chairman, HSPCB, Panchkula

पंजीकृत कार्यालय: जी-9, अली यावर जंग मार्ग, बान्द्रा (पूर्व), मुंबई-400051, महाराष्ट्र (भारत)  
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CIN - L 23201 MH 1959 GIOI 011388

## INDEX

S. No.	EC General and specific conditions/Environmental monitoring reports	Compliance Status
1	EC Letter No. J-11011/27/91-IA II(I) dated 16.07.1992 for setting up of a grass root refinery at Karnal district by Indian Oil Corporation Limited.	Attached as Annexure-1
2	EC Letter No. J.11011/60/2000-IA.II dated 09.04.2001 for Expansion of Panipat Refinery (PREP) from 6 MMTPA to 12 MMTPA.	Attached as Annexure-2
3	3EC Letter No. J.11011/52/2000-IA.II dated 30.04.2001 for Integrated Paraxylene and Purified Terphthalic Acid Projects at Panipat by M/s IOCL.	Attached as Annexure-3
4	EC Letter No. J.11011/9/2001-IA II (I) dated 06.12.2001 for MS Quality Up-gradation Project at Panipat Refinery by IOCL.	Attached as Annexure-4
5	EC Letter No. J.11011/52/2000-IA II (I) dated 20.01.2003 for Modification in Plant layout of Paraxylene and Purified Terephthalic Acid (PX/PTA) Project within Panipat Refinery Complex and Integrated with Panipat Refinery (PR) and Panipat Refinery Expansion Project (PREP).	Attached as Annexure-5
6	EC Letter No. J.11011/7/2004-IA II (I) dated 09.08.2004 for expansion of Panipat Refinery (From 12 MMTPA to 15 MMTPA) and Setting up of Indalin+ unit at Panipat Refinery Complex of IOCL, Panipat Refinery Haryana.	Attached as Annexure-6
7	EC Letter No. J.11011/177/2016-IA II (I) dated 26th March, 2018 for BS-VI Fuel Quality up-gradation and expansion of PX/PTA plant at Panipat Refinery & Petrochemical Complex (PRPC), Panipat (Haryana) by M/s Indian Oil Corporation Limited.	Attached as Annexure-7
8	EC Letter No. IA-J-11011/43/2018-IA- II (I) dated 13.11.2019 for installation of 100 KLPD Ligno-Cellulosic 2G Ethanol Plant at Baholi, Block Madlauda, Panipat Refinery road, District Panipat (Haryana) By M/S Indian Oil Corporation Limited.	Attached as Annexure-8
9	EC Letter No. J-11011/78/2018-IA- II (I) dated 25.11.2019 for setting up 128 KL per day Ethanol Production Plant by M/s Indian Oil Corporation Ltd. (IOCL) In Panipat Refinery & Petrochemical Complex at Panipat, Haryana.	Attached as Annexure-9
10	EC Letter No. J-11011/177/2016- IA II(I) dated. 03.12.2021 for panipat refinery capacity expansion from existing 15 MMTPA to 25 MMTPA within the existing complex.	Attached as Annexure-10
11	Ambient Air quality data.	Attached as Annexure-11
12	Stack Emission data	Attached as Annexure-12
13	Effluent quality data	Attached as Annexure-13
14	Fugitive Emission data	Attached as Annexure-14

**COMPLIANCE TO ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEFCC FOR SETTING UP OF A GRASSROOT REFINERY AT KARNAL, DISTRICT BY INDIAN OIL CORPORATION LIMITED - EC Letter no. J-11011/27/91-IA.II(I) dated 16.07.1992**

SN	Stipulation	Compliance
1.	The project authority must strictly adhere to the stipulations laid down by the State Pollution Control Board and State Government.	<b>Being Complied</b>
2.	Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this ministry.	<b>Being Complied</b>
3.	Sulphur recovery unit with more than 90% Sulfur Recovery should be installed and commissioned before the project is completed, and measure for its continuous operation must be taken. Techno-economic feasibility study for additional standby sulphur recovery system may be initiated after the installation of first unit.	<b>Being Complied</b> Panipat Refinery has 5 nos. Sulphur Recovery Units (SRUs) as detailed below and 4 (99.9% recovery efficiency) out of 5 units are in operation: <ul style="list-style-type: none"> <li>• 1 no. SRUs: 99% efficiency ,1X115 MT/day capacity</li> <li>• 4 no. SRUs: 99.9% efficiency ,4X225 MT/day capacity</li> </ul>
4.	Low Sulfur fuel (Sulphur content not exceeding 1%) should be used in the boilers/furnaces.	<b>Being Complied</b>
5.	Low NO <sub>x</sub> burners should be used to avoid excessive formation of NO <sub>x</sub> .	<b>Being Complied</b> Low NO <sub>x</sub> burners have been installed in the process heaters , Boilers , furnaces etc.
6.	Total emission of SO <sub>2</sub> from the refinery should not exceed 1 Ton/hr.	<b>Being Complied</b> SO <sub>2</sub> emission from the Refinery is well within the limit.
7.	The gaseous emissions (SO <sub>2</sub> , NO <sub>x</sub> etc.) from various process units should conform to the standards prescribed by the concerned authorities, from time to time. At no time the emission levels should go beyond the stipulated standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should be put out of operation immediately and should not be restarted until the control measure are rectified to achieve the desired efficiency.	<b>Being Complied</b>
8.	Adequate number (a minimum of 7) of air quality monitoring stations should be set up in the down-wind direction as well as where maximum ground level concentration is anticipated. Stack emission should be monitored by setting up of an automatic continuous stack monitoring unit. The data on stack emission should be submitted to the State Pollution Control Board once in three months and to this Ministry once in six months along with the statistical analysis. The air quality monitoring station should be selected on the basis of modeling exercise to represent the short-term ground level concentrations.	<b>Being Complied</b> Total 9 nos. of CAAQMS (2 nos. in Panipat city, 1 no. in Refinery township, 5 nos. in Refinery & 1 in Polishing Pond area) are in operation. These were set up in consultation with HSPCB. Also, one mobile van for ambient air quality monitoring is in place.  For all stacks: SO <sub>2</sub> , NO <sub>x</sub> , CO & PM analyzers are available and connected to CPCB/HSPCB server.  Data on stack emission are submitted to HSPCB/MoEFCC as per frequency mentioned.
9.	Fugitive emissions of hydrocarbons from storage tanks etc. should be minimized by adopting necessary measures.	<b>Being Complied</b>
10.	Fugitive emission should be regularly monitored and record maintained.	<b>Being Complied</b> Fugitive emission monitoring for Hydrocarbon and Benzene is done quarterly through approved agency.

SN	Stipulation	Compliance
11.	There should be no change in the stack design without the approval of the State Pollution Control Board. Alternate pollution control system and proper design in the stack should be provided to take care of excess emissions due to failure in any system of the plant.	<b>Noted.</b>  <b>Being Complied.</b>
12.	The height of stacks attached to AVU, FCCU and TPS etc. should not be less than 100 m.	<b>Implemented.</b>
13.	Total fresh water consumption (Industrial as well as township) should not exceed 8 MGD. Ground Water should not be tapped for this purpose.	8 MGD water allocated for 6 MMTPA Refinery. However, further EC granted to Refinery expansion from 6 to 12 MMTPA (J.11011/7/2004-IA-II (I) dated 09.08.2004) Fresh water allocation increased to 30 cusec.
14.	The project authorities must recycle wastewater to the maximum extent possible (at least 25% to 30% to start with). The treated effluent coming out of the plant must meet MINAS.	<b>Being Complied</b>  ETP-I and II Treated effluent meeting Refinery MINAS parameter is "Recycled and Reused" as feed to RO plant and make up water to Cooling Tower.
15.	Adequate number of effluent quality (oil & Grease, COD, BOD, suspended Solids, Phenols, Sulphides, pH and Flow) monitoring stations must be set up in consultation with State Pollution Control Board.	Effluent quality as mentioned is being monitored at various stages of Effluent Treatment Plant. Also final Treated Effluent Quality parameters (pH, BOD, COD & TSS) are connected online to CPCB/HSPCB server.
16.	Maximum recovery of oil from the sludge should be done and residual oily sludge should be incinerated.	The raw oily sludge generated from the Refinery is subjected to Oil recovery / Melting Pit treatment for recovery of oil. The recovered oil is recycled back with crude oil for processing. - The residual sludge is disposed-off through confined Bio-remediation. - Part of the sludge is processed in Coker unit.
17.	The project authorities must prepare a scheme for solid and hazardous waste disposal. The plan for disposal duly approved from the State Pollution Control Board should be submitted to this Ministry within one year and adequate space should be provided for it within the plant premises.	<b>Being Complied</b>  A common hazardous waste disposal site is developed in the state by Haryana Environmental Management Society (HEMS) in consultation with Haryana State Pollution Control Board. Panipat Refinery is the member of this society.
18.	A green belt of at least 500 m width and adequate density should be developed and maintained. Selection of the species should be done in consultation with the State Forest Department. A detailed green belt development plan taking into account attenuation factors, soil characteristics etc. should be prepared and submitted to this Ministry within six months.	<b>Complied</b>  Greenbelt of 500 m width have been developed and maintained after consultation with State Forest Department.
19.	A detailed risk analysis study based on Maximum Credible Accident (MCA) analysis should be done and submitted to this Ministry once the process design/technology and layout is finalized. Based on this, a Disaster Management Plan has to be prepared and after approval by the concerned Nodal Agency, should be submitted to this ministry within six months. The impact zone under no circumstances should cross the plant premises.	A Comprehensive Risk Analysis is conducted. Report has been submitted.  On-site Disaster Management Plan based on this Risk Analysis is also prepared which is accredited from approved Third Party Inspection agency of PNGRB.
20.	A 'no development zone' of minimum 5km radius in between the refinery and the Panipat town should	Action by State Government.

SN	Stipulation	Compliance																								
	be provided. Where only restricted growth on nonpolluting industries may be allowed (Action – State Govt.)	Letter sent from PR to DC, Panipat dated 16.05.2020 requesting enforcement of this condition.																								
21.	No tree should be cut from the site without prior written order of the competent authority.	<b>Being Complied</b>																								
22.	The industrial township should be located on the northern side of the refinery i.e. in the up-wind direction.	<b>Complied</b>																								
23.	A detailed Rehabilitation Plan for the affected people should be prepared and submitted to this Ministry within 3 months.	<b>Complied</b>																								
24.	Contractor’s labourers must leave place after the construction work is over to avoid creation of slum in the adjoining areas of the refinery and township.	<b>Complied</b>																								
25.	A comprehensive EIA must be prepared and submitted to this Ministry by September, 1993 covering regional implications and ‘no development zone’ aspects.	<b>Complied</b>																								
26.	Feasibility of using 20 tonner trucks may be studied / assessed wherever road transport is being envisaged and report submitted to this Ministry within three months.	Bulk Movement of Products is through Pipeline and Rail.																								
27.	Necessary approval may be obtained from the Regulatory Authority as per Section 5(2) and 5(3) of the Hazardous Wastes (Management and Handling) Rules, 1989 of the Environment (Protection) Act, 1986.	<b>Being Complied</b>																								
28.	The State Govt. should prepare a Master Plan for the region to avoid haphazard growth of industries and human settlements in the area.	Action by State Government.																								
29.	The project authority must set up laboratory facilities for collection and analysis of samples under the supervision of competent technical personnel, who will directly report to the Chief Executive.	<b>Complied</b>																								
30.	A separate Environment Management Cell with suitably qualified people to carry out various functions should be set up under the control of Sr. Executive, who will report directly to the Head of the organization.	<b>Complied</b>																								
31.	The funds earmarked for the environmental protection measures should not be diverted for other purposes and year wise expenditure should be reported to this Ministry.	<p><b>Being Implemented.</b> Year-wise expenditure:</p> <table border="1"> <thead> <tr> <th colspan="2">FY:2019-20</th> <th colspan="2">FY:2020-21</th> <th colspan="2">FY:2021-22</th> </tr> <tr> <th colspan="6">(Rupees In laks)</th> </tr> <tr> <th>Recurr ing</th> <th>Non-recurri ng</th> <th>Recurr ing</th> <th>Non-recurri ng</th> <th>Recurr ing</th> <th>Non-recurri ng</th> </tr> </thead> <tbody> <tr> <td>551.8</td> <td>3060.3</td> <td>1229.8</td> <td>3465.0</td> <td>701.70</td> <td>2849.7</td> </tr> </tbody> </table>	FY:2019-20		FY:2020-21		FY:2021-22		(Rupees In laks)						Recurr ing	Non-recurri ng	Recurr ing	Non-recurri ng	Recurr ing	Non-recurri ng	551.8	3060.3	1229.8	3465.0	701.70	2849.7
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**Compliance status with respect to the EC conditions stipulated in the letter for Panipat Refinery Expansion Projects (PREP) from 6 MMTPA to 12 MMTPA – EC letter no. J.11011/60/2000-IA.II dated 09.04.2001 :**

<b>S N</b>	<b>Conditions stipulated in the EC letter</b>	<b>Status</b>
1.	The company should strictly adhere to the stipulations made by MOE&F vide O.M. No. J.11011/76/96-IAII dated 5 <sup>th</sup> March,1997	<b>Being Complied</b>
2.	a) The total SO <sub>2</sub> emission from the entire Refinery complex should not exceed 1000 kg/hr even after proposed expansion.	<b>Being Complied</b>
	b) The gaseous emissions (SO <sub>2</sub> , NO <sub>x</sub> , HC, CO) and particulate matters, from various process units should conform to the standards prescribed under Environmental (Protection) Rules, 1986 or norms stipulated by SPCB whichever is most stringent.	<b>Being Complied</b>
	c) At no time, the emission level should go beyond the stipulated standards.	<b>Being Complied</b>
	d) In the event of failure of pollution control system(s) adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.	<b>Being Complied</b>
3.	Sulphur recovery units with more than 99% efficiency shall be provided.	<b>Being Complied</b> Four SRUs with 99.9% recovery have been installed & are operational.
4.	a) Adequate ambient air quality monitoring stations SO <sub>2</sub> , NO <sub>x</sub> , HC should be set up in the Refinery area in consultation with SPCB, based on occurrence of maximum ground level concentration and down-wind direction of wind.	<b>Being Complied</b> 9 nos. of CAAQMS (5 nos. in Refinery, 2 nos. in Panipat city, 1 no. each in Refinery Township, and Polishing Pond area) are in operation. These were set up in consultation with HSPCB.  Also mobile van for ambient air quality monitoring is in place.
	b) The monitoring network must be decided based on making exercise to represent short term GLCs.	<b>Complied</b>
	c) In addition, a mobile van with adequate facilities to monitor ambient air quality outside the Refinery premises should be provided.	<b>Complied</b> Mobile van with adequate facilities for ambient air quality monitoring is already available & is in operation.
	d) Continuous on-line stack monitoring equipment should be installed for measurement of SO <sub>2</sub> , NO <sub>x</sub> , CO & PM.	For all stacks: SO <sub>2</sub> , NO <sub>x</sub> , CO & PM analyzers are available and connected to CPCB / HSPCB server.
5.	a) Fugitive emission of HC from product storage tank yard, crude oil tanks etc, must be regularly monitored.	<b>Being Complied</b> Fugitive emission monitoring for Hydrocarbon and Benzene is done quarterly through approved agency.
	b) Sensors for detecting HC leakages should also be provided at strategic locations.	Hydrocarbon leak detectors installed at strategic locations.

6.	a) As per the commitment given, there will be no discharge of treated effluent into Thirana drain.	Treated effluent from ETP-1 & ETP-2 is reused as feed to RO plant and as make up to Cooling Tower. Treated Effluent from PTA-ETP (ETP-3) meeting Petrochemical MINAS is discharged into THIRANA DRAIN as per permission granted by statutory bodies (MoEFCC & HSPCB).
	b) The liquid effluent generated from the Refinery should be treated comprehensively to conform to the load based standards and concentration limits prescribed under EPA rules.	Liquid effluent generated from Refinery & PX-PTA Petrochemical Complex is being treated in Waste Water Treatment Plant(s) which are meeting applicable Refinery & Petrochemical MINAS standards. Treated effluent from ETP-1 & ETP-2 is reused as feed to RO plant and as make up to Cooling Tower.  Treated Effluent from PTA-ETP (ETP-3) meeting Petrochemical MINAS is discharged into THIRANA DRAIN as per permission granted by statutory bodies (MoEFCC & HSPCB).
	c) The entire treated wastewater should be recycled for reuse in the plant operation and green belt development so as to maintain zero discharge.	ETP-1 & ETP-2 treated effluent is recycled and reused as feed to RO plant and as make up to Cooling Tower. Treated Effluent from PTA-ETP (ETP-3) meeting Petrochemical MINAS is discharged into THIRANA DRAIN as per permission granted by statutory bodies (MoEFCC & HSPCB).
7.	a) Guard ponds of sufficient holding capacity should be provided to contain the effluent during process disturbance and or ETP failure.	<b>Complied.</b>
	b) The concerned units must be shut down in case of effluent quality exceeding the prescribed limits.	<b>Being Complied with.</b>
8.	a) The company should adopt mounded storage for LPG.	<b>Complied.</b>  Mounded storage is used for LPG storage.
	b) The recommendations made in the Rapid Risk Assessment Report must be incorporated while firming up the plant layout and equipment design.	<b>Complied.</b>  The recommendations of the Rapid Risk Assessment for the study have been incorporated in the plant layout and equipment design.
	c) The company must prepare a comprehensive risk assessment/analysis of the Refinery and associated facilities once the engineering design and layout is frozen.	<b>Complied.</b>
	d) Based on this, on-site and off-site emergency preparedness plan must be prepared.	<b>Complied.</b>  Onsite and Offsite Emergency Preparedness plans already prepared for Panipat Refinery.
	e) Approval from the nodal agency must be obtained before commissioning the project.	<b>Complied.</b>
9.	The drawl of water from the Munak Head-works should not exceed 30 cusecs even after the proposed expansion.	<b>Being Complied.</b>
<b>General conditions:</b>		
SN	<b>Conditions stipulated in the EC letter</b>	<b>Status</b>
1.	The project authorities must strictly adhere to the stipulations	<b>Being complied</b>

	made by the Haryana State Pollution Control Board and the State Government.	
2.	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forest.	<b>Being complied</b>
3.	In case of deviations or alterations in the project proposed from those submitted to this Ministry for Clearance, a fresh reference should be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	<b>Being complied</b>
4.	Data on ambient air quality, stack emission as well as fugitive emissions of HC must be regularly monitored and submitted to CPCB once in 3 months and to Ministry's Regional Office once in 6 months.	<b>Being complied.</b> Mentioned reports are being sent to MOEF&CC once in 6 months. Stack analyzers are online connected with CPCB/HSPCB server.
5.	Influent and effluent quality monitoring stations should be set up in consultation with the State Pollution Control Board. Regular monitoring should be carried out for the MINAS parameters.	Influent and Effluent quality is being monitored at various stages of Effluent Treatment Plants. Final Treated Effluent Quality parameters (pH, BOD, COD & TSS) are also connected online to CPCB/HSPCB server.
6.	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended, on 3 <sup>rd</sup> October, 1994. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire & Safety Inspectorate etc. must be obtained.	<b>Being complied.</b>
7.	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management & Handling) Rules, 1989. Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.	<b>Being complied.</b>
8.	Occupational health surveillance program should be undertaken as regular exercise for all the employees, especially for those engaged in handling hazardous substances.	<b>Being complied.</b>
9.	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)	<b>Being complied.</b> The Refinery has provided silencers on compressor discharge, acoustic leggings on turbo generators & ejectors and acoustic chambers at the burners. The ambient noise level meets the standards.
10.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA and risk analysis report.	<b>Complied.</b>
11.	The project proponent should have a scheme upliftment in the nearby villages with reference to contribution in road construction, education of children, festivals, health centers, sanitation facilities, drinking water supply, community awareness and employment to local people whenever possible both for technical and non technical jobs.	<b>Being complied</b> Social upliftment and community development has been properly taken care as per IOCL's Corporate Social Responsibility Policy through following CSR activities. <ul style="list-style-type: none"> <li>– Promoting Sanitation</li> <li>– Environment Sustainability/ Renewable Energy Sources</li> <li>– Rural Development/ Promoting Preventive Healthcare/ Promotion of Sports</li> <li>– Promoting Education</li> </ul>



		<ul style="list-style-type: none"> <li>– Enhancement of Vocational Skills</li> <li>– Empowering Women</li> <li>– Welfare of Underprivileged</li> </ul>
12.	A separate environmental management cell equipped with full fledged laboratory facilities must be set up to carry out the environmental management and monitored functions.	<b>Being Complied</b> Separate Environment Management Cell is in place.
13.	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 purpose.	<b>Being Implemented.</b>
14.	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional Office at Chandigarh / State Pollution Control Board / Central Pollution Control Board. A six monthly compliance status report should be submitted to monitoring agencies.	<b>Being Complied.</b> Six monthly compliance reports along with monitoring data are being submitted as stated.
15.	The project proponent should advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locally concerned informing 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 <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . the advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the Ministry's Regional Office.	<b>Complied</b>
16.	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 start of land development work.	<b>Complied</b>

**Integrated Paraxylene and Purified Terphthalic Acid Projects at Panipat by M/s IOCL – Environmental Clearance MOEF, N. Delhi letter no. J.11011/52/2000-IA.II dated 30.04.2001**

SN	Conditions stipulated in the EC letter	Status
1	a) The gaseous emission (SO <sub>2</sub> , NO <sub>x</sub> and HC, Benzene) from the various process units should conform to the standards prescribed under environment (Protection) Rules, 1986 or norms stipulated by the SPCB whichever is more stringent.	<b>Being Complied.</b> Emission from the stack is being monitored online and from approved lab on Bi-monthly basis. 48 stacks are connected online to CPCB/HSPCB server with parameters such as SO <sub>2</sub> , NO <sub>x</sub> , CO & PM.
	b) At no time, the emission level should go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the respective unit should not be restarted until; the control measures are rectified to achieve the desired efficiency.	<b>Being Complied.</b>
2	a) Adequate ambient air quality monitoring stations (SPM, SO <sub>2</sub> , NO <sub>x</sub> , HC and Benzene) should be set up in the petrochemical complex in consultation with SPCB, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs	<b>Being Complied.</b> Out of 9, AAQMS two Ambient Air Monitoring stations set up in PX-PTA plant area. The location of these is finalized after consultation with HSPCB.
	b) Continuous on-line stack monitoring equipment should be installed for measurement of SO <sub>2</sub> and NO <sub>x</sub> .	<b>Being Complied.</b> PX-PTA stacks are connected online to CPCB/SPCB server with parameters such as SO <sub>2</sub> , NO <sub>x</sub> , CO & PM.
3	a) Fugitive emission of HC from product storage tank yard, crude oil tanks etc. must be regularly monitored.	<b>Being Complied.</b> Fugitive emission monitoring for Hydrocarbon and Benzene is done quarterly through approved agency.
	b) Sensors for detecting HC leakage should also be provided at strategic locations.	<b>Being Complied.</b> Hydrocarbon leak detectors installed at strategic locations.
4	a) Liquid effluent generated from the petrochemical complex should be treated comprehensively to conform to the load based standards and concentration limits prescribed under EPA rules ( MINAS standards).	For Treating liquid effluent generated from Petrochemical complex separate ETP has been installed. PTA-ETP treated effluent meets the petrochemical MINAS. PTA ETP envisages Aerobic and Anaerobic Biological systems for treatment and the final effluent will meet Petrochemical MINAS.
	b) The BOD of the treated effluent should not exceed 30 mg/l at any point of time.	BOD is being maintained below 30 mg /l.
	c) The Company must undertake maximum recycling/ reusing of the treated effluent for process purposes in addition to green belt development and also adopt adequate water conservation measures.	Process Licensor M/s INVISTA has confirmed that "Recycle & Reuse" of PTA treated effluent is not feasible. PX-PTA has permission for discharge of 255m <sup>3</sup> /hr treated effluent from PTA-ETP to Thirana drain.

	d) As per the commitment given the total quantity of treated effluent discharged into Thirana drain should not exceed 255 m <sup>3</sup> /hr.	The discharge of PTA-ETP treated effluent into Thirana Drain is being restricted well below 255 m <sup>3</sup> /hr.
	e) The effluent quality at the discharge point must also be monitored periodically by an independent agency authorized by CPCB and report of the independent agency should be submitted to Ministry's Regional office at Chandigarh/CPCB/HSPCB.	Effluent Quality of PTA ETP is monitored monthly by an authorized independent agency and report is being submitted to HSPCB (Monthly) and to MoEF&CC (Six-Monthly).
	f) The Company shall fully abide by the Hon'ble Supreme Court orders on regulation of industrial discharge to River Yamuna and it's canals / drains.	<b>Being Complied.</b>
5	a) Guard ponds of sufficient holding capacity should be provided to contain the effluent during process disturbances and or ETP failure.	Guard ponds of sufficient holding capacity are provided.
	b) The concerned units must be shut down in cases of effluent quality exceeding the prescribed limits.	<b>Being Complied.</b>
	<b>General Conditions</b>	
<b>SN</b>	<b>Conditions stipulated in the EC letter</b>	<b>Status/Action plan</b>
1	The project authority must adhere to the stipulations made by Haryana State Pollution Control Board and State Government.	<b>Being Complied</b>
2	No expansion or modification of the plant should be carried out without prior approval of Ministry.	<b>Noted</b>
3	Data on ambient air quality and stack emissions as well as fugitive emissions of HC and Benzene from product storage tanks yard, naphtha tanks etc. must be regularly monitored and submitted to CPCB/SPCB once in 3- months and to Ministry (Regional Office, Chandigarh) one in 6-months.	<b>Being complied.</b> Mentioned reports are being sent to MOEF&CC once in 6 months and to HSPCB on bi-monthly basis. Stack analyzers are connected online with CPCB/HSPCB server.
4	The effluent quality before and after treatment should be regularly monitored. The frequency of monitoring and number of influent and effluent quality monitoring stations should be set up in consultation with the State PCB. The monitored data should be submitted to CPCB/ SPCB once in 3-months and to Ministry (Regional Office, Chandigarh) once in 6-months.	<b>Being Complied</b> Influent and Effluent quality is being monitored at various stages of Effluent Treatment Plants also Final Treated Effluent Quality parameters (pH, BOD, COD &TSS) also connected online to CPCB/HSPCB server. Mentioned reports are being sent to MOEF&CC once in 6 months and to HSPCB on monthly basis
5	Handling, manufacturing, storage and transportation of hazardous chemicals should be carried out in accordance with the Manufacture, Storage & Import of Hazardous chemicals Rules, 1989, as amended in 1991. Permissions from State and Central nodal agencies in this regard must be obtained.	<b>Being Complied</b>
6	Hazardous wastes, if any, must be handled and disposed as per Hazardous waste (Management and Handling) Rules, 1989. Authorization from State Pollution Control Board in this regard must be obtained.	<b>Being complied</b> Authorization for Hazardous Waste has been obtained from HSPCB which is valid up to 30.09.2024.

7	Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation etc. should be ensured for construction workers during the construction phase so as to avoid felling of trees and pollution of water and the surroundings.	<b>Complied.</b>																								
8	The overall noise levels in and around the plant area should be kept well within the standards (85dBA) 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).	<b>Being complied.</b> Silencers are provided on compressor discharge, acoustic leggings on turbo generators & ejectors and acoustic chambers at the burners. The ambient noise level meets the standards.																								
9	Occupational Health Surveillance of the workers should be done on regular basis and records maintained.	<b>Complied</b>																								
10	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP and risk analysis report.	<b>Complied</b>																								
11	The project proponent should have a scheme for social upliftment in the surrounding villages with reference to contribution in road construction ,education of children festivals, health centers, sanitation facilities, drinking water supply, community awareness and employment to local people especially the displaced people whenever and wherever possible both for technical and non-technical jobs.	<b>Being complied</b> Social upliftment and community development has been properly taken care as per IOCL's Corporate Social Responsibility Policy through following CSR activities. <ul style="list-style-type: none"> <li>– Promoting Sanitation</li> <li>– Environment Sustainability/ Renewable Energy Sources</li> <li>– Rural Development/ Promoting Preventive Healthcare/ Promotion of Sports</li> <li>– Promoting Education</li> <li>– Enhancement of Vocational Skills</li> <li>– Empowering Women</li> <li>– Welfare of Underprivileged</li> </ul>																								
12	A separate environmental management cell with full fledged laboratory facilities to carry out various management and monitoring functions should be set up under the control of senior executive.	<b>Being Complied</b> Separate environment management cell is in place.																								
13	The company must obtain ISO-14000 certification within a time frame of 5 years or so after the commissioning.	ISO-14000 certification has been obtained. <b>Complied</b>																								
14	The funds earmarked for the environmental protection measures should not be diverted for any other purpose and year-wise expenditure should be submitted to this Ministry (Regional Office, Chandigarh/CPCB/SPCB)	<b>Being Implemented.</b> Year-wise expenditure: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2">FY:2019-20</th> <th colspan="2">FY:2020-21</th> <th colspan="2">FY:2021-22</th> </tr> <tr> <th colspan="6"><b>(Rupees In laks)</b></th> </tr> <tr> <th><b>Recu rring</b></th> <th><b>Non-recu rring</b></th> <th><b>Recu rring</b></th> <th><b>Non-recu rring</b></th> <th><b>Recu rring</b></th> <th><b>Non-recu rring</b></th> </tr> </thead> <tbody> <tr> <td>551.8</td> <td>3060.3</td> <td>1229.8</td> <td>3465.0</td> <td>701.70</td> <td>2849.7</td> </tr> </tbody> </table>	FY:2019-20		FY:2020-21		FY:2021-22		<b>(Rupees In laks)</b>						<b>Recu rring</b>	<b>Non-recu rring</b>	<b>Recu rring</b>	<b>Non-recu rring</b>	<b>Recu rring</b>	<b>Non-recu rring</b>	551.8	3060.3	1229.8	3465.0	701.70	2849.7
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15	Six monthly status reports on the project vis-à-vis environmental measures should be submitted to this Ministry (Regional Office, Chandigarh/ CPCB/SPCB.	<b>Being Complied.</b> Six monthly compliance reports along with monitoring data are being submitted.
16	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional Office at Chandigarh/ State Pollution Control Board/ Central Pollution Control Board. A six monthly compliance status report should be submitted to monitoring agencies.	Will be adhered to.
17	The project proponent should advertise in at least two local newspaper widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned informing that the project has been accorded environmental clearances 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 <a href="http://www.envfor.nic.in">http://www. envfor.nic.in</a>	<b>Complied</b>
18	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 start of land development work.	<b>Complied</b>

**COMPLIANCE TO ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEF FOR MS  
QUALITY UPGRADATION PROJECT AT PANIPAT REFINERY BY IOCL,- J-11011/9/2001-IA. II  
(I) DATED 06.12.2001**

SN	EC Conditions	Compliance Status
1.	The company shall ensure strictly implementations / Compliance of the terms and conditions mentioned vide Ministry's letter no. J.11011/60/2000-IA II dated 9 <sup>th</sup> April, 2001.	<b>Being Complied</b> (Stipulations are being strictly adhered for 6 MMTPA EC condition).
2.	The company shall also ensure that total SO <sub>2</sub> emission from the Panipat Refinery (Including expansion and MS Quality Improvement Project) will not exceed 1000 kg/hr.	<b>Being Complied</b> SO <sub>2</sub> emission from the Panipat Refinery (including expansion and MS Quality Improvement Project) is well within the limit.
3.	The company shall comply with all recommendations made by Haryana SPCB vide consent order dated 24.01.2001.	<b>Complied.</b>
4.	The company shall comply with all recommendations made by EMP and risk Analysis reports.	<b>Complied.</b>
5.	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional Office at Chandigarh / State Pollution Control Board / Central Pollution Control Board. A six monthly compliance status report should be submitted to monitoring agencies.	<b>Being Complied.</b>  Six monthly compliance reports along with monitoring data are being submitted as stated.
6.	The project proponent should advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locally concerned informing 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 <a href="http://envfor.nic.in">http://envfor.nic.in</a> the advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the Ministry's Regional Office.	<b>Complied.</b>
7.	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 start of land development work.	<b>Complied.</b>

**Modification in Plant Layout of Paraxylene and Purified Terephthalic Acid (PX/PTA) Project within Panipat Refinery Complex and Integrated with Panipat Refinery (PR) and Panipat Refinery Expansion Project (PREP) by M/s IOCL – Reg. Environmental Clearance - J.11011/52/2000-IA II (I) dated 20.01.2003**

SN	EC Conditions	Compliance Status
1	The company shall ensure strict implementation / compliance to the stipulations made by MOEF vide OM no. J-11011/60/2000-IA-II dated 9 <sup>th</sup> April, 2001 for expansion of Panipat Refinery from 6 MMTPA to 12 MMTPA and J-11011/52/2000-IA-II dated 30 <sup>th</sup> April, 2001 for integrated Paraxylene and Purified Terephthalic acid project at Panipat by M/s IOCL.	Being Complied.
2	Total SO <sub>2</sub> emission after integration of PX-PTA project with PR/PREP shall not exceed 1275 kg/hr (i.e. 1000kg/hr. for PREP and 275 kg/hr from the proposed PX/PTA/PPP Project.)	SO <sub>2</sub> emission is well within the limit.
3	As per the commitment given, the total quantity of treated effluent shall not exceed 255m <sup>3</sup> /hr from the proposed integration project.	Total quantity of treated effluent discharged into Thirana Drain is maintained well below 255m <sup>3</sup> /hr.
4	The company shall develop green belt in an area of 75 acres as per the original plan in the PX-PTA project area.	<b>Complied.</b>
5	The project authorities shall also comply with all the environmental protection measures and safeguards recommended in the EIA /EMP and risk analysis report submitted while seeking environmental clearance for the PREP and PX/PTA and PX/PTA/ PR project.	<b>Being Complied.</b>
6	As per the recommendations made in the Risk assessment study for the composite facility i.e. PX/PTA/PREP and associated facilities carried out by M/s KLG-TNO Safety Technology Ltd., the various elements of safety management system should be reviewed and updated keeping in view the new facilities added to the Refinery Complex. These include: Process and facilities information and documentation; Process Hazard Analysis; Operation Procedures; Inspection and Maintenance and Onsite Emergency Management Plan.	Various elements of Safety Management System (SMS) has been reviewed and updated keeping in view the new facilities added. On-site Disaster Management Plan based on this Risk Analysis is also prepared which is accredited from PNGRB approved Third Party Inspection agency.
7	The project authorities must adhere to the stipulations made by the HSPCB for the PREP, PX/PTA projects and NOC granted for the installation of Captive Power Plant.	<b>Being Complied.</b>

**COMPLIANCE TO ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEF FOR EXPANSION OF PANIPAT REFINERY (FROM 12 MMTPA TO 15 MMTPA) AND SETTING UP OF INDALIN<sup>+</sup> UNIT AT PANIPAT REFINERY COMPLEX OF IOCL, PANIPAT REFINERY HARYANA J-11011/7/2004-IA. II (I) dated 09.08.2004**

SN	EC Conditions	Compliance Status
1.	The company shall ensure strict implementation / compliance to the stipulations made by MOEF vide OM no. J-11001/60/2000-IA-II dated 9 <sup>th</sup> April, 2001 for expansion of Panipat Refinery from 6 MMTPA to 12 MMTPA	<b>Being Complied</b>
2.	The gaseous emissions (SO <sub>2</sub> , NO <sub>x</sub> and HC, Benzene) from the various process units should conform to the standards prescribed under Environment (Protection) Rules, 1986 or norms stipulated by the SPCB whichever is more stringent. At no time, the emission level should go beyond the stipulated standards. In the event of failure pollution control system(s) adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.	<p><b>Being Complied.</b></p> <p>Emission from the stack is being monitored online and from approved lab on bi-monthly basis. All stacks are connected online to CPCB / HSPCB server for parameters such as SO<sub>2</sub>, NO<sub>x</sub>, CO &amp; PM.</p> <p>Gaseous emission from various process units meets the prescribed standards.</p>
3.	Adequate ambient air quality monitoring stations, (SPM, SO <sub>2</sub> , NO <sub>x</sub> and HC, Benzene) should be set up in the refinery complex in consultation with SPCB, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs. Continuous on-line stack monitoring equipment should be installed for measurement of SO <sub>2</sub> and NO <sub>x</sub> . Data on VOC should be monitored and submitted to the SPCB / Ministry.	<p>9 nos. AAQMS (5 nos. in Refinery, 2 nos. in Panipat city, 1 no. each in Refinery township and Polishing Pond area) are in operation. These were set up in consultation with HSPCB. Also mobile van for ambient air quality monitoring is in place.</p> <p>For all stacks: SO<sub>2</sub>, CO, PM &amp; NO<sub>x</sub> analyzers are available and connected with CPCB server.</p> <p>Fugitive emission monitoring for Hydrocarbon and benzene is done quarterly through approved agency.</p> <p>All reports are submitted to HSPCB as stated.</p>
4.	Fugitive emission of HC from product storage tank yard, crude oil tanks etc. must be regularly monitored. Sensors for detecting HC leakage should also be provided at strategic locations.	<p>Fugitive emission monitoring for Hydrocarbon and Benzene for product storage tanks and crude oil storage tanks is done through approved agency on quarterly basis.</p> <p>Hydrocarbon detectors have been provided at strategic locations.</p>
5.	The company shall also ensure that the total SO <sub>2</sub> emissions from the Panipat Refinery after expansion shall not exceed i.e. 1000 kg/hr. The company shall install an additional Sulphur Recovery Unit (225 MT/day capacity) with 99.9% efficiency and the entire gas generated should be amine treated to reduce the SO <sub>2</sub> emissions level from the Refinery.	<p>The total SO<sub>2</sub> emission of Panipat Refinery is within the limit i.e. 1000 kg/hr as mentioned.</p> <p>Panipat Refinery has 5 nos. Sulphur Recovery Units (SRUs) as detailed below and 4 (99.9 % recovery efficiency) out of 5 units are in operation:</p> <ul style="list-style-type: none"> <li>• 1 no. SRU: 99% efficiency ,1X115 MT/day capacity</li> <li>• 4 no. SRUs: 99.9% efficiency ,4X225 MT/day capacity</li> </ul>



SN	EC Conditions	Compliance Status
6.	<p>As per the commitment given, there should be zero effluent discharge due to the proposed expansion.</p> <p>The company should ensure that there will be no discharge of treated effluent into Thirana Drain and the treated effluent from the refinery is not discharged along with the treated effluent from PX-PTA plant.</p> <p>The entire treated waste water should be recycled for reuse in the plant operation and greenbelt development so as to maintain zero discharge. Further, the liquid effluent generated from the Refinery should be treated comprehensively to conform to the load based standards and concentration limits prescribed under Environment (Protection) Act, 1986 Rules.</p>	<p>There is no discharge of treated effluent from Refinery operation into Thirana drain.</p> <p>ETP-1 &amp; ETP-2 treated effluent meets Refinery MINAS. These treated effluents are re-used as a feed to RO plant and makeup to Cooling Towers.</p> <p>PTA-ETP treated effluent meeting Petrochemical MINAS is discharged into Thirana Drain as per Consent-To-Operate /approvals from MOEFCC, HSPCB &amp; Irrigation Department.</p>
7.	<p>The IOCL shall ensure installation of continuous flow measurement devices so that only the permitted quantity of treated effluent from PX-PTA plant (255 m<sup>3</sup>/hr.) is discharged. Further, IOCL shall make all efforts to recycle and reuse the treated effluent from PX-PTA plant after commencing of the unit.</p>	<p>Flow meters were installed at the time of setting up PTA-ETP. At no point of time discharge of treated effluent is exceeding the prescribed limit of 255 m<sup>3</sup>/hr.</p> <p>Process Licensor M/s INVISTA has confirmed that "Recycle and Reuse" of PTA treated effluent is not feasible.</p> <p>PX-PTA has permission for discharge of 255m<sup>3</sup>/hr treated effluent from PTA-ETP to Thirana drain.</p>
8.	<p>Additional water requirement shall not exceed 400 m<sup>3</sup>/hr. The total quantity of effluent generation should not exceed 1280 m<sup>3</sup>/hr. as indicated in the Environment Management Plan. The treated effluent should be reused/ recycled to achieve zero discharge.</p>	<p>The total allowable withdrawal of fresh water as per previous EC was 3058.21 m<sup>3</sup>/hr (as per EC of 6-12 MMTPA expansion).</p> <p>Adding the additional quantity of 400 m<sup>3</sup>/hr., the overall total allowable water quantity is 3458.21 m<sup>3</sup>/hr. Presently, fresh water consumption of the Refinery is well below the above mentioned limits.</p> <p>Total quantity of effluent generation remains &lt;1100 m<sup>3</sup>/hr.</p> <p>ETP-1 &amp; ETP-2 treated effluent meets MINAS. These treated effluents from Refinery operation are completely re-used as a feed to RO plant and as a makeup to Cooling Towers.</p> <p>PTA-ETP treated effluent meeting Petrochemical MINAS is discharged into Thirana Drain as per approvals/ Consent to Operate from MOEFCC, HSPCB, and Irrigation Department.</p>
9.	<p>Green belt of adequate width and density should be provided to mitigate the effects of fugitive emissions all around the plant. The bio-sludge from the ETP should be used as manure in the green belt development. Company shall develop greenbelt in consultation with DFO as per CPCB guidelines.</p>	<p>Greenbelts with adequate width &amp; density were already provided. These greenbelts were developed in consultation with the District Forest Deptt.</p> <p>Bio-sludge from ETP is being used as manure after converting it into semi solid form.</p>
10.	<p>The IOCL shall make efforts to sell petroleum coke (0.9 MMTPA) to organized industries having consent</p>	<p>The Refinery gives Pet-coke to a separate IOCL division called Marketing Division which sells the</p>

SN	EC Conditions	Compliance Status
	from the concerned State Pollution Control Board. Further, the Pet-coke from the Delayed Coker Unit should be conveyed to storage area by pipe conveyer system. The company should ensure to prevent seepage in Pet-coke stockpile / storage area to prevent soil and ground water pollution.	same to consented/registered industries.  Pet-coke is conveyed to storage area by pipe conveyer system.
11.	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 raw oily sludge generated from the Refinery is subjected to Oil recovery/Melting Pit treatment for recovery of oil. The recovered oil is recycled back with crude oil for processing. - The residual sludge is disposed-off through confined Bio-remediation. - Part of the sludge is processed in Coker unit.
12.	The company should adopt mounded storage for LPG. The project authorities shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP and risk analysis report.	The Mounded Bullets are in operation.
13.	Occupational Health Surveillance of the workers should done on a regular basis and records maintained as per the Factories Act.	The Refinery has a full-fledged Occupational Health Centre (OHC) in operation. The OHC carries out health surveillance of the workers on a regular basis and records are maintained.
<b>General conditions</b>		
1.	The project authorities must strictly adhere to the stipulations made by the Haryana State Pollution Control Board and the State Government.	<b>Complied</b>
2.	No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment & Forests.	<b>Noted.</b>
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.	<b>Being Complied.</b> Emission from the stack is being monitored online and from approved lab on bi-monthly basis. All stacks are connected online to CPCB/HSPCB server with parameters such as SO <sub>2</sub> , NO <sub>x</sub> , CO & PM.
4.	The overall noise levels in and around 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).	The Refinery has provided silencers on compressor discharge, acoustic leggings on turbo generators & ejectors and acoustic chambers at the burners.  The ambient noise level meets the standards.
5.	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the project.	<b>Complied.</b>
6.	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the	<b>Complied.</b>

SN	EC Conditions	Compliance Status
	Hazardous Waste (Management & Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collections / treatment / storage / disposal of hazardous waste.	
7.	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.	<b>Being Implemented.</b>
8.	The stipulated conditions will be monitored by the Regional of this Ministry at Chandigarh / Central Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly.	Six monthly compliance report on EC conditions is sent along with various monitoring reports as stated.
9.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board / Committee and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional Office.	<b>Complied.</b>
10.	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.	<b>Complied</b>

**ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEFCC FOR BS-VI FUEL QUALITY UP-GRADATION AND EXPANSION OF PX/PTA PLANT AT PANIPAT REFINERY & PETROCHEMICAL COMPLEX (PRPC), PANIPAT (HARYANA) BY M/SINDIAN OIL CORPORATION LIMITED - ENVIRONMENTAL CLEARANCE - REG.**

(Ref. No. J-11011/177/2016-IA- II (I) dated 26.03.2018)

Sl. No.	EC Conditions	Compliance 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 Operate for BS-VI facilities including Panipat Refinery & PX-PTA Petrochemical Complex has been received from HSPCB.
(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.	There is no discharge of treated effluent from Refinery operations into Thirana drain.  ETP-1 & ETP-2 treated effluent meets Refinery MINAS. These treated effluents are re-used as a feed to RO plant and makeup to Cooling Towers.  PTA-ETP treated effluent meeting Petrochemical MINAS is discharged into Thirana Drain as per Consent-To-Operate/approvals from MOEFCC, HSPCB & Irrigation Department.
(iii)	In case of PX/PTA expansion project, there shall not be any increase in effluent discharge and the treated effluent of 255 cum/hr shall continue to be discharged to the existing Thirana Drain.	There will be no increase in treated effluent discharge into Thirana Drain post PX-PTA capacity expansion project.
(iv)	Necessary authorization required under the Hazardous and Other Wastes Management Rules, 2016 shall be obtained and the previous contained in the Rules shall be strictly adhered to.	Authorization under Hazardous and Other Wastes Management Rules, 2016 received from HSPCB on 16.06.2020 which is valid upto 30.09.2024.
(v)	Total SO <sub>2</sub> emissions from the Refinery (including BS-VI Upgradation project) shall not exceed 1100 kg/hr whereas, for the PX/PTA plant after expansion, total SO <sub>2</sub> emissions shall not exceed 375 kg/hr. Accordingly, total SO <sub>2</sub> emissions from the Refinery Complex shall be limited to 1475 hg/hr.	SO <sub>2</sub> emissions from the Refinery (including BS-VI Up gradation project) is within 1100 kg/hr. SO <sub>2</sub> emissions from the PX-PTA petrochemical project is well within 275 Kg/hr. PX-PTA expansion project is under implementation. Post commissioning, SO <sub>2</sub> emission will be maintained below 375 Kg/hr.
(vi)	National Emission Standards for Organic Chemicals Manufacturing Industry issued by the Ministry vide G.S.R. 608(E) dated 21 <sup>st</sup> July, 2010 and amended from time to time shall be followed.	<b>Being complied.</b>
(vii)	To control source and the fugitive emissions, suitable pollution control devices shall be installed with different stacks (attached to DHD, HGU, Prime G) to meet the prescribed norms and /or the NAAQS. The gaseous emissions shall be dispersed through stacks of adequate height as per CPCB / SPCB guidelines.	For BS-VI fuel quality up gradation project being complied. Post commissioning of the PX-PTA capacity expansion project, same shall be ensured.
(viii)	Total fresh water requirement shall not exceed 354 m <sup>3</sup> /hr (8500 KLD) to be met from Munak Regulator. Necessary permission in this regard shall be obtained from the concerned regulatory authority.	<b>Complied</b>
(ix)	Process effluent/any waste water shall not be allowed to mix with storm water. Storm water drain shall be passed	<b>Being complied</b>

Sl. No.	EC Conditions	Compliance Status
	through guard pond.	
(x)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm, and solvent transfer to be done through pumps.	<b>Complied</b>
(xi)	Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF. The ash from boiler shall be sold to brick manufacturers/cement industry.	<b>Complied.</b>  Being mixed fuel (Liquid +Gas) firing in the Boiler, there will be no ash generation.
(xii)	The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	<b>Being complied</b>
(xiii)	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 to workers to fly ash & dust should be avoided.	<b>Not Applicable</b>
(xiv)	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 material 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.	<b>Complied</b>
(xv)	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	<b>Complied</b>
(xvi)	At least 2.5% of the total project cost shall be allocated for Enterprise Social Commitment and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	<b>Complied</b>
(xvii)	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.	<b>Complied</b>
(xviii)	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.	<b>Complied</b>
(xix)	Continuous online (24X7) monitoring system for stack emission 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	<b>Stack analyzers are installed and connected to CPCB/HSPCB server.</b>  <b>Complied</b>

Sl. No.	EC Conditions	Compliance Status
	meters in the channel/drain carrying effluent within the premises. In case of the treated effluent to be utilized for irrigation/gardening, real time monitoring system shall be installed at the ETP outlet.	
(xx)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	<b>Being complied</b>
<b>General Conditions</b>		
(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.	<b>Complied</b>
(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 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.	<b>Noted</b>
(iii)	The locations of ambient air quality monitoring stations shall be decided in consultation with 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.	<b>Complied</b> 2 nos. of additional CAAQMS under BS-VI fuel quality up-gradation project is installed in addition to existing 7 nos. of CAAQMS.
(iv)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826 (E) dated 16 <sup>th</sup> November, 2009 shall be followed.	<b>Complied</b>
(v)	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environmental (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	<b>Complied</b>
(vi)	The Company shall harvest rainwater from the roof tops of the building and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.	<b>Complied</b>
(vii)	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	<b>Being complied</b>
(viii)	The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management and risk mitigation measures relating to the project shall be implemented.	<b>Shall be complied</b>
(ix)	The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. ESC activities shall be undertaken by involving local	<b>Complied</b>

Sl. No.	EC Conditions	Compliance Status
	villages and administration.	
(x)	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.	<b>Complied</b>
(xi)	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.	<b>Being implemented</b>
(xii)	A copy of the clearance letter shall be sent by the project 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.	<b>Complied</b>
(xiii)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website to the company.	<b>Six monthly EC compliance report is submitted as stated. It is also posted on the website of the company.</b>
(xiv)	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	<b>This is being complied and will continue to do so in future.</b>
(xv)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <a href="http://moef.nic.in">http://moef.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	<b>Complied and informed</b>
(xvi)	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	<b>Complied</b>

**ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEFCC FOR INSTALLATION OF 100 KLPD LIGNO-CELLULOSIC 2G ETHANOL PLANT AT BAHOLI, BLOCK MADLAUDA, PANIPAT REFINERY ROAD, DISTRICT PANIPAT (HARYANA) BY M/S INDIAN OIL CORPORATION LIMITED - ENVIRONMENTAL CLEARANCE - REG.**

**(Ref. No. IA-J-11011/43/2018-IA- II (I) dated 13.11.2019)**

SN	EC Conditions	Compliance Status
<b>General Conditions</b>		
1.	The project authorities must strictly adhere to the stipulations made by State Pollution Control Board (SPCB), State Govt. and/or any other statutory authority.	Shall be adhered
2.	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 should be made to the ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted & Shall be adhered
3.	The location of Ambient Air Quality Monitoring Stations shall be decided in consultation with the State Pollution Control Board and it shall be ensured that at least one stations each is installed in upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Will be complied.
4.	The Nation Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R No. 826 (E) dated 16 <sup>th</sup> November, 2009 shall be complied with.	Shall be complied
5.	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 source of noise generation. The ambient noise levels shall confirm to the standards prescribed under the Environment (Protection) Act, 1986 and the rules made there under.	Will be complied.
6.	The company shall harvest rain water from the rooftops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial operations inside the plant.	Will be complied.
7.	Training shall be imparted to all employees on safety and health aspects of chemical handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Will be complied
8.	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the ministry. All the recommendations made in the EIA/EMP in respect of environmental management risk mitigation measures and public hearing shall be implemented.	Will be complied.
9.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-development shall be undertaken for overall improvement of the environment.	Will be complied
10.	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Will be complied
11.	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forests 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 implemented



12.	A copy of the clearance letter shall be sent by the project proponent to the concerned Panchayat, Zila Parishad/Municipal corporation, urban local body and local NGO, if any, from whom suggestion/representation, if any, were received while processing the proposal.	Complied
13.	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 copy 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.	Complied
14.	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Environmental Clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	Will be complied
15.	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <a href="http://moef.nic.in">http://moef.nic.in</a> . This shall be advertised within seven days from the date of issue of 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 of the Ministry.	Complied
<b>Specific Conditions</b>		
1.	The project proponent shall install 10 TPD 2G Ethanol demo plant for R&D purpose.	Will be complied.
2.	Prior approval shall be obtained from the Petroleum & Explosive Safety Organization (PESO) for the site and layout plan submitted to this ministry along with the proposal for EC. In case of any changes therein post PESO approval, the proposal shall require fresh appraisal by the sectoral EAC.	Will be complied.
3.	Necessary permission as mandated under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 as applicable from time to time shall be obtained from the State Pollution Control Board as required.	<b>CTE dated 10.1.2020 received</b>
4.	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste / treated water shall be discharged outside the premises.	Will be complied.
5.	Sludge management plan shall be formulated and ensured.	Will be complied.
6.	Ash management shall be ensured by utilizing for manufacturing bricks.	Will be complied.
7.	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.	Will be complied.
8.	To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.	Will be complied.
9.	Total fresh water requirement shall not exceed 109 m <sup>3</sup> /hr., proposed to be met from Munak Regulator on Western Yamuna Canal. Prior permission shall be obtained from the concerned regulatory authority.	Will be complied.
10.	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arrester shall be provided on tank farm and the solvent transfer through pumps.	Will be complied.

11.	Process organic residue and spent carbon, if any shall be sent to cement industries. ETP sludge, process inorganic and evaporation salt shall be disposed off to the TSDF.	Will be complied.
12.	The company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as mentioned time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicles Act, 1989.	Will be complied.
13.	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 materials substitutes in other processes. (c) Use of automatic filling to avoid spillage. (d) Use of Close Feed System into batch reactors. (e) Venting equipment through vapor recovery system (f) Use of high pressure hoses for equipment clearing to reduce waste water generation.	Project under construction.
14.	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be done as per the CPCB guidelines in consultation with the State Forest Department.	Will be complied.
15.	All the commitments made regarding issues raised during the public hearing / consultation meeting shall be satisfactorily implemented.	Will be complied.
16.	At least 1% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and item wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	Will be complied.
17.	For the DG sets, emission limits and stack height shall be in conformity with the extant regulations and the CPCB regulations. Acoustic enclosures shall be provided to the DG set for controlling the noise pollution.	Will be complied.
18.	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.	Will be ensured after project commissioning of the plant.
19.	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Will be complied
20.	There shall be adequate space inside the plant premises earmarked for parking of vehicles for raw materials and finished products, and no parking to be allowed outside on public places.	Will be ensured after project commissioning of the plant.
21.	Storage of raw material shall be either stored in silos or in covered areas to prevent dust pollution and other fugitive emissions.	Will be ensured after project commissioning of the plant.
22.	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.	Will be ensured

**ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEFCC FOR SETTING UP 128 KL PER DAY ETHANOL PRODUCTION PLANT BY M/S INDIAN OIL CORPORATION LTD. (IOCL) IN PANIPAT REFINERY & PETROCHEMICAL COMPLEX AT PANIPAT, HARYANA - ENVIRONMENTAL CLEARANCE – REGARDING**  
**(Ref. No. J-11011/78/2018-IA- II (I) dated 25.11.2019)**

SN	EC Conditions	Compliance Status
<b>General Conditions</b>		
1.	The project authorities must strictly adhere to the stipulations made by State Pollution Control Board (SPCB), State Govt. and/or any other statutory authority.	Shall be adhered.
2.	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 should be made to the ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Shall be adhered.
3.	The location of Ambient Air Quality Monitoring Stations shall be decided in consultation with the State Pollution Control Board and it shall be ensured that at least one stations each is installed in upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Will be complied
4.	The Nation Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R No. 826 (E) dated 16 <sup>th</sup> November, 2009 shall be complied with.	Will be complied
5.	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 source of noise generation. The ambient noise levels shall confirm to the standards prescribed under the Environment (Protection) Act, 1986 and the rules made there under.	Will be complied
6.	The company shall harvest rain water from the rooftops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial operations inside the plant.	Will be complied
7.	Training shall be imparted to all employees on safety and health aspects of chemical handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Will be complied
8.	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the ministry. All the recommendations made in the EIA/EMP in respect of environmental management risk mitigation measures and public hearing shall be implemented.	Will be Complied
9.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-developmental shall be undertaken for overall improvement of the environment.	Will be Complied
10.	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Will be Complied
11.	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forests 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	Will be Complied

	purpose.	
12.	A copy of the clearance letter shall be sent by the project proponent to the concerned Panchayat, Zila Parishad/Municipal corporation, urban local body and local NGO, if any, from whom suggestion/representation, if any, were received while processing the proposal.	<b>Complied</b>
13.	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 copy 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.	<b>Will be Complied</b>
14.	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Environmental Clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	<b>Will be Complied</b>
15.	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <a href="http://moef.nic.in">http://moef.nic.in</a> . This shall be advertised within seven days from the date of issue of 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 of the Ministry.	<b>Complied</b>
<b>Specific Conditions</b>		
1.	Necessary permission as mandated under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 as applicable from time to time shall be obtained from the State Pollution Control Board as required.	<b>Complied</b>
2.	Effluent of 209 cum per day shall be treated in existing Effluent Treatment Plant of Panipat Refinery and Panipat Refinery will not exceed the permissible discharge as allowed to Panipat Refinery while granting environmental clearance vide letter dated 26 <sup>th</sup> March 2018.	<b>Will be ensured</b>
3.	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.	<b>Will be complied</b>
4.	To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.	Will be complied
5.	Odour shall be prevented at the source and effective odour management scheme shall be implemented.	Will be complied
6.	Total fresh water requirement shall not exceed 3600 cum/day, proposed to be met from Munak Regulator on Western Yamuna Canal. Prior permission shall be obtained from the concerned regulatory authority.	Will be ensured
7.	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arrester shall be provided on tank farm and the solvent transfer through pumps.	Will be complied
8.	Process organic residue and spent carbon, if any shall be sent to cement industries. ETP sludge, process inorganic and evaporation salt shall be disposed off to the TSDF.	Will be complied
9.	The company shall strictly comply with the rules and guidelines under	Continuous, Will be

	Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as mentioned time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicles Act, 1989.	complied
10.	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 materials substitutes in other processes. (c) Use of automatic filling to avoid spillage. (d) Use of Close Feed System into batch reactors. (e) Venting equipment through vapor recovery system (f) Use of high pressure hoses for equipment clearing to reduce waste water generation.	Project under construction
11.	The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. Selection of plant species shall be done as per the CPCB guidelines in consultation with the State Forest Department.	Will be complied
12.	All the commitments made regarding issues raised during the public hearing / consultation meeting shall be satisfactorily implemented.	Will be complied
13.	At least 1% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and item wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office. Priority shall be given for construction/repair of the village roads.	Will be complied
14.	For the DG sets, emission limits and stack height shall be in conformity with the extant regulations and the CPCB regulations. Acoustic enclosures shall be provided to the DG set for controlling the noise pollution.	Will be complied
15.	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.	Will be ensured after commissioning of the plant
16.	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Will be complied
17.	There shall be adequate space inside the plant premises earmarked for parking of vehicles for raw materials and finished products, and no parking to be allowed outside on public places.	Will be ensured after commissioning of the plant
18.	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.	Will be complied
19.	The unit shall comply with NGT order and shall not damage environment any further including ground water.	Will be complied
20.	The unit shall take precautionary measures for control of VOCs and shall follow CPCB guideline and norms.	Will be complied

**ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEFCC FOR PANIPAT REFINERY CAPACITY EXPANSION FROM EXISTING 15 MMTPA TO 25 MMTPA WITHIN THE EXISTING REFINERY COMPLEX, ENVIRONMENTAL CLEARANCE – REGARDING**

**(EC Identification No. EC21A010HR142882; File No. J-11011/177/2016-IAII(I) dated 03.12.2021)**

SN	EC Conditions	Compliance Status
<b>Specific Conditions</b>		
(i).	The project shall conform to ZLD.	<b>Noted</b>
(ii).	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	<b>Will be complied</b>
(iii).	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.	<b>Noted</b>
(iv).	Volatile organic compounds (VOCs)/Fugitive emissions shall be 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.	<b>Will be complied</b>
(v).	Total water requirement is 1,62,864 m3/day of which fresh water requirement of 98880 m3/day will be met from Western Yamuna Canal. Necessary permission in this regard shall be obtained from the concerned regulatory authority.	<b>Will be complied</b>
(vi).	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.	<b>Will be complied</b>
(vii).	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.	<b>Will be complied</b>
(viii).	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.	<b>Will be complied</b>
(ix).	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. The ash from boiler shall be sold to brick manufacturers/cement industry.	Mixed fuel (Liquid +Gas) will be fired in the Boiler; there will be no ash generation.
(x).	The company shall undertake waste minimization measures as below: - <ul style="list-style-type: none"> <li>a. Metering and control of quantities of active ingredients to minimize waste.</li> <li>b. Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.</li> <li>c. Use of automated filling to minimize spillage.</li> <li>d. Use of Close Feed system into batch reactors.</li> <li>e. Venting equipment through vapour recovery system.</li> <li>f. Use of high pressure hoses for equipment clearing to reduce wastewater generation.</li> </ul>	<b>Will be complied</b>

(xi).	The green belt of 5-10 m width shall be developed in the total project area, mainly along the plant periphery, in downward wind direction, and along road sides etc. The project proponent shall ensure 33% greenbelt area vis-à-vis the project area through afforestation in the degraded area. The Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.	<b>Will be complied</b>
(xii).	As per the Ministry's OM dated 30.09.2020 superseding the OM dated 01.05.2018 regarding the Corporate Environmental Responsibility, and as per the action plan proposed by the project proponent to address the socioeconomic and environmental issues in the study area, the project proponent, as committed, shall provide education funds in technical training centers/ support in nearby village's schools, support in health care facilities, drinking water supply and funds for miscellaneous activities like solar street lights, battery, solar panel etc., in the nearby villages. The action plan shall to be completed within time as proposed.	<b>Will be complied</b>
(xiii).	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.	<b>Complied</b>
(xiv).	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.	<b>Will be complied</b>
(xv).	Continuous online (24x7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration, and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises. In case of the treated effluent to be utilized for irrigation/gardening, real time monitoring system shall be installed at the ETP outlet.	<b>Will be complied</b>
(xvi).	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	<b>Will be complied</b>
(xvii).	Process safety and risk assessment studies shall be further carried out using advanced models, and the mitigating measures shall be undertaken/implemented accordingly.	<b>Will be complied</b>
(xviii).	The PP should improve the efficiency of ETP Plant and the water discharge should be as per prescribed CPCB Norms. They should also install 24x7 hours monitoring system (of the discharge) and the same should be connected to the server of SCPB/CPCB.	<b>Noted and complied</b>
<b>General Conditions</b>		
(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.	<b>Noted</b>
(ii).	The energy source for lighting purpose shall be preferably LED based, or advanced having preference in energy conservation and environment betterment.	<b>Will be complied</b>
(iii).	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of	<b>Will be complied</b>

	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).	
(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.	<b>Will be complied</b>
(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.	<b>Will be complied</b>
(vi).	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal.	<b>Complied</b>
(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 email) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.	<b>This is being complied for existing refinery and will continue to do so in future</b>
(viii).	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	<b>This is being complied for existing refinery and will continue to do so in future</b>
(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 <a href="https://parivesh.nic.in/">https://parivesh.nic.in/</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	<b>Complied and informed</b>
(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.	<b>Will be complied</b>
(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.	<b>Noted</b>



**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC 636621000002575, 2604, 2668, 2720, 2768, 2831, 2848, 2889  
Test Report Date: 03/01/2022

**Sample Particulars**

Nature of the Sample : **Ambient Air Quality Monitoring**  
Sampling Location : Roof of Administration Building Annexe  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS 5182 (Part 14)  
Monitoring Conducted By : Mr. Rishi Pal  
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m3	Particulate Matter (PM10) µg/m3	Sulphur Dioxide (as SO2) µg/m3	Nitrogen Dioxide (as NO2) µg/m3	Ozone (as O3) ug/m3	Lead (as Pb <sup>2+</sup> ) µg/m3	Carbon Monoxide (as CO) mg/m3	Ammonia (as NH3) ug/m3	Nickel (as Ni <sup>2+</sup> ) ng/m <sup>3</sup>	Arsenic (as As <sup>3+</sup> ) ng/m3	Benzo (a) pyrene (as BAP <sup>4+</sup> ) ng/m <sup>3</sup>	Benzen e (C6H6 <sup>5</sup> ) ug/m3
03/12/2021	36.4	80.1	12.9	25.8	20.5	BDL	1.04	40.8	BDL	BDL	BDL	BDL
07/12/2021	46.2	88.9	21.4	30.2	26.2	BDL	1.02	46.1	BDL	BDL	BDL	BDL
10/12/2021	36.1	86.3	20.1	24.8	23.3	BDL	0.95	41.4	BDL	BDL	BDL	BDL
14/12/2021	44.8	89.2	22.4	26.2	21.8	BDL	0.96	44.2	BDL	BDL	BDL	BDL
17/12/2021	47.3	90.8	21.8	30.9	18.4	BDL	1.05	42.1	BDL	BDL	BDL	BDL
21/12/2021	38.2	85.7	23.5	34.7	26.4	BDL	1.0	48.4	BDL	BDL	BDL	BDL
23/12/2021	40.8	81.2	19.5	27.2	21.7	BDL	1.1	52.7	BDL	BDL	BDL	BDL
27/12/2021	41.4	90.8	24.4	33.3	24.9	BDL	1.2	49.8	BDL	BDL	BDL	BDL
Minimum	36.1	80.1	12.9	24.8	18.4	-	0.95	40.8	-	-	-	-
Maximum	47.3	90.8	24.4	34.7	26.4	-	1.2	52.7	-	-	-	-
Average	41.4	86.6	20.7	29.1	22.9	-	1.04	45.6	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 53 CPCB Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ -13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 16.11.20  
BDL-Below Detection Limit, <sup>3</sup>Arsenic-BDL [LOQ- 0.5], <sup>4</sup>BAP-BDL [LOQ- 0.5], <sup>5</sup>Benzene-BDL [LOQ- 0.5]  
Sample Analysed within Seven days from the date of sampling.



(AUTHORISED SIGNATORY)  
(RAVINDER MITTAL)

TC-6366

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC63662200000009, 030, 059, 099,127, 188, 292, 326  
Test Report Date: 05/02/2022

**Sample Particulars**

Nature of the Sample : **Ambient Air Quality Monitoring**  
Sampling Location : Roof of Administration Building Annexe  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS 5182 (Part 14)  
Monitoring Conducted By : Mr. Rishi Pal  
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m3	Particulate Matter (PM10) µg/m3	Sulphur Dioxide (as SO2) µg/m3	Nitrogen Dioxide (as NO2) µg/m3	Ozone (as O3) µg/m3	Lead (as Pb <sup>2+</sup> ) µg/m3	Carbon Monoxide (as CO) mg/m3	Ammonia (as NH3) µg/m3	Nickel (as Ni <sup>2+</sup> ) ng/m <sup>3</sup>	Arsenic (as As <sup>3+</sup> ) ng/m <sup>3</sup>	Benzo(a)pyrene (as BAP <sup>1</sup> ) ng/m <sup>3</sup>	Benzen e (C6H6 <sup>5</sup> ) ug/m3
03/01/2022	34.68	82.42	14.24	22.82	25.64	BDL	1.07	45.26	BDL	BDL	BDL	BDL
07/01/2022	42.82	86.48	18.62	32.84	28.42	BDL	1.03	42.84	BDL	BDL	BDL	BDL
10/01/2022	32.64	80.68	22.42	30.42	22.84	BDL	0.94	48.24	BDL	BDL	BDL	BDL
14/01/2022	40.24	84.22	20.24	34.92	26.86	BDL	0.91	40.81	BDL	BDL	BDL	BDL
17/01/2022	44.88	92.64	24.62	38.16	20.48	BDL	1.12	44.86	BDL	BDL	BDL	BDL
21/01/2022	36.52	82.11	26.22	36.44	23.62	BDL	1.06	46.58	BDL	BDL	BDL	BDL
24/01/2022	38.44	80.16	21.48	28.82	21.52	BDL	1.12	50.14	BDL	BDL	BDL	BDL
28/01/2022	43.62	88.68	23.88	31.24	24.82	BDL	1.21	47.22	BDL	BDL	BDL	BDL
Minimum	32.64	80.16	14.24	22.82	20.48	-	0.91	40.81	-	-	-	-
Maximum	44.88	92.64	26.22	38.16	28.42	-	1.21	50.14	-	-	-	-
Average	39.23	84.67	21.47	31.96	24.28	-	1.06	45.74	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 53 CPCB Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part II, Schedule I, Table I, 1.2009]  
BDL-Below Detection Limit, <sup>1</sup>Arsenic-BDL [LOQ- 0.5], <sup>2</sup>BAP-BDL [LOQ- 0.5], <sup>3</sup>Benzo(a)pyrene-BDL [LOQ- 0.5], <sup>4</sup>Lead-BDL [LOQ- 0.5], <sup>5</sup>Nickel-BDL [LOQ- 1.0]  
Sample Analysed within Seven days from the date of sampling.



(AUTHORISED SIGNATORY)  
(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC63662200000388, 405, 417, 433, 515, 546, 581, 634  
Test Report Date: 05/03/2022

**Sample Particulars**

Nature of the Sample : **Ambient Air Quality Monitoring**  
Sampling Location : Roof of Administration Building Annexe  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS 5182 (Part 14)  
Monitoring Conducted By : Mr. Rishi Pal  
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m <sup>3</sup>	Particulate Matter (PM10) µg/m <sup>3</sup>	Sulphur Dioxide (as SO <sub>2</sub> ) µg/m <sup>3</sup>	Nitrogen Dioxide (as NO <sub>2</sub> ) µg/m <sup>3</sup>	Ozone (as O <sub>3</sub> ) µg/m <sup>3</sup>	Lead (as Pb <sup>2+</sup> ) µg/m <sup>3</sup>	Carbon Monoxide (as CO) mg/m <sup>3</sup>	Ammonia (as NH <sub>3</sub> ) µg/m <sup>3</sup>	Nickel (as Ni <sup>2+</sup> ) ng/m <sup>3</sup>	Arsenic (as As <sup>3+</sup> ) ng/m <sup>3</sup>	Benzo (a) pyrene (as BAP <sup>4</sup> ) ng/m <sup>3</sup>	Benzen e (C <sub>6</sub> H <sub>6</sub> <sup>5</sup> ) µg/m <sup>3</sup>
01/02/2022	36.64	86.41	16.22	28.91	20.82	BDL	1.05	42.72	BDL	BDL	BDL	BDL
04/02/2022	40.85	90.82	20.46	33.62	22.69	BDL	1.15	44.28	BDL	BDL	BDL	BDL
08/02/2022	34.24	82.26	17.22	27.33	24.62	BDL	1.06	43.95	BDL	BDL	BDL	BDL
11/02/2022	42.85	88.45	22.69	31.24	21.95	BDL	0.95	41.52	BDL	BDL	BDL	BDL
15/02/2022	38.95	84.22	26.52	34.68	23.77	BDL	1.04	38.46	BDL	BDL	BDL	BDL
18/02/2022	40.66	80.94	24.52	30.94	25.22	BDL	1.02	40.22	BDL	BDL	BDL	BDL
21/02/2022	34.99	78.42	20.66	25.26	20.78	BDL	1.16	46.46	BDL	BDL	BDL	BDL
25/02/2022	41.84	83.46	25.68	32.84	24.61	BDL	1.14	44.11	BDL	BDL	BDL	BDL
<b>Minimum</b>	<b>34.24</b>	<b>78.42</b>	<b>16.22</b>	<b>25.26</b>	<b>20.78</b>	-	<b>0.95</b>	<b>38.46</b>	-	-	-	-
<b>Maximum</b>	<b>42.85</b>	<b>90.82</b>	<b>26.52</b>	<b>34.68</b>	<b>25.22</b>	-	<b>1.16</b>	<b>46.46</b>	-	-	-	-
<b>Average</b>	<b>38.88</b>	<b>84.37</b>	<b>21.75</b>	<b>30.60</b>	<b>23.06</b>	-	<b>1.07</b>	<b>42.72</b>	-	-	-	-
<b>NAAQM Standards</b>	<b>60</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>100</b>	<b>1</b>	<b>2</b>	<b>400</b>	<b>20</b>	<b>6</b>	<b>1</b>	<b>5</b>
<b>Test Method</b>	<b>40CFR Appendix L Part 53 CPCB Guidelines</b>	<b>IS:5182 (P-23)</b>	<b>IS:5182 (P-2)</b>	<b>IS:5182 (P-6)</b>	<b>IS:5182 (P-9)</b>	<b>NL/SO P/AAQ-11</b>	<b>IS:5182 (P-10)</b>	<b>Method of Air Sampling &amp; Analysis</b>	<b>NL/SO P/AAQ -13</b>	<b>NL/SOP /AAQ-12</b>	<b>IS:5182 (P-12)</b>	<b>IS:5182 (P-11)</b>

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part II, sub-section (1)] 16.11.2009  
BDL-Below Detection Limit, <sup>3</sup>Arsenic-BDL [LOQ- 0.5], <sup>4</sup>BAP-BDL [LOQ- 0.5], <sup>5</sup>Benzen e-BDL [LOQ- 0.5], <sup>6</sup>Lead-BDL [LOQ- 0.5], <sup>2</sup>Nickel-BDL [LOQ- 1.0]  
Sample Analysed within Seven days from the date of sampling.



(AUTHORISED SIGNATORY)  
(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203030113, 202203070114, 202203110118, 202203140114  
202203180110, 202203210114, 202203250126, 202203280110  
Test Report Date: 04/04/2022

**Sample Particulars**

Nature of the Sample : **Ambient Air Quality Monitoring**  
Sampling Location : Roof of Administration Building Annexe  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS 5182 (Part 14)  
Monitoring Conducted By : Mr. Rishi Pal  
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m3	Particulate Matter (PM10) µg/m3	Sulphur Dioxide (as SO2) µg/m3	Nitrogen Dioxide (as NO2) µg/m3	Ozone (as O3) µg/m3	Lead (as Pb <sup>2+</sup> ) µg/m3	Carbon Monoxide (as CO) mg/m3	Ammonia (as NH3) µg/m3	Nickel (as Ni <sup>2+</sup> ) ng/m <sup>3</sup>	Arsenic (as As <sup>3+</sup> ) ng/m3	Benzo (a) pyrene (as BAP <sup>4</sup> ) ng/m <sup>3</sup>	Benzen e (C6H6 <sup>5</sup> ) µg/m3
03/03/2022	34.16	90.14	20.14	26.24	20.28	ND	1.14	36.82	ND	ND	ND	ND
07/03/2022	38.14	94.16	22.64	30.28	18.67	ND	1.12	40.16	ND	ND	ND	ND
11/03/2022	32.16	86.24	18.22	25.42	22.66	ND	1.08	38.22	ND	ND	ND	ND
14/03/2022	40.24	92.64	24.42	32.82	23.18	ND	0.98	42.28	ND	ND	ND	ND
18/03/2022	36.16	88.22	21.68	28.42	20.72	ND	1.01	34.66	ND	ND	ND	ND
21/03/2022	30.82	84.64	26.52	34.68	21.28	ND	1.05	46.12	ND	ND	ND	ND
25/03/2022	32.44	80.14	19.58	26.82	23.82	ND	1.12	44.82	ND	ND	ND	ND
28/03/2022	38.64	91.24	23.16	28.88	22.42	ND	1.13	42.72	ND	ND	ND	ND
<b>Minimum</b>	<b>30.82</b>	<b>80.14</b>	<b>18.22</b>	<b>25.42</b>	<b>20.28</b>	-	<b>0.98</b>	<b>34.66</b>	-	-	-	-
<b>Maximum</b>	<b>40.24</b>	<b>94.16</b>	<b>26.52</b>	<b>34.68</b>	<b>23.82</b>	-	<b>1.14</b>	<b>46.12</b>	-	-	-	-
<b>Average</b>	<b>35.35</b>	<b>88.43</b>	<b>22.05</b>	<b>29.20</b>	<b>21.63</b>	-	<b>1.08</b>	<b>40.73</b>	-	-	-	-
<b>NAAQM Standards</b>	<b>60</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>100</b>	<b>1</b>	<b>2</b>	<b>400</b>	<b>20</b>	<b>6</b>	<b>1</b>	<b>5</b>
<b>Test Method</b>	40CFR Appendix L Part 53 CPCB Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec-3(i)] 16.11.2009  
ND-Not Detected, <sup>1</sup>Arsenic-ND [DL- 0.5],<sup>2</sup>BAP-ND [DL- 0.5], <sup>3</sup>Benzene-ND [DL- 0.5], <sup>4</sup>Lead-ND [DL- 0.5],<sup>5</sup>Nickel-ND [DL- 1.0]  
Sample Analysed within Seven days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202204010110, 202204040111, 202204008110, 202204110114  
202204150114, 202204180113, 202204020114, 202204220122  
202204290114  
**Test Report Date:** 07/05/2022

**Sample Particulars**

**Nature of the Sample** : Ambient Air Quality Monitoring  
**Sampling Location** : Roof of Administration Building Annexe  
**Purpose of Monitoring** : To Check the Pollution Load  
**Method of Sampling** : IS 5182 (Part 14)  
**Monitoring Conducted By** : Mr. Rishi Pal  
**Sampling Duration (Hrs.)** : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m3	Particulate Matter (PM10) µg/m3	Sulphur Dioxide (as SO2) µg/m3	Nitrogen Dioxide (as NO2) µg/m3	Ozone (as O3) µg/m3	Lead (as Pb <sup>4</sup> ) µg/m3	Carbon Monoxide (as CO) mg/m3	Ammonia (as NH3) µg/m3	Nickel (as Ni <sup>2</sup> ) ng/m3	Arsenic (as As <sup>3</sup> ) ng/m3	Benzo (a) pyrene (as BAP <sup>4</sup> ) ng/m3	Benzen e (C6H6 <sup>5</sup> ) µg/m3
01/04/2022	38.26	92.41	18.26	24.62	22.68	ND	1.13	34.28	ND	ND	ND	ND
04/04/2022	34.51	88.42	23.28	35.41	20.47	ND	1.15	38.42	ND	ND	ND	ND
08/04/2022	36.12	80.14	20.44	26.14	23.82	ND	1.06	36.42	ND	ND	ND	ND
11/04/2022	42.42	90.84	26.24	32.42	18.26	ND	0.94	44.82	ND	ND	ND	ND
15/04/2022	38.44	84.48	22.58	34.28	21.22	ND	1.04	38.22	ND	ND	ND	ND
18/04/2022	36.24	88.22	20.22	30.55	24.86	ND	1.06	46.24	ND	ND	ND	ND
22/04/2022	40.82	92.14	23.46	32.24	21.88	ND	1.08	40.48	ND	ND	ND	ND
25/04/2022	37.18	90.44	17.88	26.48	23.22	ND	1.12	46.55	ND	ND	ND	ND
<b>Minimum</b>	<b>34.51</b>	<b>80.14</b>	<b>17.88</b>	<b>24.62</b>	<b>18.26</b>	-	<b>0.94</b>	<b>34.28</b>	-	-	-	-
<b>Maximum</b>	<b>42.42</b>	<b>92.41</b>	<b>26.24</b>	<b>35.41</b>	<b>24.86</b>	-	<b>1.15</b>	<b>46.55</b>	-	-	-	-
<b>Average</b>	<b>38.00</b>	<b>88.39</b>	<b>21.55</b>	<b>30.27</b>	<b>22.05</b>	-	<b>1.07</b>	<b>40.68</b>	-	-	-	-
<b>NAAQM Standards</b>	<b>60</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>100</b>	<b>1</b>	<b>2</b>	<b>400</b>	<b>20</b>	<b>6</b>	<b>1</b>	<b>5</b>
<b>Test Method</b>	40CFR Appendix L Part 53 CPCB Guideline s	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ -13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 16.11.2009  
ND-Not Detected, <sup>1</sup>Arsenic-ND [DL- 0.5],<sup>2</sup>BAP-ND [DL- 0.5], <sup>3</sup>Benzene-ND [DL- 0.5], <sup>4</sup>Lead-ND [DL- 0.5],<sup>5</sup>Nickel-ND [DL- 1.0]  
Sample Analysed within Seven days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205010120, 202206010117, 202205090125, 202205130120  
202205160114, 202205200121, 202205230117, 202205270114  
202205300114  
Test Report Date: 07/06/2022

**Sample Particulars**

Nature of the Sample  
Sampling Location  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By  
Sampling Duration (Hrs.)

: **Ambient Air Quality Monitoring**  
: Roof of Administration Building Annexe  
: To Check the Pollution Load  
: IS 5182 (Part 14)  
: Mr. Rishi Pal  
: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m <sup>3</sup>	Particulate Matter (PM10) µg/m <sup>3</sup>	Sulphur Dioxide (as SO <sub>2</sub> ) µg/m <sup>3</sup>	Nitrogen Dioxide (as NO <sub>2</sub> ) µg/m <sup>3</sup>	Ozone (as O <sub>3</sub> ) µg/m <sup>3</sup>	Lead (as Pb <sup>2+</sup> ) µg/m <sup>3</sup>	Carbon Monoxide (as CO) mg/m <sup>3</sup>	Ammonia (as NH <sub>3</sub> ) µg/m <sup>3</sup>	Nickel (as Ni <sup>2+</sup> ) ng/m <sup>3</sup>	Arsenic (as As <sup>3+</sup> ) ng/m <sup>3</sup>	Benzo(a)pyrene (as BAP <sup>4</sup> ) ng/m <sup>3</sup>	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>
02/05/2022	34.26	96.46	22.40	28.26	20.26	ND	1.08	36.24	ND	ND	ND	ND
06/05/2022	36.24	90.82	20.28	30.84	24.20	ND	1.12	34.10	ND	ND	ND	ND
09/05/2022	32.82	86.44	24.62	32.40	22.88	ND	1.08	32.68	ND	ND	ND	ND
13/05/2022	40.46	94.26	22.10	36.24	19.82	ND	1.02	40.48	ND	ND	ND	ND
16/05/2022	34.26	82.42	20.84	30.66	20.64	ND	0.94	36.24	ND	ND	ND	ND
20/05/2022	30.84	84.60	18.94	32.42	22.18	ND	1.12	33.80	ND	ND	ND	ND
23/05/2022	38.24	96.48	22.46	34.16	21.86	ND	1.04	37.82	ND	ND	ND	ND
27/05/2022	34.16	98.42	20.88	32.24	26.44	ND	1.06	42.84	ND	ND	ND	ND
30/05/2022	35.48	94.38	21.29	30.53	24.36	ND	1.04	40.16	ND	ND	ND	ND
<b>Minimum</b>	<b>30.84</b>	<b>82.42</b>	<b>18.94</b>	<b>28.26</b>	<b>19.82</b>	-	<b>0.94</b>	<b>32.68</b>	-	-	-	-
<b>Maximum</b>	<b>40.46</b>	<b>98.42</b>	<b>24.62</b>	<b>36.24</b>	<b>26.44</b>	-	<b>1.12</b>	<b>42.84</b>	-	-	-	-
<b>Average</b>	<b>35.20</b>	<b>91.59</b>	<b>21.53</b>	<b>31.97</b>	<b>22.52</b>	-	<b>1.06</b>	<b>37.15</b>	-	-	-	-
<b>NAAQM Standards</b>	<b>60</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>100</b>	<b>1</b>	<b>2</b>	<b>400</b>	<b>20</b>	<b>6</b>	<b>1</b>	<b>5</b>
<b>Test Method</b>	<b>40CFR Appendix L Part 53 CPCB Guidelines</b>	<b>IS:5182 (P-23)</b>	<b>IS:5182 (P-2)</b>	<b>IS:5182 (P-6)</b>	<b>IS:5182 (P-9)</b>	<b>NL/SO P/AAQ-11</b>	<b>IS:5182 (P-10)</b>	<b>Method of Air Sampling &amp; Analysis</b>	<b>NL/SO P/AAQ-13</b>	<b>NL/SOP/AAQ-12</b>	<b>IS:5182 (P-12)</b>	<b>IS:5182 (P-11)</b>

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 16.11.2009  
ND-Not Detected, <sup>1</sup>Arsenic-ND [DL- 0.5], <sup>2</sup>BAP-ND [DL- 0.5], <sup>3</sup>Benzene-ND [DL- 0.5], <sup>4</sup>Lead-ND [DL- 0.5], <sup>5</sup>Nickel-ND [DL- 1.0]  
Sample Analysed within Seven days from the date of sampling.

**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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

**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202206030110, 202206060110, 202206100110, 202206130110  
202206170110, 202206200110, 202206240110, 202206170115  
**Test Report Date:** 06/07/2022

**Sample Particulars**

Nature of the Sample : **Ambient Air Quality Monitoring**  
Sampling Location : Roof of Administration Building Annexe  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS 5182 (Part 14)  
Monitoring Conducted By : Mr. Rishi Pal  
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m3	Particulate Matter (PM10) µg/m3	Sulphur Dioxide (as SO2) µg/m3	Nitrogen Dioxide (as NO2) µg/m3	Ozone (as O3) µg/m3	Lead (as Pb <sup>+</sup> ) µg/m3	Carbon Monoxide (as CO) mg/m3	Ammonia (as NH3) µg/m3	Nickel (as Ni <sup>2+</sup> ) ng/m <sup>3</sup>	Arsenic (as As <sup>3+</sup> ) ng/m3	Benzo (a) pyrene (as BAP <sup>4+</sup> ) ng/m <sup>3</sup>	Benzen e (C6H6 <sup>5</sup> ) µg/m3
03/06/2022	36.16	92.48	20.14	28.48	22.52	ND	1.06	34.88	ND	ND	ND	ND
06/06/2022	30.46	86.28	18.60	25.42	21.94	ND	1.13	36.40	ND	ND	ND	ND
10/06/2022	34.82	82.26	22.54	30.64	24.60	ND	1.06	32.50	ND	ND	ND	ND
13/06/2022	44.60	96.58	24.16	32.40	21.88	ND	1.04	48.62	ND	ND	ND	ND
17/06/2022	36.40	84.28	21.24	28.90	22.60	ND	0.98	32.33	ND	ND	ND	ND
20/06/2022	33.48	80.16	19.98	30.12	20.24	ND	1.10	34.28	ND	ND	ND	ND
24/06/2022	34.84	90.36	23.40	36.20	23.64	ND	1.06	33.92	ND	ND	ND	ND
27/06/2022	40.26	96.84	22.82	34.24	21.92	ND	1.05	36.18	ND	ND	ND	ND
<b>Minimum</b>						-			-	-	-	-
<b>Maximum</b>						-			-	-	-	-
<b>Average</b>						-			-	-	-	-
<b>NAAQM Standards</b>	<b>60</b>	<b>100</b>	<b>80</b>	<b>80</b>	<b>100</b>	<b>1</b>	<b>2</b>	<b>400</b>	<b>20</b>	<b>6</b>	<b>1</b>	<b>5</b>
<b>Test Method</b>	40CFR Appendix L Part 53 CPCB Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

**Remark:**

\*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)] 16.11.2009  
ND-Not Detected, <sup>1</sup>Arsenic-ND [DL- 0.5], <sup>2</sup>BAP-ND [DL- 0.5], <sup>3</sup>Benzenene-ND [DL- 0.5], <sup>4</sup>Lead-ND [DL- 0.5], <sup>5</sup>Nickel-ND [DL- 1.0]  
Sample Analysed within Seven days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC 636621000002743-2744  
Test Report Date: 23/12/2021

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Aveg. Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	16/12/2021	70	1.9	21	115	9.04	BDL	-	-
2	SRU-26	16/12/2021	70	1.9	21	117	9.53	BDL	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Old</b>	<b>15</b>		
							<b>New</b>	<b>10</b>		
<b>Test Method</b>								<b>IS:11255 (P-4)</b>		

**Remark:**

BDL-Below Detection Limit, <sup>1</sup> Hydrogen Sulphide (as H<sub>2</sub>S)-BDL [LOQ-0.1],  
Sample Analysed within six days from the date of sampling.



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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202112160110-111  
Test Report Date: 23/12/2021

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
1	SRU-57	16/12/2021	70	1.9	21	115	9.04	25	1.8	9.5	41	2.91	21.79
2	SRU-26	16/12/2021	70	1.9	21	117	9.53	29	2.2	11.1	49	3.64	26.04
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Old</b>	-			<b>350</b>		
							<b>New</b>	-			<b>250</b>		

**Remark:**

BDL-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-BDL (LOQ:1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202112160110-111  
Test Report Date: 23/12/2021

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	16/12/2021	70	1.9	21	115	9.04	112	7.94	97.77
2	SRU-26	16/12/2021	70	1.9	21	117	9.53	107	7.96	93.40
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Old</b>	<b>150</b>		
							<b>New</b>	<b>100</b>		

**Remark:**

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC636622000000366-367  
Test Report Date: 05/02/2022

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Aveg. Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	31/01/2022	70	1.9	22	119	9.50	BDL	-	-
2	SRU-26	31/01/2022	70	1.9	22	127	9.68	BDL	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Old</b>	<b>15</b>		
							<b>New</b>	<b>10</b>		
<b>Test Method</b>							<b>IS:11255 (P-4)</b>			

**Remark:**

BDL-Below Detection Limit, <sup>3</sup>Hydrogen Sulphide (as H<sub>2</sub>S)-BDL (LOQ-0.1),  
Sample Analysed within six days from the date of sampling.



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201310110-111  
Test Report Date: 05/02/2022

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
1	SRU-57	31/01/2022	70	1.9	22	119	9.50	29	2.2	11.1	46	3.43	24.45
2	SRU-26	31/01/2022	70	1.9	22	127	9.68	32	2.4	12.2	54	4.08	28.70
							<b>Old</b>	-			<b>350</b>		
							<b>New</b>	-			<b>250</b>		

**Remark:**

BDL-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201310110-111  
Test Report Date: 05/02/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	31/01/2022	70	1.9	22	119	9.50	119	8.87	103.88
2	SRU-26	31/01/2022	70	1.9	22	127	9.68	121	9.13	105.62
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Old</b>	<b>150</b>		
							<b>New</b>	<b>100</b>		

**Remark:**

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.



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

Issued to: M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report

ULR No.: TC 63662200000001-0005, 0011-0014, 0019-0020, 0022, 0105-01C  
0121-0124

Test Report Date: 26/01/2022

**Sample Particulars**  
Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Particulate Matters <sup>1</sup> (as PM)		Nickel & Vanadium <sup>2</sup> (as Ni & V) <sup>2</sup>		
								mg/N m <sup>3</sup>	Kg/hr	mg/N m <sup>3</sup>	Kg/hr	PPM
1	HRSG-2	1/1/2022	65	3.3	19	219	10.43	11.68	2.3	BDL	-	-
2	HRSG-3	1/1/2022	70	3.3	19	217	10.97	14.78	3.0	BDL	-	-
3	HRSG-4	1/1/2022	70	3.3	18	218	10.63	19.54	3.9	BDL	-	-
4	CPP-VHP-1	1/1/2022	100	3.34	16	122	10.26	12.67	3.1	BDL	-	-
5	CPP-VHP-2	1/1/2022	100	3.34	16	140	10.15	14.28	3.3	BDL	-	-
6	OHCU LP Section	3/1/2022	65	2.42	21	192	9.93	12.67	1.3	BDL	-	-
7	OHCU RG Heater	3/1/2022	63	1.35	21	241	11.15	9.68	0.3	BDL	-	-
8	PX Isomer	3/1/2022	56	1.2	21	243	11.23	12.29	0.3	BDL	-	-
9	PX Tatory	3/1/2022	56	1.2	21	237	10.46	14.98	0.4	BDL	-	-
10	PX-Xylene	4/1/2022	78	2	19	194	10.54	15.38	1.2	BDL	-	-
11	PXCCR	4/1/2022	100	1.9	21	264	11.02	18.28	1.1	BDL	-	-
12	PX NHT	5/1/2022	30	1	20	239	11.01	13.26	0.2	BDL	-	-
13	AVU-1	14/01/2022	100	5.1	16	120	9.77	14.24	7.8	BDL	-	-
14	HGU 06	14/01/2022	60	3.4	17	156	9.15	11.26	2.3	BDL	-	-
15	UB-01	15/01/2022	100	3.04	19	165	10.38	14.18	2.6	BDL	-	-
16	MSQ-1	15/01/2022	60	1.64	16	195	10.11	8.34	0.4	BDL	-	-
17	MSQ-2	15/01/2022	60	1.64	15	272	11.81	9.29	0.5	BDL	-	-
18	MSQ-3	15/01/2022	60	1.64	15	283	12.14	8.94	0.4	BDL	-	-
Permissible Limits (mg/Nm <sup>3</sup> )							Gas	10		-		
							Liquid	100		5		
Test Method							IS-11255 (P-1)		USEPA Method 29 By AAS			

Remark:

BDL-Below Detection Limit, <sup>1</sup> Particulate Matters (as PM)-BDL [LOQ- 5.0], <sup>2</sup> Nickel & Vanadium (as Ni & V)-BDL [LOQ- 0.5]  
Sample Analysed within six days from the date of sampling.



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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC 636622000000131-0143  
Test Report Date: 26/01/2022

**Sample Particulars**  
Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Particulate Matters <sup>1</sup> (as PM)		Nickel & Vanadium <sup>2</sup> (as Ni & V) <sup>2</sup>		
								mg/N m <sup>3</sup>	Kg/hr	mg/N m <sup>3</sup>	Kg/hr	PPM
19	DCU Heater-1	17/01/2022	70	3	16	151	10.55	7.39	1.4	BDL	-	-
20	PTA/Hot Oil Heater	17/01/2022	60	2.35	15	70	8.13	14.27	1.6	BDL	-	-
21	PTA/Thermal Oxidiser	17/01/2022	60	2.35	16	148	10.41	14.28	1.6	BDL	-	-
22	PTA/FCPH	17/01/2022	60	2.35	16	153	10.78	11.26	1.3	BDL	-	-
23	DHDT BSIV	17/01/2022	70	1.8	16	123	9.71	9.49	0.6	BDL	-	-
24	HGU-BS-VI	17/01/2022	0	3.4	15	146	10.33	7.37	1.8	BDL	-	-
25	DHDS	17/01/2022	60	1.25	16	172	10.32	8.21	0.3	BDL	-	-
26	CCRU Reformer Heater-205 FF	18/01/2022	60	1.26	16	274	11.13	7.32	0.2	BDL	-	-
27	CCRU NHT Heater	18/01/2022	70	2.34	18	257	11.08	8.25	0.8	BDL	-	-
28	CCRU Reformer Heater-201, 202,203 FF	18/01/2022	60	1.64	17	275	11.33	9.35	0.4	BDL	-	-
29	DHDT H-01	18/01/2022	70	1.8	18	221	11.56	9.24	0.6	BDL	-	-
30	DHDT H-02	18/01/2022	70	1.8	18	232	12.10	8.24	0.5	BDL	-	-
31	RFCC Heater	18/01/2022	59	0.9	18	235	11.46	9.24	0.1	BDL	-	-
Permissible Limits (mg/Nm <sup>3</sup> )								Gas	10		-	
								Liquid	100		5	
Test Method								IS-11255 (P-1)		USEPA Method 29 By AAS		

Remark: BDL-Below Detection Limit, <sup>1</sup> Particulate Matters (as PM)-BDL [LOQ- 5.0], <sup>2</sup> Nickel & Vanadium (as Ni & V)-BDL [LOQ- 0.5] Sample Analysed within six days from the date of sampling.



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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201010110-114, 202201030110-113, 202201040110-111  
202201050110, 202201140110-111, 202201150110-113

Date: 26/01/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/Nm <sup>3</sup>	Kg/hr	PPM	mg/Nm <sup>3</sup>	Kg/hr	PPM
1	HRS-2	1/1/2022	65	3.3	19	219	10.43	23	4.5	8.8	277	53.91	147.23
2	HRS-3	1/1/2022	70	3.3	19	217	10.97	17	3.5	6.5	228	46.87	121.19
3	HRS-4	1/1/2022	70	3.3	18	218	10.63	11	2.2	4.2	152	30.21	80.79
4	CPP-VHP-1	1/1/2022	100	3.34	16	122	10.26	17	4.2	6.5	318	77.65	169.02
5	CPP-VHP-2	1/1/2022	100	3.34	16	140	10.15	188	43.5	71.7	324	74.89	172.21
6	OHCU LP Section	3/1/2022	65	2.42	21	192	9.93	7	0.7	2.7	53	5.59	28.17
7	OHCU RG Heater	3/1/2022	63	1.35	21	241	11.15	3	0.1	1.1	68	2.27	36.14
8	PX Isomer	3/1/2022	56	1.2	21	243	11.23	3	0.1	1.1	37	0.98	19.67
9	PX Tatory	3/1/2022	56	1.2	21	237	10.46	9	0.2	3.4	99	2.47	52.62
10	PX-Xylene	4/1/2022	78	2	19	194	10.54	8	0.6	3.1	90	6.85	47.84
11	PXCCR	4/1/2022	100	1.9	21	264	11.02	6	0.4	2.3	90	5.62	47.84
12	PX NHT	5/1/2022	30	1	20	239	11.01	6	0.1	2.3	123	2.23	65.38
13	AVU-1	14/01/2022	100	5.1	16	120	9.77	7	3.8	2.7	83	45.26	44.12
14	HGU 06	14/01/2022	60	3.4	17	156	9.15	5	1.0	1.9	41	8.52	21.79
15	UB-01	15/01/2022	100	3.04	19	165	10.38	191	35.2	72.9	390	71.96	207.29
16	MSQ-1	15/01/2022	60	1.64	16	195	10.1	6	0.3	2.3	101	4.95	53.68
17	MSQ-2	15/01/2022	60	1.64	15	272	11.81	3	0.1	1.1	88	4.32	46.77
18	MSQ-3	15/01/2022	60	1.64	15	283	12.14	3	0.1	1.1	82	4.06	43.58
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Gas</b>	<b>50</b>			<b>350</b>		
							<b>Liquid</b>	<b>1700</b>			<b>450</b>		

**Remark:**

BDL-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measured with Flue Gas Analyser.

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No. 202201170110-116, 202201180110-115  
Date: 26/01/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**

: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>2</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/Nm <sup>3</sup>	Kg/hr	PPM	mg/Nm <sup>3</sup>	Kg/hr	PPM
19	DCU Heater-1	17/01/2022	70	3	16	151	10.55	17	3.2	6.5	46	8.68	24.45
20	PTA/Hot Oil Heater	17/01/2022	60	2.35	15	70	8.13	10	1.1	3.8	35	3.86	18.60
21	PTA/Thermal Oxidiser	17/01/2022	60	2.35	16	148	10.41	3	0.3	1.1	27	3.11	14.35
22	PTA/FCPH	17/01/2022	60	2.35	16	153	10.78	11	1.3	4.2	161	18.97	85.58
23	DHDT BSIV	17/01/2022	70	1.8	16	123	9.71	12	0.8	4.6	76	5.09	40.40
24	HGU-BS-VI	17/01/2022	0	3.4	15	146	10.33	16	3.8	6.1	70	16.82	37.21
25	DHDS	17/01/2022	60	1.25	16	172	10.32	3	0.1	1.1	49	1.50	26.04
26	CCRU Reformer Heater-205 FF	18/01/2022	60	1.25	16	274	11.13	7	0.2	2.7	31	0.84	16.48
27	CCRU NHT Heater	18/01/2022	70	2.34	18	257	11.08	8	0.8	3.1	178	17.17	94.61
28	CCRU Reformer Heater-201, 202, 203 FF	18/01/2022	60	1.64	17	275	11.33	3	0.1	1.1	64	3.00	34.02
29	DHDT H-01	18/01/2022	70	1.8	18	221	11.56	3	0.2	1.1	74	4.73	39.33
30	DHDT H-02	18/01/2022	70	1.8	18	221	12.10	6	0.4	2.3	111	7.26	59.00
31	RFCC Heater	18/01/2022	59	0.9	18	235	11.46	3	0.0	1.1	74	1.14	39.33
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Gas</b>	<b>50</b>			<b>350</b>		
							<b>Liquid</b>	<b>1700</b>			<b>450</b>		

Remark:

BDL-Below Detection Limit, Oxides of Sulphur (as SO<sub>2</sub>)-BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.



(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201010110-114, 202201030110-113, 202201040110-111  
202201050110, 202201140110-111, 202201150110-113  
Date: 26/01/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**Stack Monitoring**

: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	HRSG-2	1/1/2022	65	3.3	19	219	10.43	16	3.11	13.97
2	HRSG-3	1/1/2022	70	3.3	19	217	10.97	7	1.44	6.11
3	HRSG-4	1/1/2022	70	3.3	18	218	10.63	7	1.39	6.11
4	CPP-VHP-1	1/1/2022	100	3.34	16	122	10.26	5	1.22	4.36
5	CPP-VHP-2	1/1/2022	100	3.34	16	140	10.15	6	1.39	5.24
6	OHCU LP Section	3/1/2022	65	2.42	21	192	9.93	78	8.22	68.09
7	OHCU RG Heater	3/1/2022	63	1.35	21	241	11.15	5	0.17	4.36
8	PX Isomer	3/1/2022	56	1.2	21	243	11.23	11	0.29	9.60
9	PX Tatory	3/1/2022	56	1.2	21	237	10.46	11	0.27	9.60
10	PX-Xylene	4/1/2022	78	2	19	194	10.54	6	0.46	5.24
11	PXCCR	4/1/2022	100	1.9	21	264	11.02	1	0.06	0.87
12	PX NHT	5/1/2022	30	1	20	239	11.01	7	0.13	6.11
13	AVU-1	14/01/2022	100	5.1	16	120	9.77	9	4.91	7.86
14	HGU 06	14/01/2022	60	3.4	17	156	9.15	53	11.02	46.26
15	UB-01	15/01/2022	100	3.04	19	165	10.38	14	2.58	12.22
16	MSQ-1	15/01/2022	60	1.64	16	195	10.11	12	0.59	10.47
17	MSQ-2	15/01/2022	60	1.64	15	272	11.81	14	0.69	12.22
18	MSQ-3	15/01/2022	60	1.64	15	283	12.14	21	1.04	18.33
							<b>Gas</b>	<b>150</b>		
							<b>Liquid</b>	<b>200</b>		
							<b>FCCU</b>	<b>400</b>		
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>										

**Remark:**

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (LDQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
(AUTHORISED SIGNATORY)  
(RAVINDER MITTAL)

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**Test Report**

Issued to: **M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201170110-116, 202201180110-115

Date: 26/01/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
19	DCU Heater-1	17/01/2022	70	3	16	151	10.55	145	27.37	126.57
20	PTA/Hot Oil Heater	17/01/2022	60	2.35	15	70	8.13	148	16.33	129.19
21	PTA/Thermal Oxidiser	17/01/2022	60	2.35	16	148	10.41	1	0.12	0.87
22	PTA/FCPH	17/01/2022	60	2.35	16	153	10.78	6	0.71	5.24
23	DHDT BSTV	17/01/2022	70	1.8	16	123	9.71	4	0.27	3.49
24	HGU-BS-VI	17/01/2022	0	3.4	15	146	10.33	4	0.96	3.49
25	DHDS	17/01/2022	60	1.25	16	172	10.32	7	0.21	6.11
26	CCRU Reformer Heater-205 FF	18/01/2022	60	1.26	16	274	11.13	39	1.06	34.04
27	CCRU NHT Heater	18/01/2022	70	2.34	18	257	11.08	31	2.99	27.06
28	CCRU Reformer Heater-201, 202, 203 FF	18/01/2022	60	1.64	17	275	11.33	30	1.41	26.19
29	DHDT H-01	18/01/2022	70	1.8	18	221	11.56	9	0.57	7.86
30	DHDT H-02	18/01/2022	70	1.8	18	232	12.10	6	0.39	5.24
31	RFCC Heater	18/01/2022	59	0.9	18	235	11.46	5	0.08	4.36
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Gas</b>	<b>150</b>		
							<b>Liquid</b>	<b>200</b>		
							<b>FCCU</b>	<b>400</b>		

**Remark:**

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC 63662200000586-587  
Test Report Date: 28/02/2022

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Aveg. Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	22/02/2022	70	1.9	25	132	9.82	BDL	-	-
2	SRU-26	22/02/2022	70	1.9	25	126	9.79	BDL	-	-
							<b>Old</b>	<b>15</b>		
							<b>New</b>	<b>10</b>		
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>										
<b>Test Method</b>								<b>IS:11255 (P-4)</b>		

**Remark:**

BDL-Below Detection Limit, <sup>1</sup>Hydrogen Sulphide (as H<sub>2</sub>S)-BDL (LOQ- 0.1),  
Sample Analysed within six days from the date of sampling.



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 20220220110-111  
Test Report Date: 28/02/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
1	SRU-57	22/02/2022	70	1.9	25	132	9.82	32	2.4	12.2	46	3.39	24.4
2	SRU-26	22/02/2022	70	1.9	25	126	9.79	27	2.0	10.3	54	4.03	28.7
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Old</b>	-			<b>350</b>		
							<b>New</b>	-			<b>250</b>		

**Remark:**

BDL-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-BDL (LOQ:1.0)  
Sample Analyzed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202202220110-111  
Test Report Date: 28/02/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	22/02/2022	70	1.9	25	132	9.82	123	9.07	107.37
2	SRU-26	22/02/2022	70	1.9	25	126	9.79	114	8.51	99.51
							<b>Old</b>	<b>150</b>		
							<b>New</b>	<b>100</b>		

**Remark:**

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL(LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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

**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203030115-120, 202203050110-113, 202203070116-120  
202203080111-114, 202203090122-123

Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Particulate Matters <sup>1</sup> (as PM)		Nickel & Vanadium <sup>2</sup> (as Ni & V) <sup>2</sup>		
								mg/Nm <sup>3</sup>	Kg/hr	mg/Nm <sup>3</sup>	Kg/hr	PPM
1	PX Isomer	03-03-2022	56	1.2	26	245	11.07	14.68	0.4	ND	-	-
2	PX Tatory	03-03-2022	56	1.2	26	245	11.16	16.23	0.4	ND	-	-
3	PXCCR	03-03-2022	100	1.9	29	259	11.07	12.49	0.8	ND	-	-
4	PX-Xylene	03-03-2022	78	2	24	192	11.24	12.58	1.0	ND	-	-
5	PX NHT	03-03-2022	30	1	28	246	11.41	14.37	0.3	ND	-	-
6	HGU 76	05-03-2022	60	3.4	31	169	11.09	11.26	2.8	ND	-	-
7	HGU-PDS	05-03-2022	60	1.7	30	171	10.58	6.38	0.4	ND	-	-
8	DHDT H-01	05-03-2022	70	1.8	27	174	12.00	8.26	0.6	ND	-	-
9	DHDT H-02	05-03-2022	70	1.8	31	186	11.99	9.26	0.7	ND	-	-
10	HCU	07-03-2022	70	1.3	28	198	11.74	9.16	0.3	ND	-	-
11	MSQ-1	07-03-2022	60	1.64	25	275	12.34	6.78	0.3	ND	-	-
12	MSQ-2	07-03-2022	60	1.64	25	287	12.27	8.97	0.4	ND	-	-
13	New Prime G	07-03-2022	60	0.8	27	319	12.03	9.25	0.1	ND	-	-
14	AVU-II	07-03-2022	100	5.1	27	147	11.32	12.28	7.3	ND	-	-
15	DCU Heater-1	08-03-2022	70	3	30	133	9.83	8.28	1.5	ND	-	-
16	DHDS	08-03-2022	60	1.25	31	214	11.45	8.80	0.3	ND	-	-
17	OHCU LP Section	08-03-2022	65	2.42	33	235	11.26	11.29	1.2	ND	-	-
18	OHCU RG Heater	08-03-2022	63	1.35	33	261	11.51	9.24	0.3	ND	-	-
19	CCRU NHT Heater-FF 204	09-03-2022	70	2.34	30	264	12.19	9.28	1.0	ND	-	-
20	CCRU Reformer Heater-FF 202 and FF 203	09-03-2022	70	2.34	31	273	12.61	8.23	0.9	ND	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Gas</b>	<b>10</b>		<b>-</b>		
							<b>Liquid</b>	<b>100</b>		<b>5</b>		
<b>Test Method</b>								<b>IS-11255 (P-1)</b>		<b>USEPA Method 29 By AAS</b>		

Remark: ND-Below Detection Limit, <sup>1</sup> Particulate Matters (as PM)-ND [LOQ- 5.0], <sup>2</sup> Nickel & Vanadium (as Ni & V)-ND [LOQ- 0.5]  
Sample Analysed within six days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203090124-125, 202203100132-133, 202203120110-115  
202203140116-117, 202203150119-120, 202203160110-112

Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Particulate Matters <sup>1</sup> (as PM)		Nickel & Vanadium <sup>2</sup> (as Ni & V) <sup>2</sup>		
								mg/Nm <sup>3</sup>	Kg/hr	mg/Nm <sup>3</sup>	Kg/hr	PPM
21	DHDT BSVI	09-03-2022	70	1.8	31	178	11.17	6.80	0.5	ND	-	-
22	HGU-BS-VI	09-03-2022	0	3.4	31	204	11.04	9.10	2.1	ND	-	-
23	CCRU Reformer Heater-205 FF	10-03-2022	60	1.26	28	228	11.55	9.46	0.29	ND	-	-
24	CCRU Reformer Heater-201, 202, 203 FF	10-03-2022	60	1.64	29	281	11.48	8.48	0.4	ND	-	-
25	HRS-2	12-03-2022	65	3.3	27	143	10.37	9.26	2.1	ND	-	-
26	HRS-3	12-03-2022	70	3.3	28	153	11.08	10	2.4	ND	-	-
27	HRS-4	12-03-2022	70	3.3	28	160	11.25	12	2.9	ND	-	-
28	HRS-5	12-03-2022	70	3.3	28	147	10.90	11.19	2.7	ND	-	-
29	CPP-VHP-2	12-03-2022	100	3.34	26	139	10.75	12.16	3.0	ND	-	-
30	CPP-VHP-3	12-03-2022	100	3.34	26	162	10.84	10.38	2.4	ND	-	-
31	AVU-1	14-03-2022	100	5.1	30	130	10.56	14.28	8.2	ND	-	-
32	HGU-06	14-03-2022	0	3.4	30	203	10.41	10.28	2.2	ND	-	-
33	UB-02	15-03-2022	100	3.04	28	161	10.38	13.28	2.5	ND	-	-
34	UB-01	15-03-2022	100	3.04	28	154	10.24	10.2	1.9	ND	-	-
35	PTA/Thermal Oxidiser	16-03-2022	60	2.35	32	121	9.20	14.28	1.6	ND	-	-
36	PTA/FCPH	16-03-2022	60	2.35	31	193	11.75	11.18	1.3	ND	-	-
Permissible Limits (mg/Nm <sup>3</sup> )							Gas	10		-		
							Liquid	100		5		
Test Method							IS-11255 (P-1)		USEPA Method 29 By AAS			

**Remark:**

ND-Below Detection Limit, <sup>1</sup> Particulate Matters (as PM)-ND [LOQ- 5.0], <sup>2</sup> Nickel & Vanadium (as Ni & V)-ND [LOQ- 0.5]  
Sample Analysed within six days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**CORPORATE OFFICE & CENTRAL LABORATORIES :-**

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**Test Report**

Issued to: **M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203030115-120, 202203050110-113, 202203070116-120  
202203080111-114, 202203090122-123  
Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )			
								mg/Nm <sup>3</sup>	Kg/hr	PPM	mg/Nm <sup>3</sup>	Kg/hr	PPM	
1	PX Isomer	03-03-2022	56	1.2	26	245	11.07	6	0.2	2.3	70	1.82	37.21	
2	PX Tatory	03-03-2022	56	1.2	26	245	11.16	4	0.1	1.5	87	2.28	46.24	
3	PXCCR	03-03-2022	100	1.9	29	259	11.07	6	0.4	2.3	105	6.65	55.81	
4	PX-Xylene	03-03-2022	78	2	24	192	11.24	3	0.2	1.1	53	4.32	28.17	
5	PX NHT	03-03-2022	30	1	28	246	11.41	3	0.1	1.1	96	1.78	51.03	
6	HGU 76	05-03-2022	60	3.4	31	169	11.09	18	4.4	6.9	36	8.80	19.13	
7	HGU-PDS	05-03-2022	60	1.7	30	171	10.58	12	0.7	4.6	2	0.12	1.06	
8	DHDT H-01	05-03-2022	70	1.8	27	174	12.00	6	0.4	2.3	111	8.14	59.00	
9	DHDT H-02	05-03-2022	70	1.8	31	186	11.99	7	0.5	2.7	107	7.63	56.87	
10	HCU	07-03-2022	70	1.3	28	198	11.74	10	0.4	3.8	132	4.69	70.16	
11	MSQ-1	07-03-2022	60	1.64	25	275	12.34	3	0.2	1.1	64	3.27	34.02	
12	MSQ-2	07-03-2022	60	1.64	25	287	12.27	3	0.1	1.1	88	4.37	46.77	
13	New Prime G	07-03-2022	60	0.8	27	319	12.03	8	0.1	3.1	78	0.85	41.46	
14	AVU-II	07-03-2022	100	5.1	27	147	11.32	3	1.8	1.1	14	8.27	7.44	
15	DCU Heater-1	08-03-2022	70	3	30	133	9.83	16	2.9	6.1	23	4.22	12.23	
16	DHDS	08-03-2022	60	1.25	31	214	11.45	3	0.1	1.1	64	1.98	34.02	
17	OHCU LP Section	08-03-2022	65	2.42	33	235	11.26	3	0.3	1.1	49	5.36	26.04	
18	OHCU RG Heater	08-03-2022	63	1.35	33	261	11.51	3	0.1	1.1	60	1.99	31.89	
19	CCRU NHT Heater-FF 204	09-03-2022	70	2.34	30	264	12.19	6	0.6	2.3	90	9.43	47.84	
20	CCRU Reformer Heater-FF 202 and FF 203	09-03-2022	70	2.34	31	273	12.61	3	0.3	1.1	76	8.10	40.40	
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>Gas</b>	<b>50</b>			<b>350</b>		
								<b>Liquid</b>	<b>1700</b>			<b>450</b>		

**Remark:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LOQ:1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203090124-125, 202203100132-133, 202203120110-115  
202203140116-117, 202203150119-120, 202203160110-112  
Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
21	DHDT BSIV	09-03-2022	70	1.8	31	178	11.17	ND	ND	27	1.83	14.35	
22	HGU-BS-VI	09-03-2022	0	3.4	31	204	11.04	6	1.4	2.3	47	10.60	24.98
23	CCRU Reformer Heater-205 FF	10-03-2022	60	1.26	28	228	11.55	6	0.2	2.3	94	2.90	49.96
24	CCRU Reformer Heater-201, 202,203 FF	10-03-2022	60	1.64	29	281	11.48	3	0.1	1.1	84	3.95	44.65
25	HRSG-2	12-03-2022	65	3.3	27	143	10.37	12	2.7	4.6	79	18.08	41.99
26	HRSG-3	12-03-2022	70	3.3	28	153	11.08	5	1.2	1.9	63	15.04	33.49
27	HRSG-4	12-03-2022	70	3.3	28	160	11.25	3	0.7	1.1	57	13.59	30.30
28	HRSG-5	12-03-2022	70	3.3	28	147	10.90	33	7.9	12.6	178	42.41	94.61
29	CPP-VHP-2	12-03-2022	100	3.34	26	139	10.75	0	0.0	0.0	119	29.20	63.25
30	CPP-VHP-3	12-03-2022	100	3.34	26	162	10.84	157	36.8	59.9	320	75.00	170.00
31	AVU-1	14-03-2022	100	5.1	30	130	10.56	3	1.7	1.1	71	40.79	37.74
32	HGU-06	14-03-2022	0	3.4	30	203	10.41	8	1.7	3.1	23	4.90	12.23
33	UB-02	15-03-2022	100	3.04	28	161	10.38	142	26.5	54.2	162	30.18	86.11
34	UB-01	15-03-2022	100	3.04	28	154	10.24	167	31.2	63.7	94	17.56	49.96
35	PTA/Thermal Oxidiser	16-03-2022	60	2.35	32	121	9.20	36	3.9	13.7	64	6.95	34.02
36	PTA/PCPH	16-03-2022	60	2.35	31	193	11.75	9	1.1	3.4	173	20.30	91.95
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Gas</b>	<b>50</b>			<b>350</b>		
							<b>Liquid</b>	<b>1700</b>			<b>450</b>		

**Remark:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measured with Flue Gas Analyser.



**(AUTHORISED SIGNATORY)**

**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203030115-120, 202203050110-113, 202203070116-120  
202203080111-114, 202203090122-123

Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**

: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	PX Isomer	03-03-2022	56	1.2	26	245	11.07	4	0.10	3.49
2	PX Tatory	03-03-2022	56	1.2	26	245	11.16	7	0.18	6.11
3	PXCCR	03-03-2022	100	1.9	29	259	11.07	19	1.20	16.59
4	PX-Xylene	03-03-2022	78	2	24	192	11.24	ND	-	-
5	PX NHT	03-03-2022	30	1	28	246	11.41	11	0.20	9.60
6	HGU 76	05-03-2022	60	3.4	31	169	11.09	1	0.24	0.87
7	HGU-PDS	05-03-2022	60	1.7	30	171	10.58	5	0.29	4.36
8	DHDT H-01	05-03-2022	70	1.8	27	174	12.00	4	0.29	3.49
9	DHDT H-02	05-03-2022	70	1.8	31	185	11.99	8	0.57	6.98
10	HCU	07-03-2022	70	1.3	28	198	11.74	12	0.43	10.47
11	MSQ-1	07-03-2022	60	1.64	25	275	12.34	5	0.26	4.36
12	MSQ-2	07-03-2022	60	1.64	25	287	12.27	20	0.99	17.46
13	New Prime G	07-03-2022	60	0.8	27	319	12.03	128	1.40	111.73
14	AVU-II	07-03-2022	100	5.1	27	147	11.32	134	79.20	116.97
15	DCU Heater-1	08-03-2022	70	3	30	133	9.83	12	2.20	10.47
16	DHDS	08-03-2022	60	1.25	31	214	11.45	1	0.03	0.87
17	OHCU LP Section	08-03-2022	65	2.42	33	235	11.26	10	1.09	8.73
18	OHCU RG Heater	08-03-2022	63	1.35	33	261	11.51	9	0.30	7.86
19	CCRU NHT Heater-FF 204	09-03-2022	70	2.34	30	264	12.19	9	0.94	7.86
20	CCRU Reformer Heater-FF 202 and FF 203	09-03-2022	70	2.34	31	273	12.61	19	2.02	16.59
							Gas	150		
							Liquid	200		
							FCCU	400		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.



**(AUTHORISED SIGNATORY)**

**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203090124-125, 202203100132-133, 202203120110-115  
202203140116-117, 202203150119-120, 202203160110-112  
Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
21	DHDT BSIV	09-03-2022	70	1.8	31	178	11.17	15	1.01	13.09
22	HGU-BS-VI	09-03-2022	0	3.4	31	204	11.04	6	1.35	5.24
23	CCRU Reformer Heater-205 FF	10-03-2022	60	1.26	28	228	11.55	1	0.03	0.87
24	CCRU Reformer Heater-201, 202,203 FF	10-03-2022	60	1.64	29	281	11.48	14	0.66	12.22
25	HRS-G-2	12-03-2022	65	3.3	27	143	10.37	39	8.93	34.04
26	HRS-G-3	12-03-2022	70	3.3	28	153	11.08	12	2.87	10.47
27	HRS-G-4	12-03-2022	70	3.3	28	160	11.25	ND	-	-
28	HRS-G-5	12-03-2022	70	3.3	28	147	10.90	ND	-	-
29	CPP-VHP-2	12-03-2022	100	3.34	26	139	10.75	142	34.84	123.95
30	CPP-VHP-3	12-03-2022	100	3.34	26	162	10.84	137	32.11	119.59
31	AVU-1	14-03-2022	100	5.1	30	130	10.56	ND	-	-
32	HGU-06	14-03-2022	0	3.4	30	203	10.41	5	1.07	4.36
33	UB-02	15-03-2022	100	3.04	28	161	10.38	52	9.69	45.39
34	UB-01	15-03-2022	100	3.04	28	154	10.24	59	11.02	51.50
35	PTA/Thermal Oxidiser	16-03-2022	60	2.35	32	121	9.20	189	20.54	164.98
36	PTA/FCPH	16-03-2022	60	2.35	31	193	11.75	11	1.29	9.60
Permissible Limits (mg/Nm <sup>3</sup> )							Gas	150		
							Liquid	200		
							FCCU	400		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.



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**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.:202203140118-119  
Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	14-03-2022	70	1.9	33	220	11.68	ND	-	-
2	SRU-26	14-03-2022	70	1.9	33	228	11.80	ND	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>15</b>		
<b>Test Method</b>								<b>IS:11255 (P-4)</b>		

**Remark:**

ND-Below Detection Limit, <sup>1</sup> Hydrogen Sulphide (as H<sub>2</sub>S)-ND [LOQ- 0.1],  
Sample Analysed within six days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.:202203140118-119  
Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
1	SRU-57	14-03-2022	70	1.9	33	220	11.68	26	1.9	9.9	57	4.11	30.30
2	SRU-26	14-03-2022	70	1.9	33	228	11.80	19	1.4	7.3	74	5.30	39.33
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								-			<b>350</b>		

**Remark:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LOQ:1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
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**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.:202203140118-119

Test Report Date: 22/03/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**

: To Check the Pollution Load

: IS: 11255 (Part 7)

: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	14-03-2022	70	1.9	33	220	11.68	143	10.31	124.83
2	SRU-26	14-03-2022	70	1.9	33	228	11.80	138	9.89	120.46
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>150</b>		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (LOQ:1.0)

Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204300150-151

Test Report Date: 06/05/2022

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Aveg. Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	30/04/2022	70	1.9	34	225	11.06	BDL	-	-
2	SRU-26	30/04/2022	70	1.9	34	220	10.97	BDL	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>15</b>		
<b>Test Method</b>								<b>IS:11255 (P-4)</b>		

**Remark:**

BDL-Below Detection Limit, <sup>1</sup> Hydrogen Sulphide (as H<sub>2</sub>S)-BDL [LOQ- 0.1],  
Sample Analysed within six days from the date of sampling.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204300150-151

Test Report Date: 06/05/2022

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	30/04/2022	70	1.9	34	225	11.06	226	18.8	86.2	8	0.66	4.25
2	SRU-26	30/04/2022	70	1.9	34	220	10.97	268	22.4	102.3	10	0.84	5.32
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>											<b>350</b>		

Remark:

BDL-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
(AUTHORISED SIGNATORY)  
(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204300150-151

Test Report Date: 06/05/2022

**Sample Particulars**

Nature of the Sample : **Stack Monitoring**  
Purpose of Monitoring : To Check the Pollution Load  
Method of Sampling : IS: 11255 (Part 7)  
Monitoring Conducted By : Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	30/04/2022	70	1.9	34	225	11.06	134	11.13	71.22
2	SRU-26	30/04/2022	70	1.9	34	220	10.97	132	11.04	70.16
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>150</b>		

Remark:

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205060111-112, 202205070116-119, 202205090110-111  
202205100114-117, 202205110110-113, 202205120123-126

Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Particulate Matters <sup>1</sup> (as PM)		Nickel & Vanadium <sup>2</sup> (as Ni & V) <sup>2</sup>		
								mg/Nm <sup>3</sup>	Kg/hr	mg/Nm <sup>3</sup>	Kg/hr	PPM
1	HGU 76	06-05-2022	60	3.4	41	259	11.43	12.49	0.3	ND	-	-
2	HGU-PDS	06-05-2022	60	1.7	40	265	11.47	8.36	0.2	ND	-	-
3	HRS-G-1	07-05-2022	65	3.3	34	155	8.99	8.25	0.5	ND	-	-
4	HRS-G-2	07-05-2022	70	3.3	34	157	8.79	12.34	0.9	ND	-	-
5	HRS-G-3	07-05-2022	70	3.3	36	151	11.89	14.28	0.3	ND	-	-
6	HRS-G-5	07-05-2022	70	3.3	36	167	9.86	10.38	2.3	ND	-	-
7	AVU-II	09-05-2022	100	5.1	36	149	9.60	14.27	0.8	ND	-	-
8	HCU	09-05-2022	70	1.3	38	182	10.66	17.28	1.1	ND	-	-
9	DHDT H-01	10-05-2022	70	1.8	39	192	10.82	9.37	0.6	ND	-	-
10	DHDT H-02	10-05-2022	70	1.8	39	199	10.51	8.56	0.3	ND	-	-
11	DCU Heater-1	10-05-2022	70	3	38	147	8.87	12.23	0.6	ND	-	-
12	DHDS	10-05-2022	60	1.25	39	226	10.87	8.24	0.2	ND	-	-
13	CCRU Reformer Heater-201, 202,203 FF	11-05-2022	60	1.64	36	286	12.75	9.21	0.5	ND	-	-
14	OHCU LP Section	11-05-2022	65	2.42	37	228	11.35	8.35	0.9	ND	-	-
15	OHCU RG Heater	11-05-2022	63	1.35	37	273	10.92	7.48	0.2	ND	-	-
16	CCRU NHT Heater-FF 101	11-05-2022	70	2.34	36	282	11.58	7.69	0.7	ND	-	-
17	MSQ-1	12-05-2022	60	1.64	38	267	11.18	8.58	0.9	ND	-	-
18	MSQ-2	12-05-2022	60	1.64	39	282	11.58	9.38	0.3	ND	-	-
19	MSQ-3	12-05-2022	60	1.64	37	305	11.92	6.29	0.6	ND	-	-
20	CCRU Reformer Heater-FF 205	12-05-2022	70	2.34	38	240	11.02	9.2	0.9	ND	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>							<b>Gas</b>	<b>10</b>		<b>-</b>		
							<b>Liquid</b>	<b>100</b>		<b>5</b>		
<b>Test Method</b>							<b>IS-11255 (P-1)</b>		<b>USEPA Method 29 By AAS</b>			

Remark: ND-Below Detection Limit, <sup>1</sup> Particulate Matters (as PM)-ND (LOQ: 5.0), <sup>2</sup> Nickel & Vanadium (as Ni & V)-ND (LOQ: 0.5)  
Sample Analysed within six days from the date of sampling.

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Dist. Panipat  
Haryana, INDIA

Test Report No.: 202205140114-116, 202205160116-117, 202205170110-112  
202205180116-118, 202205190162-163, 202205200136-138

Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**

: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Particulate Matters <sup>1</sup> (as PM)		Nickel & Vanadium <sup>2</sup> (as Ni & V) <sup>2</sup>		
								mg/Nm <sup>3</sup>	Kg/hr	mg/Nm <sup>3</sup>	Kg/hr	PPM
21	DHDT BS VI	14-05-2022	70	1.8	39	182	10.12	9.45	0.6	ND	-	-
22	HGU-BS-VI	14-05-2022	0	3.4	39	208	10.52	8.23	1.8	ND	-	-
23	RFCC Feed Charger	14-05-2022		2.1	38	284	11.97	9.3	0.74	ND	-	-
24	AVU-1	16-05-2022	100	5.1	39	145	9.53	12.28	6.1	ND	-	-
25	HGU-06	16-05-2022	0	3.4	40	212	11.09	11.2	2.5	ND	-	-
26	UB-01	17-05-2022	100	3.04	40	155	10.12	10.38	1.9	ND	-	-
27	CPP-VHP-1	17-05-2022	100	3.34	39	156	9.60	10.38	2.2	ND	-	-
28	CPP-VHP-2	17-05-2022	100	3.34	39	168	10.55	9.48	2.1	ND	-	-
29	PTA/Thermal Oxidiser	18-05-2022	60	2.35	36	79	9.73	11.34	1.5	ND	-	-
30	PTA/FCPH	18-05-2022	60	2.35	36	200	10.20	10.37	1.0	ND	-	-
31	PTA/Hot Oil Heater	18-05-2022	60	2.35	37	264	10.10	13.28	1.2	ND	-	-
32	PXCCR	19-05-2022	100	1.9	39	278	11.26	8.26	0.5	ND	-	-
33	PX NHT	19-05-2022	30	1	39	265	11.59	9.24	0.2	ND	-	-
34	PX Isomer	20-05-2022	56	1.2	40	289	11.84	11.28	0.3	ND	-	-
35	PX Tatory	20-05-2022	56	1.2	40	275	11.93	13.15	0.3	ND	-	-
36	PX-Xylene	20-05-2022	78	2	39	213	11.73	10.37	0.8	ND	-	-
Permissible Limits (mg/Nm <sup>3</sup> )							Gas	10		-		
							Liquid	100		5		
Test Method							IS-11255 (P-1)		USEPA Method 29 By AAS			

Remark: ND: Below Detection Limit, <sup>1</sup> Particulate Matters (as PM)-ND [LOQ- 5.0], <sup>2</sup> Nickel & Vanadium (as Ni & V)-ND [LOQ- 0.5]  
Sample Analysed within six days from the date of sampling.



(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205060111-112, 2022050701116-119, 202205090110-111  
202205100114-117, 202205110110-113, 202205120123-126  
Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )			
								mg/Nm <sup>3</sup>	Kg/hr	PPM	mg/Nm <sup>3</sup>	Kg/hr	PPM	
1	HGU 76	06-05-2022	60	3.4	41	259	11.43	3	0.6	1.1	27	5.65	14.35	
2	HGU-PDS	06-05-2022	60	1.7	40	265	11.47	3	0.2	1.1	1	0.05	0.53	
3	HRS-G-1	07-05-2022	65	3.3	34	155	8.99	9	1.7	3.4	14	2.70	7.44	
4	HRS-G-2	07-05-2022	70	3.3	34	157	8.79	234	43.9	89.3	8	1.50	4.25	
5	HRS-G-3	07-05-2022	70	3.3	36	151	11.89	9	2.3	3.4	17	4.38	9.04	
6	HRS-G-5	07-05-2022	70	3.3	36	167	9.86	14	2.9	5.3	10	2.06	5.32	
7	AVU-II	09-05-2022	100	5.1	36	149	9.60	287	143.2	109.5	4	2.00	2.13	
8	HCU	09-05-2022	70	1.3	38	182	10.66	5	0.2	1.9	9	0.30	4.78	
9	DHDT H-01	10-05-2022	70	1.8	39	192	10.82	3	0.2	1.1	41	2.61	21.79	
10	DHDT H-02	10-05-2022	70	1.8	39	199	10.51	6	0.4	2.3	6	0.36	3.19	
11	DCU Heater-1	10-05-2022	70	3	38	147	8.87	27	4.3	10.3	6	0.96	3.19	
12	DHDS	10-05-2022	60	1.25	39	226	10.87	6	0.2	2.3	1	0.03	0.53	
13	CCRU Reformer Heater-201, 202, 203 FF	11-05-2022	60	1.64	36	286	12.75	6	0.3	2.3	4	0.21	2.13	
14	OHCU LP Section	11-05-2022	65	2.42	37	228	11.35	8	0.9	3.1	6	0.67	3.19	
15	OHCU RG Heater	11-05-2022	63	1.35	37	273	10.92	2	0.1	0.8	1	0.03	0.53	
16	CCRU NHT Heater-FF 101	11-05-2022	70	2.34	36	282	11.58	6	0.6	2.3	1	0.10	0.53	
17	MSQ-1	12-05-2022	60	1.64	38	267	11.18	3	0.1	1.1	8	0.38	4.25	
18	MSQ-2	12-05-2022	60	1.64	39	282	11.58	3	0.1	1.1	2	0.09	1.06	
19	MSQ-3	12-05-2022	60	1.64	37	305	11.92	3	0.1	1.1	66	3.09	35.08	
20	CCRU Reformer Heater-FF 205	12-05-2022	70	2.34	38	240	11.02	4	0.4	1.5	4	0.40	2.13	
Permissible Limits (mg/Nm <sup>3</sup> )								Gas	50			350		
								Liquid	1700			450		

**Remarks:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205140114-116, 202205160116-117, 202205170110-112  
202205180116-118, 202205190162-163, 202205200136-138  
Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**

: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/Nm <sup>3</sup>	Kg/hr	PPM	mg/Nm <sup>3</sup>	Kg/hr	PPM
21	DHDT BS VI	14-05-2022	70	1.8	39	182	10.12	0	0.0	0.0	22	1.34	11.69
22	HGU-BS-VI	14-05-2022	0	3.4	39	208	10.52	4	0.9	1.5	18	3.84	9.57
23	RFCC Feed Charger	14-05-2022		2.1	38	284	11.97	6	0.5	2.3	1	0.08	0.53
24	AVU-1	16-05-2022	100	5.1	39	145	9.53	191	95.5	72.9	1	0.50	0.53
25	HGU-06	16-05-2022	0	3.4	40	212	11.09	3	0.7	1.1	1	0.22	0.53
26	UB-01	17-05-2022	100	3.04	40	155	10.12	228	42.0	87.0	23	4.24	12.23
27	CPP-VHP-1	17-05-2022	100	3.34	39	156	9.60	180	37.9	68.7	5	1.05	2.66
28	CPP-VHP-2	17-05-2022	100	3.34	39	168	10.55	234	52.6	89.3	110	24.73	58.47
29	PTA/Thermal Oxidiser	18-05-2022	60	2.35	36	79	9.73	6	0.8	2.3	1	0.13	0.53
30	PTA/FCPH	18-05-2022	60	2.35	36	200	10.20	8	0.8	3.1	11	1.10	5.85
31	PTA/Hot Oil Heater	18-05-2022	60	2.35	37	264	10.10	9	0.8	3.4	42	3.68	22.32
32	PXCCR	19-05-2022	100	1.9	39	278	11.26	9	0.6	3.4	24	1.49	12.76
33	PX NHT	19-05-2022	30	1	39	265	11.59	4	0.1	1.5	12	0.22	6.38
34	PX Isomer	20-05-2022	56	1.2	40	289	11.84	8	0.2	3.1	6	0.15	3.19
35	PX Tatory	20-05-2022	56	1.2	40	275	11.93	9	0.2	3.4	9	0.24	4.78
36	PX-Xylene	20-05-2022	78	2	39	213	11.73	12	1.0	4.6	6	0.49	3.19
								<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>					
							<b>Gas</b>	<b>50</b>			<b>350</b>		
							<b>Liquid</b>	<b>1700</b>			<b>450</b>		

**Remark:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LOQ:1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measured with Flue Gas Analyser.

  
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**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205060111-112, 202205070116-119, 202205090110-111  
202205100114-117, 202205110110-113, 202205120123-126

Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**

: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	HGU 76	06-05-2022	60	3.4	41	259	11.43	27	5.65	23.57
2	HGU-PDS	06-05-2022	60	1.7	40	265	11.47	1	0.05	0.87
3	HRS-G-1	07-05-2022	65	3.3	34	155	8.99	14	2.70	12.22
4	HRS-G-2	07-05-2022	70	3.3	34	157	8.79	8	1.50	6.98
5	HRS-G-3	07-05-2022	70	3.3	36	151	11.89	17	4.38	14.84
6	HRS-G-5	07-05-2022	70	3.3	36	167	9.86	10	2.06	8.73
7	AVU-II	09-05-2022	100	5.1	36	149	9.60	4	2.00	3.49
8	HCU	09-05-2022	70	1.3	38	182	10.66	9	0.30	7.86
9	DHDT H-01	10-05-2022	70	1.8	39	192	10.82	41	2.61	35.79
10	DHDT H-02	10-05-2022	70	1.8	39	199	10.51	6	0.36	5.24
11	DCU Heater-1	10-05-2022	70	3	38	147	8.87	6	0.96	5.24
12	DHDS	10-05-2022	60	1.25	39	226	10.87	1	0.03	0.87
13	CCRU Reformer Heater-201, 202,203 FF	11-05-2022	60	1.64	36	286	12.75	4	0.21	3.49
14	OHCU LP Section	11-05-2022	65	2.42	37	228	11.35	6	0.67	5.24
15	OHCU RG Heater	11-05-2022	63	1.35	37	273	10.92	1	0.03	0.87
16	CCRU NHT Heater-FF 101	11-05-2022	70	2.34	36	282	11.58	1	0.10	0.87
17	MSQ-1	12-05-2022	60	1.64	38	267	11.18	8	0.38	6.98
18	MSQ-2	12-05-2022	60	1.64	39	282	11.58	2	0.09	1.75
19	MSQ-3	12-05-2022	60	1.64	37	305	11.92	66	3.09	57.61
20	CCRU Reformer Heater-FF 205	12-05-2022	70	2.34	38	240	11.02	4	0.40	3.49
							Gas	150		
							Liquid	200		
							FCCU	400		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measured with Flue Gas Analyser.

**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205140114-116, 202205160116-117, 202205170110-112  
202205180116-118, 202205190162-163, 202205200136-138  
Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

**: Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
21	DHDT BS VI	14-05-2022	70	1.8	39	182	10.12	22	1.34	19.20
22	HGU-BS-VI	14-05-2022	0	3.4	39	208	10.52	18	3.84	15.71
23	RFCC Feed Charger	14-05-2022		2.1	38	284	11.97	1	0.08	0.87
24	AVU-1	16-05-2022	100	5.1	39	145	9.53	1	0.50	0.87
25	HGU-06	16-05-2022	0	3.4	40	212	11.09	1	0.22	0.87
26	UB-01	17-05-2022	100	3.04	40	155	10.12	23	4.24	20.08
27	CPP-VHP-1	17-05-2022	100	3.34	39	156	9.60	5	1.05	4.36
28	CPP-VHP-2	17-05-2022	100	3.34	39	168	10.55	110	24.73	96.02
29	PTA/Thermal Oxidiser	18-05-2022	60	2.35	36	79	9.73	1	0.13	0.87
30	PTA/FCPH	18-05-2022	60	2.35	36	200	10.20	11	1.10	9.60
31	PTA/Hot Oil Heater	18-05-2022	60	2.35	37	264	10.10	42	3.68	36.66
32	PXCCR	19-05-2022	100	1.9	39	278	11.26	24	1.49	20.95
33	PX NHT	19-05-2022	30	1	39	265	11.59	12	0.22	10.47
34	PX Isomer	20-05-2022	56	1.2	40	289	11.84	6	0.15	5.24
35	PX Tatory	20-05-2022	56	1.2	40	275	11.93	9	0.24	7.86
36	PX-Xylene	20-05-2022	78	2	39	213	11.73	6	0.49	5.24
Permissible Limits (mg/Nm <sup>3</sup> )							Gas	150		
							Liquid	200		
							FCCU	400		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measured with Flue Gas Analyser.



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(RAVINDER MITTAL)

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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205190160-161  
Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	19-05-2022	70	1.9	39	223	11.47	ND	-	-
2	SRU-26	19-05-2022	70	1.9	40	245	12.08	ND	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>15</b>		
<b>Test Method</b>								<b>IS:11255 (P-4)</b>		

**Remark:**  
ND-Below Detection Limit, <sup>1</sup> Hydrogen Sulphide (as H<sub>2</sub>S)-ND [LOQ- 0.1],  
Sample Analysed within six days from the date of sampling.



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**Test Report**

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Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205190160-161  
Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
1	SRU-57	19-05-2022	70	1.9	39	223	11.47	32	2.3	12.2	326	22.94	173.28
2	SRU-26	19-05-2022	70	1.9	40	245	12.08	36	2.6	13.7	310	22.01	164.77
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>-</b>			<b>350</b>		

**Remark:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LDQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures With Flue Gas Analyser.



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Panipat Refinery, Distt. Panipat  
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Test Report No.: 202205190160-161  
Test Report Date: 28/05/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	19-05-2022	70	1.9	39	223	11.47	142	9.99	123.95
2	SRU-26	19-05-2022	70	1.9	40	245	12.08	135	9.58	117.84
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>150</b>		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (L.OQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.



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**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206290111-112  
Test Report Date: 05/07/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

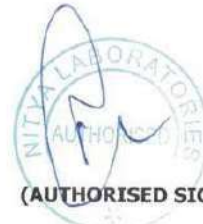
: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Hydrogen Sulphide (as H <sub>2</sub> S)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	29-06-2022	70	1.9	31	203	10.14	ND	-	-
2	SRU-26	29-06-2022	70	1.9	30	152	8.77	ND	-	-
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>15</b>		
<b>Test Method</b>								<b>IS:11255 (P-4)</b>		

**Remark:**

ND-Below Detection Limit; <sup>1</sup> Hydrogen Sulphide (as H<sub>2</sub>S)-ND [LOQ- 0.1],  
Sample Analysed within six days from the date of sampling.

  
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**(RAVINDER MITTAL)**

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

**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206290111-112  
Test Report Date: 05/07/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Oxides of Sulphur (as SO <sub>x</sub> )			Oxides of Nitrogen (as NO <sub>x</sub> )		
								mg/N m <sup>3</sup>	Kg/hr	PPM	mg/N m <sup>3</sup>	Kg/hr	PPM
1	SRU-57	29.06.2022	70	1.9	39	223	11.47	38	2.5	14.5	301	19.51	159.99
2	SRU-26	29.06.2022	70	1.9	40	245	12.08	32	2.0	12.2	311	19.53	165.30
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								-			350		

**Remark:**

ND-Below Detection Limit, Oxides of Sulphur (as SO<sub>x</sub>)-ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measures with Flue Gas Analyser.

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

**Test Report**

**Issued to: M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206290111-112  
Test Report Date: 05/07/2022

**Sample Particulars**

Nature of the Sample  
Purpose of Monitoring  
Method of Sampling  
Monitoring Conducted By

: **Stack Monitoring**  
: To Check the Pollution Load  
: IS: 11255 (Part 7)  
: Mr. Rishi Pal

**Analysis Report**

Sr. No.	Stack Particulars	Date of Sampling	Stack Height (meter)	Stack Diameter (meter)	Ambient Temp. (°C)	Stack Temp. (°C)	Average Gas Velocity (m/s)	Carbon Monoxide (as CO)		
								mg/Nm <sup>3</sup>	Kg/hr	PPM
1	SRU-57	29.06.2022	70	1.9	39	223	11.47	119	7.71	103.88
2	SRU-26	29.06.2022	70	1.9	40	245	12.08	138	8.67	120.46
<b>Permissible Limits (mg/Nm<sup>3</sup>)</b>								<b>150</b>		

**Remark:**

ND-Below Detection Limit, Carbon Monoxide (as CO) ND (LOQ-1.0)  
Sample Analysed within six days from the date of sampling. All above Parameters are measured with Flue Gas Analyser.



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**ULR No.:** TC 636621000002859  
**Test Report Date:** 03/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 25/12/2021  
Test Completed : 01/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 24/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.58	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	14.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	90	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	13	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	3.2	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.27	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	0.81	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA-23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.05	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.4	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.72	1.0	APHA-23 <sup>rd</sup> Ed.

Remark: BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration that can be accurately measured under specified experimental conditions.



TC-6366

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202112240110  
**Test Report Date:** 03/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 25/12/2021  
Test Completed : 01/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 24/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	4.2	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyrene	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**ULR No.:** TC 636621000002860

**Test Report Date:** 03/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle

Test Started on : 25/12/2021

Test Completed : 01/01/2022

Method of Sampling : SOP/B/D-3

Date of Sampling : 24/12/2021

Sampling Conducted By : Mr. Rishi Prat

Place of Sampling : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.73	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	16	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	110	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	11	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.2	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.22	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	0.53	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.06	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.89	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.79	1.0	APHA-23 <sup>rd</sup> Ed.

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



TC - 6366

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202112240111  
**Test Report Date:** 03/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 25/12/2021  
Test Completed : 01/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	6.2	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC 636621000002861  
Test Report Date: 03/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 25/12/2021  
Test Completed : 01/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 24/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.68	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	74	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	190	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	20.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.38	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.6	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.83	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL(LOQ-0.05)	0.1	IS:3025 (P-52)

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



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202112240112  
Test Report Date: 03/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 25/12/2021  
Test Completed : 01/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 24/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)

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



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC63662200000061  
Test Report Date: 20/01/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 12/01/2022  
Test Completed : 19/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 10/01/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.64	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	16.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	100	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	12	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	3.8	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.31	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.20	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.07	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.6	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.65	1.0	APHA-23 <sup>rd</sup> Ed.

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration or mass of substance that can be accurately measured under specified experimental conditions.



TC-6366

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201100110

Test Report Date: 20/01/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 12/01/2022  
Test Completed : 19/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 10/01/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	6.4	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyrene	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**ULR No.:** TC63662200000062  
**Test Report Date:** 20/01/2022

**Sample Particulars**

**Nature of Sample** : Waste Water  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 12/01/2022  
**Test Completed** : 19/01/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 10/01/2022  
**Sampling Conducted By** : M. Rishi Pal  
**Sample Description** : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.84	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	12	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	80	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	7.0	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.8	5.0	IS:3025 (P-39)
6	Phenols (C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.21	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.2	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	0.26	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA-23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.04	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.14	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.51	1.0	APHA-23 <sup>rd</sup> Ed.

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



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202201100111  
**Test Report Date:** 20/01/2022

**Sample Particulars**

**Nature of Sample** : Waste Water  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 17/01/2022  
**Test Completed** : 19/01/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 10/01/2022  
**Sampling Conducted By** : Mr. Rishi Pal  
**Sample Description** : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	3.4	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC63662200000063  
Test Report Date: 20/01/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 12/01/2022  
Test Completed : 19/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 10/01/2022  
Sampling Conducted By : Mr. Rishi ,e,  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.66	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	72	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	180	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	16.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.68	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.4	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.41	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL(LOQ-0.05)	0.1	IS:3025 (P-52)

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



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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201100112  
Test Report Date: 20/01/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : **1.0 Liter, Pet Bottle**  
Test Started on : **12/01/2022**  
Test Completed : **19/01/2022**  
Method of Sampling : **SOP/B/D-3**  
Date of Sampling : **10/01/2022**  
Sampling Conducted By : **Mr. Rishi Pal**  
Sample Description : **ETP-3 (PTA-ETP)**

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC63662200000602  
Test Report Date: 04/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.24	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	18.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	120	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	10	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	3.4	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.32	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.2	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.41	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.05	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.2	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.69	1.0	APHA-23 <sup>rd</sup> Ed.

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



TC-6366

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202202230110  
Test Report Date: 04/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	6.1	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC63662200000603  
Test Report Date: 04/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.58	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	14	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	90	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	10	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	2.6	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.25	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	0.28	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.07	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.62	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.85	1.0	APHA-23 <sup>rd</sup> Ed.

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



TC-6366

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(RAVINDER MITTAL)

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**Test Report**

**Issued To** **M/e Indian Oil Corporation Limited** Test Report No.: 202202230111  
(Refinery Division) Test Report Date: 04/03/2022  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	4.8	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**(RAVINDER MITTAL)**

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### Test Report

**Issued To** **M/s Indian Oil Corporation Limited** **ULR No.:** TC63662200000604  
(Refinery Division) **Test Report Date:** 04/03/2022  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

### Sample Particulars

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

### Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.85	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	76	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	190	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	18.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.84	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.6	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.84	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL(LOQ-0.05)	0.1	IS:3025 (P-52)

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



TC-6366



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202202230112  
**Test Report Date:** 04/03/2022

**Sample Particulars**

**Nature of Sample** : Waste Water  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 24/02/2022  
**Test Completed** : 03/03/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 23/02/2022  
**Sampling Conducted By** : Mr. Rishi Pal  
**Sample Description** : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)

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



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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203210116  
Test Report Date: 30/03/2022

**Sample Particulars**

Nature of Sample : **Wastewater**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 22/03/2022  
Test Completed : 29/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 21/03/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.62	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	16.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	110	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	12	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	3.6	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.31	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.28	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.06	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.8	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.72	1.0	APHA-23 <sup>rd</sup> Ed.

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

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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203210116  
Test Report Date: 30/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 22/03/2022  
Test Completed : 29/03/2022  
Method of Sampling : SCP/B/D-3  
Date of Sampling : 21/03/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	4.8	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited**  
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Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203210117  
Test Report Date: 30/03/2022

**Sample Particulars**  
Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 22/03/2022  
Test Completed : 29/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 21/03/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.62	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	12	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	100	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	8.0	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	2.4	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.22	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	BDL (LOQ-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	0.38	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL (LOQ-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	BDL (LOQ-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.08	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	BDL (LOQ-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.42	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.66	1.0	APHA-23 <sup>rd</sup> Ed.

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

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203210117  
Test Report Date: 30/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 22/03/2022  
Test Completed : 29/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 21/03/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	4.2	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	BDL(LOQ-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	BDL(LOQ-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	BDL(LOQ-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203210118

Test Report Date: 30/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 22/03/2022  
Test Completed : 29/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 21/03/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.64	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	78	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	180	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	14.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.68	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.2	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.14	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	BDL(LOQ-0.05)	0.1	IS:3025 (P-52)

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

  
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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited**  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203210118  
Test Report Date: 30/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 22/03/2022  
Test Completed : 29/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 21/03/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	BDL (LOQ-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	BDL(LOQ-0.05)	2.0	IS:3025 (P-52)

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



**(AUTHORISED SIGNATORY)**

**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204250119  
Test Report Date: 30/04/2022

**Sample Particulars**

Nature of Sample : **Wastewater**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 25/04/2022  
Test Completed : 30/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.82	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	14.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	120	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	10	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	3.8	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.30	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.40	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	ND (DL-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.40	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND (DL-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	ND (DL-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.06	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	ND (DL-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.4	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.76	1.0	APHA-23 <sup>rd</sup> Ed.

Remark:

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

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204250119  
Test Report Date: 30/04/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 26/04/2022  
Test Completed : 30/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	4.1	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	ND(DL-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	ND(DL-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	ND(DL-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204250120  
Test Report Date: 30/04/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 26/04/2022  
Test Completed : 30/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 C/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.33	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	16	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	110	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	12.0	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	2.8	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.28	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.4	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	ND (DL-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.2	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND (DL-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	ND (DL-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.06	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	ND (DL-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.42	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.68	1.0	APHA-23 <sup>rd</sup> Ed.

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

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204250120  
Test Report Date: 30/04/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 26/04/2022  
Test Completed : 30/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	6.8	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	ND(DL-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	ND(DL-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	ND(DL-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

Remark:

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

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204250121  
Test Report Date: 30/04/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 26/04/2022  
Test Completed : 30/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.82	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	76.0	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	190	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	16.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.64	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.8	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.24	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND(DL-0.05)	0.1	IS:3025 (P-52)

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

  
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### Test Report

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202204250121  
**Test Report Date:** 30/04/2022

### Sample Particulars

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 26/04/2022  
Test Completed : 30/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 25/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

### Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)

Remark:

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202205270121  
**Test Report Date:** 04/06/2022

**Sample Particulars**

**Nature of Sample** : Wastewater  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 28/05/2022  
**Test Completed** : 03/06/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 27/05/2022  
**Sampling Conducted By** : Mr. Rishi Pal  
**Sample Description** : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.24	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	18.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	110	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	12	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	4.0	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.32	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.20	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	ND (DL-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.66	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND (DL-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	ND (DL-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.08	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	ND (DL-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.6	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.82	1.0	APHA-23 <sup>rd</sup> Ed.

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

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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205270121  
Test Report Date: 04/06/2022

**Sample Particulars**

Nature of Sample : Waste Water  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 28/05/2022  
Test Completed : 03/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 27/05/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	8.2	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	ND(DL-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	ND(DL-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	ND(DL-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202205270122  
**Test Report Date:** 04/06/2022

**Sample Particulars**

**Nature of Sample** : Waste Water  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 28/05/2022  
**Test Completed** : 03/06/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 27/05/2022  
**Sampling Conducted By** : Mr. Rishi Pal  
**Sample Description** : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.46	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	18	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	100	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	10.0	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	2.4	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.24	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.2	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	ND (DL-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.8	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND (DL-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	ND (DL-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.08	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	ND (DL-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.42	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.42	1.0	APHA-23 <sup>rd</sup> Ed.

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

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202205270122  
**Test Report Date:** 04/06/2022

**Sample Particulars**

**Nature of Sample** : Waste Water  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 28/05/2022  
**Test Completed** : 03/06/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 27/05/2022  
**Sampling Conducted By** : Mr. Rishi Pal  
**Sample Description** : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	10.2	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	ND(DL-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	ND(DL-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	ND(DL-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205270123  
Test Report Date: 04/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 28/05/2022  
Test Completed : 03/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 27/05/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.48	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	84.0	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	210	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	20.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.84	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.6	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.4	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND(DL-0.05)	0.1	IS:3025 (P-52)

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

  
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### Test Report

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205270123

Test Report Date: 04/06/2022

### Sample Particulars

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 28/05/2022  
Test Completed : 03/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 27/05/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

### Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206150111

Test Report Date: 24/06/2022

**Sample Particulars**

Nature of Sample : **Wastewater**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.42	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	14.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	100	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	10	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	4.2	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.30	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.40	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	ND (DL-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.82	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND (DL-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	ND (DL-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.06	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	ND (DL-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	3.2	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.64	1.0	APHA-23 <sup>rd</sup> Ed.

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

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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited** Test Report No.: 202206150111  
(Refinery Division) Test Report Date: 24/06/2022  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-1 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	4.2	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	ND(DL-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	ND(DL-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	ND(DL-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited** Test Report No.: 202206150112  
(Refinery Division) Test Report Date: 24/06/2022  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	7.16	6.0-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	16	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	110	125.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	12.0	15.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	2.8	5.0	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.32	0.35	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.2	0.5	IS:3025 (P-29)
8	Total Kjeldahl Nitrogen (NH <sub>3</sub> )	mg/L	ND (DL-0.2)	40	IS:3025 (P-34)
9	Phosphate	mg/L	1.2	3.0	IS:3025 (P-31)
10	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND (DL-0.05)	0.1	IS:3025 (P-52)
11	Copper (Cu)	mg/L	ND (DL-0.1)	1.0	APHA -23 <sup>rd</sup> Ed.
12	Lead (Pb)	mg/L	0.05	0.1	APHA-23 <sup>rd</sup> Ed.
13	Mercury (Hg)	mg/L	ND (DL-0.005)	0.01	APHA-23 <sup>rd</sup> Ed.
14	Zinc (Zn)	mg/L	2.60	5.0	APHA-23 <sup>rd</sup> Ed.
15	Nickel (Ni)	mg/L	0.34	1.0	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited** Test Report No.: 202206150112  
(Refinery Division) Test Report Date: 24/06/2022  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-2 O/L (PR)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Ammonia (N)	mg/L	8.4	15.0	IS:3025 (P-34)
2	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
3	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)
4	Vanadium (V)	mg/L	ND(DL-0.1)	0.2	APHA-23 <sup>rd</sup> Ed.
5	Benzene	mg/L	ND(DL-0.01)	0.1	APHA-23 <sup>rd</sup> Ed.
6	Benzo(a)-Pyreen	mg/L	ND(DL-0.02)	0.2	APHA-23 <sup>rd</sup> Ed.

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

  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206150113  
Test Report Date: 24/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.82	6.5-8.5	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	80.0	100	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	220	250	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	22.0	30	IS:3025 (P-44)
5	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.76	<1	IS:3025 (P-43)
6	Sulphide (S)	mg/L	1.4	2.0	IS:3025 (P-29)
7	Fluoride	mg/L	3.2	<5	IS:3025 (P-60)
8	Chromium Hexavalent (Cr <sup>+6</sup> )	mg/L	ND(DL-0.05)	0.1	IS:3025 (P-52)

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

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206150113  
Test Report Date: 24/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : ETP-3 (PTA-ETP)

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Cyanide (CN)	mg/L	ND (DL-0.1)	0.20	APHA-23 <sup>rd</sup> Ed.
2	Total Chromium	mg/L	ND(DL-0.05)	2.0	IS:3025 (P-52)

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

  
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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

ULR No.: TC 636621000003008  
Test Report Date: 07/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 01/01/2022  
Test Completed : 06/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 31/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.53	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	18.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	46.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	6.0	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.4	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.12	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.8	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	1.8	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.52	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	721	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	3.24	-	IS:3025 (P-34)
13	MLSS	mg/L	17.0	-	APHA 23rd

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



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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202112310110  
Test Report Date: 07/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 01/01/2022  
Test Completed : 06/01/2022  
Method of Sampling : SUP/B/D-3  
Date of Sampling : 31/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	7.4	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	4.2	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.84	-	IS:3025 (P-60)
5.	Residual Sodium Carbonate (RSC)	mg/L	1.2	-	IS 11624

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

  
**AUTHORISED SIGNATORY**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202112310110  
Test Report Date: 07/01/2022

**Sample Particulars**

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 01/01/2022  
Test Completed : 06/01/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 31/12/2021  
Sampling Conducted By : Mr. Rishi Pal  
Place of Sampling : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Faecal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

  
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RHYTHM BASSON

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**Test Report**

**Issued To** M/S Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**ULR No.:** TC63662200000341  
**Test Report Date:** 08/02/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 31/01/2022  
Test Completed : 07/02/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 29/01/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.61	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	17.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	42.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	4.0	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.2	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.18	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.6	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	2.4	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.42	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	846	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	3.12	-	IS:3025 (P-34)
13	MLSS	mg/L	18.0	-	APHA 23rd
14					

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



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(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202201290118  
Test Report Date: 08/02/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 31/01/2022  
Test Completed : 07/02/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 29/01/2022  
Sampling Conducted By : Mr. Rishi P  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	6.2	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	4.8	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.66	-	IS:3025 (P-60)
5.	Residual Sodium Carbonate (RSC)	mg/L	1.4	-	IS 11624
6.	Feecal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

  
(AUTHORISED SIGNATORY)  
(RHYTHM BASSON)

  
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(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**ULR No.:** TC63662200000607  
**Test Report Date:** 04/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.72	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	14.8	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	46.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	6.0	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.8	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.22	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	0.8	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	3.8	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.84	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	882	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	3.46	-	IS:3025 (P-34)
13	MLSS	mg/L	14.0	-	APHA 23rd
14					

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



TC-6366

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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202202230116  
Test Report Date: 04/03/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 24/02/2022  
Test Completed : 03/03/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 23/02/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	8.6	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	6.9	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.42	-	IS:3025 (P-60)
5.	Residual Sodium Carbonate (RSC)	mg/L	1.2	-	IS 11624
6.	Faecal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

Remark

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

  
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(RHYTHM BASSON)

  
(AUTHORISED SIGNATORY)  
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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202203280120  
Test Report Date: 05/04/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 29/03/2022  
Test Completed : 04/04/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 28/03/2022  
Sampling Conducted By : M Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.83	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	16.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	44.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	3.4	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.6	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.32	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	1.2	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	4.2	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.68	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	1028	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	3.24	-	IS:3025 (P-34)
13	MLSS	mg/L	18.0	-	APHA 23rd
14					

**Remark:**

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Test Report No.:** 202203280120  
**Test Report Date:** 05/04/2022

**Sample Particulars**

**Nature of Sample** : Waste Water  
**Sample Quantity & Packaging** : 1.0 Liter, Pet Bottle  
**Test Started on** : 29/03/2022  
**Test Completed** : 04/04/2022  
**Method of Sampling** : SOP/B/D-3  
**Date of Sampling** : 28/03/2022  
**Sampling Conducted By** : Mr. Rishi Pal  
**Sample Description** : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	6.8	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	6.2	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.1	-	IS:3025 (P-60)
5	Residual Sodium Carbonate (RSC)	mg/L	1.4	-	IS 11624
6	Feecal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

Remark:

BDL-Below Detection Limit, LOQ-Limit of Quantification, the lowest concentration of a substance that can be accurately measured under specified experimental conditions.



**(AUTHORISED SIGNATORY)**

**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** **M/s Indian Oil Corporation Limited** Test Report No.: 202204300149  
(Refinery Division) Test Report Date: 09/05/2022  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 02/05/2022  
Test Completed : 07/05/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 30/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.43	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	12.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	40.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	3.2	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.8	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.38	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	1.6	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	6.2	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.42	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	1186	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	3.82	-	IS:3025 (P-34)
13	MLSS	mg/L	14.0	-	APHA 23rd

Remark:

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

  
(AUTHORISED SIGNATORY)  
(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202204300149  
Test Report Date: 09/05/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 02/05/2022  
Test Completed : 07/05/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 30/04/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	8.2	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	6.0	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.6	-	IS:3025 (P-60)
5.	Residual Sodium Carbonate (RSC)	mg/L	1.2	-	IS 11624
6.	Feecal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

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

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205280110  
Test Report Date: 04/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 29/05/2022  
Test Completed : 03/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 28/05/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.46	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	18.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	44.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	4.2	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.4	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.82	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	1.6	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	6.8	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.82	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	1194	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	4.16	-	IS:3025 (P-34)
13	MLSS	mg/L	16.0	-	APHA 23rd

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

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202205280110  
Test Report Date: 04/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 29/05/2022  
Test Completed : 03/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 28/05/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	8.6	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	4.0	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.8	-	IS:3025 (P-60)
5.	Residual Sodium Carbonate (RSC)	mg/L	1.6	-	IS 11624
6.	Feacal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

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

  
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**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206150117  
Test Report Date: 24/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	pH	...	6.58	5.5-9.0	IS:3025 (P-11)
2	Total Suspended Solids (TSS)	mg/L	12.0	20.0	IS:3025 (P-17)
3	Chemical Oxygen Demand (COD)	mg/L	42.0	50.0	IS:3025 (P-58)
4	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	4.0	10.0	IS:3025 (P-44)
5	Oil & Grease (O&G)	mg/L	1.8	-	IS:3025 (P-39)
6	Phenols(C <sub>6</sub> H <sub>5</sub> OH)	mg/L	0.86	-	IS:3025 (P-43)
7	Sulphide (S)	mg/L	1.2	-	IS:3025 (P-29)
8	Odour	-	Agreeable	-	IS:3025 (P-5)
9	Total Residual Free Chlorine	mg/L	6.4	-	IS:3025 (P-26)
10	Phosphate	mg/L	0.62	-	IS:3025 (P-31)
11	Electrical Conductivity	us/cm	1182	-	IS:3025 (P-14)
12	Ammonical Nitrogen	mg/L	4.26	-	IS:3025 (P-34)
13	MLSS	mg/L	10.0	-	APHA 23rd

**Remark:**

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

  
**(AUTHORISED SIGNATORY)**  
**(RAVINDER MITTAL)**

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**Test Report**

**Issued To** M/s Indian Oil Corporation Limited  
(Refinery Division)  
Panipat Refinery, Distt. Panipat  
Haryana, INDIA

Test Report No.: 202206150116  
Test Report Date: 24/06/2022

**Sample Particulars**

Nature of Sample : **Waste Water**  
Sample Quantity & Packaging : 1.0 Liter, Pet Bottle  
Test Started on : 16/06/2022  
Test Completed : 23/06/2022  
Method of Sampling : SOP/B/D-3  
Date of Sampling : 15/06/2022  
Sampling Conducted By : Mr. Rishi Pal  
Sample Description : STP-O/L Township

**Test Report**

Sr. No.	Parameter	Unit	Result	Permissible Limits	Protocol
1	Colour	Hazen	<5	-	IS:3025 (P-4)
2	Total Nitrogen	mg/L	8.2	10	IS:3025 (P-34)
3	Sodium Adsorption Ratio	-	6.0	-	In House NL/SOP/W&WW/52
4	Fluoride as F	mg/L	2.6	-	IS:3025 (P-60)
5.	Residual Sodium Carbonate (RSC)	mg/L	1.2	-	IS 11624
6.	Feecal Coliform	No./100 ml	Less than 2	Less than 100	IS 1622

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

  
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**LDAR Monitoring Report for IOCL, Panipat**

**Name of client** M/s Indian Oil Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR Monitoring Report for IOCL, Panipat

**Report Period** Month of October to December, 2021.

For NETEL (INDIA) LIMITED

  
**JAYANT MESHARAM**  
SR.MANAGER - EMS OPERATION

A circular blue ink stamp for NETEL (INDIA) LIMITED. The outer ring contains the text 'NETEL (INDIA) LIMITED' at the top and 'RABALE MIDC, NAVI MUMBAI' at the bottom. In the center is a smaller square logo with the letters 'NETEL'.

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Report for the month of October to December, 2021.



LDAR VOC MONITORING REPORT FOR IOCL, PANIPAT



LEAK DETECTION AND REPAIR (LDAR) PROGRAM  
VOC REPORT MONTH OF OCTOBER TO DECEMBER, 2021.

PLANTWISE SUMMARY

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	HGU (PR)	15/11/2021	124	1 to 4	3	2.120
2	OHCU	15/11/2021	287	5 to 13	4	1.968
3	AVU-I	15/11/2021	438	14 to 27	3	1.822
4	DHDS	16/11/2021	269	27 to 36	1	0.734
5	RFCC	16/11/2021	251	36 to 44	4	2.609
6	CCRU	16/11/2021	191	44 to 50	2	1.400
7	AVU-II	17/11/2021	300	50 to 59	1	0.662
8	DHDT	17/11/2021	263	59 to 67	1	0.838
9	HGU(76&77)	17/11/2021	245	67 to 75	4	2.541
10	HCU	17/11/2021	394	75 to 87	2	1.569
11	MSQ	18/11/2021	225	87 to 94	4	2.520
12	HGU (BS-6)	18/11/2021	85	94 to 97	2	1.228
13	DHDT (BS-6)	18/11/2021	429	97 to 110	3	2.073
14	DCU	20/11/2021	333	110 to 120	0	0.110
15	ETP-1	20/11/2021	57	120 to 122	0	0.007
16	ETP-2	20/11/2021	58	122 to 124	0	0.008
17	OM&S	20/11/2021	477	124 to 139	6	4.133
18	SRU-NEW	22/11/2021	58	139 to 140	0	0.006
19	SRU-(BS-6)	22/11/2021	30	140 to 143	0	0.014
<b>Total in Kg/day</b>			<b>4514</b>		<b>40</b>	<b>26.36</b>
<b>Total in MT/Annum</b>						<b>9.622</b>

Verified by

Surekha Jamdar  
Dy. Technical Manager



Checked by

Shraddha Kere  
Technical Manager



## LDAR Benzene Monitoring Report for IOCL , Panipat


**Name of client** M/s Indian Oli Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR Monitoring Report for IOCL , Panipat

**Report Period** Month of October to December,2021

**For NETEL (INDIA) LIMITED**

  
**Jayant Meshram**  
**Sr.Manager-EMS Operation**



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Report for the Month of Octoberto December,2021.



**LEAK DETECTION AND REPAIR (LDAR) PROGRAM**  
**BENZENE QUARTERLY REPORT : OCTOBER TO DECEMBER, 2021.**  
**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	CCRU	16/11/2021	230	1 to 7	0	0.056
2	MSQ	18/11/2021	32	7 to 8	0	0.019
<b>Total in Kg/day</b>						<b>0.075</b>
<b>Total in MT/Annum</b>						<b>0.027</b>

Verified by

Surekha Jamdar  
Dy. Technical Manager



Checked by

Shraddha Kere  
Technical Manager

Report for the month of October to December, 2021.



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**LDAR Monitoring Report for IOCL PX-PTA, Panipat**

**Name of client** M/s Indian Oil Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR Monitoring Report for IOCL PX-PTA, Panipat

**Report Period** Months of October to December, 2021

For NETEL (INDIA) LIMITED

  
Jayant Meshram  
Sr. Manager - EMS Operation



---

Report for the period from October to December, 2021.



**LEAK DETECTION AND REPAIR (LDAR) PROGRAM**  
**VOC QUARTERLY REPORT : OCTOBER TO DECEMBER, 2021.**

**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	PX-I	22/11/2021	260	1 to 9	6	0.103
2	PX-II	22/11/2021	257	9 to 17	0	0.110
2	PTA	23/11/2021	200	17 to 23	0	0.053
3	PTA-ETP	23/11/2021	45	23 to 24	0	0.044
Total in Kg/day			762		6	0.310
Total in MT/Annum						0.113

Verified by

Surekha Jamdar  
Dy. Technical Manager



Checked by

Shradha Kere  
Technical Manager

Report for the period from October to December, 2021.



**LDAR Benzene Monitoring Report for IOCL, Panipat**

**Name of client** M/s Indian Oil Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Pipe line Road, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR Monitoring Report for IOCL, Panipat

**Report Period** Month of October to December,2021

**For NETEL (INDIA) LIMITED**

  
**JAYANT MESHAM**  
**SR.MANAGER - EMS OPREATION**

A circular blue ink stamp of NETEL (INDIA) LIMITED. The outer ring contains the text 'NETEL (INDIA) LIMITED'. The inner part contains 'RABALE' and 'NAVI MUMBAI'.

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Report for the period from October to December,2021

**LEAK DETECTION AND REPAIR (LDAR) PROGRAM**  
**BENZENE QUARTERLY REPORT : OCTOBER TO DECEMBER, 2021**  
**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	PX-1	22/11/2021	198	7 to 11	0	0.042
2	PX-2	22/11/2021	80	11 to 13	0	0.008
3	PTA	23/11/2021	64	13 to 15	0	0.015
Total in Kg/day			342		0	0.065
Total in MT/Annum						0.024

Verified by



Surekha Jamdar  
Dy. Technical Manager



Checked by



Shraddha Kere  
Technical Manager

Report for the period from October to December, 2021



**LDAR (VOC) Monitoring Report for IOCL, Panipat Refinery**

**Name of client** M/s Indian Oil Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR (VOC) Monitoring Report for IOCL, Panipat

**Report Period** 3 Months of January 2022 to March,2022.

**For NETEL (INDIA) LIMITED**

A handwritten signature in blue ink, appearing to read 'Anil Shelke'.



**ANIL SHELKE**  
**GENERAL MANAGER - EMS**

Report for the month of January 2022 to March 2022.





**LEAK DETECTION AND REPAIR (LDAR) PROGRAM**  
**VOC QUARTERLY REPORT: From JANUARY 2022 TO MARCH 2022**

**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	HGU (PR)	21/03/2022	124	1 to 4	4	1.377
6	AVU-I	21/03/2022	438	5 to 18	3	1.737
2	OHCU	21/03/2022	287	18 to 27	5	2.540
4	DHDS	22/03/2022	269	27 to 35	2	0.785
5	RFCC	22/03/2022	251	35 to 44	4	1.688
6	CCRU	22/03/2022	191	44 to 50	5	2.975
7	AVU-II	23/03/2022	300	50 to 59	4	1.876
9	HGU(76&77)	23/03/2022	245	59 to 67	2	0.972
10	HCU	23/03/2022	394	67 to 79	3	1.139
11	MSQ	23/03/2022	225	79 to 86	2	1.248
12	HGU (BS-6)	24/03/2022	85	86 to 89	0	0.006
13	DHDT (BS-6)	24/03/2022	429	89 to 102	1	0.313
14	DCU	24/03/2022	333	102 to 113	3	1.271
15	ETP-1	24/03/2022	57	113 to 114	0	0.008
16	ETP-2	24/03/2022	58	114 to 116	0	0.016
18	SRU-NEW	25/03/2022	58	116 to 118	0	0.028
19	SRU-(BS-6)	25/03/2022	30	118 to 119	0	0.003
17	OM&S	26/03/2022	450	119 to 128	5	2.118
<b>Total in Kg/day</b>			<b>4224</b>		<b>43</b>	<b>20.10</b>
<b>Total in MT/Annum</b>						<b>7.337</b>

Verified by

  
**Surekha Jamdar**  
 Technical Manager



Checked by

  
**Shraddha Kere**  
 Quality Manager

Report for the month of January 2022 to March,2022.



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**LDAR (Benzene) Monitoring Report for IOCL , Panipat Refinery**

**Name of client** M/s Indian Oli Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR (Benzene) Monitoring Report for IOCL , Panipat Refinery

**Report Period** 3 Months from January 2022 to March,2022

**For NETEL (INDIA) LIMITED**

A handwritten signature in blue ink, appearing to read "Anil Shelke".



**ANIL SHELKE**  
**GENERAL MANAGER-EMS**

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Report for the Month of January 2022 to March,2022.



**LEAK DETECTION AND REPAIR (LDAR) PROGRAM**  
**BENZENE QUARTERLY REPORT : From JANUARY 2022 TO MARCH 2022**

**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	CCRU	22/03/2022	230	1 to 7	0	0.041
2	MSQ	23/03/2022	32	7 to 8	0	0.010
<b>Total in Kg/day</b>						<b>0.051</b>
<b>Total in MT/Annum</b>						<b>0.019</b>

Verified by

  
 Surekha Jamdar  
 Technical Manager



Checked by

  
 Shraddha Kere  
 Quality Manager

Report for the month of January 2022 to March,2022.



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**LDAR (VOC) Monitoring Report for IOCL PX-PTA, Panipat Refinery**

**Name of client** M/s Indian Oli Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR (VOC) Monitoring Report for IOCL PX-PTA, Panipat Refinery

**Report Period** 3 Month from January 2022 to March 2022

**For NETEL (INDIA) LIMITED**

A handwritten signature in black ink, appearing to read "Anil Shelke".



**ANIL SHELKE**  
**GENERAL MANAGER-EMS**

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Report for the month of January 2022 to March 2022.



**LEAK DETECTION AND REPAIR (LDAR) PROGRAM  
VOC QUARTERLY REPORT FROM JANUARY 2022 TO MARCH, 2022**

**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	PX-I	25/03/2022	260	1 to 9	4	2.449
2	PX-II	25/03/2022	257	9 to 17	0	0.628
2	PTA	26/03/2022	200	17 to 23	1	0.036
3	PTA-ETP	26/03/2022	45	23 to 24	0	0.017
Total in Kg/day			762		5	3.130
Total in MT/Annum						1.142

Verified by

*Surekha*  
Surekha Jamdar  
Technical Manager



Checked by

*Shraddha*  
Shraddha Kere  
Quality Manager

Report for the month of January 2022 to March 2022.



**LDAR Benzene Monitoring Report for IOCL, PX- PTA Panipat Refinery**

**Name of client** M/s Indian Oli Corporation Limited  
P.O. Panipat Refinery  
Panipat-132 140  
HARYANA

**Name of Contractor** NETEL (INDIA) LIMITED  
Environment Management Services  
W-408, Pipe line Road, Rabale MIDC,  
TTC Industrial Area, Navi Mumbai - 400 701

**Nature of job** LDAR (Benzene) Monitoring Report for IOCL, PX-PTA Panipat

**Report Period** Month of January to March,2022

**For NETEL (INDIA) LIMITED**

A handwritten signature in black ink, appearing to be "Anil Shelke".



**ANIL SHELKE**  
**GENERAL MANAGER - EMS**

Report for the month of January 2022 to March 2022



**LEAK DETECTION AND REPAIR (LDAR) PROGRAM  
BENZENE QUARTERLY REPORT FROM JANUARY 2022 TO MARCH 2022**

**PLANTWISE SUMMARY**

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	PX-1	25/03/2022	198	7 to 11	0	0.104
2	PX-2	25/03/2022	80	11 to 13	0	0.053
3	PTA	26/03/2022	64	13 to 15	0	0.047
<b>Total in Kg/day</b>			<b>342</b>		<b>0</b>	<b>0.204</b>
<b>Total in MT/Annum</b>						<b>0.074</b>

Verified by

**Surekha Jamdar**  
Technical Manager



Checked by

**Shradha Kere**  
Quality Manager

Report for the month of January 2022 to March 2022