



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/2021/EC Compliance

Date: 17.01.2022

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

Sub: Six Monthly Environmental Clearances (Jul'2021 to Dec'2021) Compliance Report- Panipat Refinery Complex.

Dear Sir,

Enclosed please find herewith the Six Monthly Environmental Clearances (ECs) Compliance Report- Panipat Refinery Complex for the period of **July'2021 to December'2021** of the MoEFCC 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 Terphthalic 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 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.
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 by M/s Indian Oil Corporation Ltd. (IOCL), Panipat Refinery & Petrochemical Complex at Panipat, Haryana

Thanking you,

Yours faithfully,

P. V. Ramakrishna

(P V Ramakrishna)

General Manager (HSE)

Panipat Refinery and Petrochemical Complex

Copy to:

- The Regional Officer, HSPCB, Panipat
- Chairman, HSPCB, Panchkula

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श्री. पी. रामकृष्णा
P. V. Ramakrishna
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General Manager (Health, Safety & Environment)
पानीपत रिफ़ाइनरी एवं पेट्रोकेमिकल कॉम्प्लेक्स (आई.ओ.सी.एल.)
Panipat Refinery & Petrochemical Complex (I O C L)
पानीपत, Panipat-132140

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| S N | EC General & Specific Conditions / Environmental Monitoring Reports | Compliance Status |
|-----|---|-------------------------|
| 1. | EC Letter No. J-11011/27/91-IA II(T) 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. | EC Letter No. J.11011/52/2000-IA.II dated 30.04.2001 for Integrated Para xylene 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 Para xylene 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 26 th 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 Refinery Complex by M/s Indian Oil Corporation Ltd. (IOCL), Panipat Refinery & Petrochemical Complex at Panipat, Haryana. | Attached as Annexure 10 |
| 11. | Six Monthly Ambient Air Quality and Stack Monitoring Data. | Attached as Annexure 11 |
| 12. | Six Monthly Treated Effluent Quality Data (ETP and STP). | Attached as Annexure 12 |
| 13. | Six Monthly Fugitive Emission Data. | Attached as Annexure 13 |
| 14. | Noise Survey 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. | Being Complied |
| 2. | Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this ministry. | Being Complied |
| 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. | Being Complied 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"> • 1 no. SRUs: 99% efficiency ,1X115 MT/day capacity • 4 no. SRUs: 99.9% efficiency ,4X225 MT/day capacity |
| 4. | Low Sulfur fuel (Sulphur content not exceeding 1%) should be used in the boilers/furnaces. | Being Complied |
| 5. | Low NO _x burners should be used to avoid excessive formation of NO _x . | Being Complied Low NO _x burners have been installed in the process heaters , Boilers , furnaces etc. |
| 6. | Total emission of SO ₂ from the refinery should not exceed 1 Ton/hr. | Being Complied SO ₂ emission from the Refinery is well within the limit. |
| 7. | The gaseous emissions (SO ₂ , NO _x 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. | Being Complied |
| 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. | Being Complied 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 ₂ , NO _x , 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. | Being Complied |
| 10. | Fugitive emission should be regularly monitored and record maintained. | Being Complied 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. | Noted. Being Complied. |
| 12. | The height of stacks attached to AVU, FCCU and TPS etc. should not be less than 100 m. | Implemented. |
| 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. | Being Complied 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 is being monitored at various stages 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. - There are 4 nos. lined pits available for storing residual oily sludge. |
| 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. | Being Complied 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. | Complied 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. | Being Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 22. | The industrial township should be located on the northern side of the refinery i.e. in the up-wind direction. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 23. | A detailed Rehabilitation Plan for the affected people should be prepared and submitted to this Ministry within 3 months. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 25. | A comprehensive EIA must be prepared and submitted to this Ministry by September, 1993 covering regional implications and 'no development zone' aspects. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 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. | Being Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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>Being Implemented.</p> <p>Year-wise expenditure:</p> <table border="1"> <thead> <tr> <th colspan="2">FY:2018-19</th> <th colspan="2">FY:2019-20</th> <th colspan="2">FY:2020-21</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>394.2</td> <td>1728.6</td> <td>551.8</td> <td>3060.3</td> <td>1229.8</td> <td>3465.0</td> </tr> </tbody> </table> | FY:2018-19 | | FY:2019-20 | | FY:2020-21 | | (Rupees in laks) | | | | | | Recurr ing | Non-recurri ng | Recurr ing | Non-recurri ng | Recurr ing | Non-recurri ng | 394.2 | 1728.6 | 551.8 | 3060.3 | 1229.8 | 3465.0 |
| FY:2018-19 | | FY:2019-20 | | FY:2020-21 | | | | | | | | | | | | | | | | | | | | | | |
| (Rupees in laks) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Recurr ing | Non-recurri ng | Recurr ing | Non-recurri ng | Recurr ing | Non-recurri ng | | | | | | | | | | | | | | | | | | | | | |
| 394.2 | 1728.6 | 551.8 | 3060.3 | 1229.8 | 3465.0 | | | | | | | | | | | | | | | | | | | | | |

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 :

| S N | Conditions stipulated in the EC letter | Status |
|-----|--|---|
| 1. | The company should strictly adhere to the stipulations made by MOE&F vide O.M. No. J.11011/76/96-IAII dated 5 th March, 1997 | Being Complied |
| 2. | a) The total SO ₂ emission from the entire Refinery complex should not exceed 1000 kg/hr even after proposed expansion. | Being Complied |
| | b) The gaseous emissions (SO ₂ , NO _x , 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. | Being Complied |
| | c) At no time, the emission level should go beyond the stipulated standards. | Being Complied |
| | 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. | Being Complied |
| 3. | Sulphur recovery units with more than 99% efficiency shall be provided. | Being Complied Four SRUs with 99.9% recovery have been installed & are operational. |
| 4. | a) Adequate ambient air quality monitoring stations SO ₂ , NO _x , 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. | Being Complied 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. | Complied |
| | c) In addition, a mobile van with adequate facilities to monitor ambient air quality outside the Refinery premises should be provided. | Complied 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 ₂ , NO _x , CO & PM. | For all stacks: SO ₂ , NO _x , 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. | Being Complied 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. |

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| 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. | Complied. |
| | b) | The concerned units must be shut down in case of effluent quality exceeding the prescribed limits. | Being Complied with. |
| 8. | a) | The company should adopt mounded storage for LPG. | Complied. 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. | Complied. 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. | Complied. |
| | d) | Based on this, on-site and off-site emergency preparedness plan must be prepared. | Complied. Onsite and Offsite Emergency Preparedness plans already prepared for Panipat Refinery. |
| | e) | Approval from the nodal agency must be obtained before commissioning the project. | Complied. |
| 9. | | The drawl of water from the Munak Head-works should not exceed 30 cusecs even after the proposed expansion. | Being Complied. |
| General conditions: | | | |
| SN | Conditions stipulated in the EC letter | | Status |
| 1. | The project authorities must strictly adhere to the stipulations | | Being complied |

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| | 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. | Being complied |
| 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. | Being complied |
| 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. | Being complied. 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 also Final Treated Effluent Quality parameters (pH, BOD, COD & TSS) 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 rd October, 1994. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire & Safety Inspectorate etc. must be obtained. | Being complied. |
| 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. | Being complied. |
| 8. | Occupational health surveillance program should be undertaken as regular exercise for all the employees, especially for those engaged in handling hazardous substances. | Being complied. |
| 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) | Being complied. 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. | Complied. |
| 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. | Being complied Social upliftment and community development has been properly taken care as per IOCL's Corporate Social Responsibility Policy through following CSR activities. – Promoting Sanitation – Environment Sustainability/ Renewable Energy Sources – Rural Development/ Promoting Preventive Healthcare/ Promotion of Sports – Promoting Education |

| | | |
|-----|---|--|
| | | <ul style="list-style-type: none"> - Enhancement of Vocational Skills - Empowering Women - Welfare of Underprivileged |
| 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. | Being Complied 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. | Being Implemented. |
| 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. | Being Complied. Six monthly compliance reports along with monitoring data are being submitted regularly. |
| 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 http://www.envfor.nic.in . 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. | Complied |
| 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. | Complied |

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 ₂ , NO _x 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. | Being Complied. 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 ₂ , NO _x , 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. | Being Complied. |
| 2 | a) Adequate ambient air quality monitoring stations (SPM, SO ₂ , NO _x , 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 | Being Complied. 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 ₂ and NO _x . | Being Complied. PX-PTA stacks are connected online to CPCB/SPCB server with parameters such as SO ₂ , NO _x , CO & PM. |
| 3 | a) Fugitive emission of HC from product storage tank yard, crude oil tanks etc. must be regularly monitored. | Being Complied. 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. | Being Complied. 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. However, Technical feasibility study for "Recycle & Reuse" of PTA treated effluent is being taken up with leading technology providers in the field of water treatment. |

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| | d) As per the commitment given the total quantity of treated effluent discharged into Thirana drain should not exceed 255 m ³ /hr. | The discharge of PTA-ETP treated effluent into Thirana Drain is being restricted well below 255 m ³ /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. | Being Complied. |
| 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. | Being Complied. |
| | General Conditions | |
| SN | Conditions stipulated in the EC letter | Status/Action plan |
| 1 | The project authority must adhere to the stipulations made by Haryana State Pollution Control Board and State Government. | Being Complied |
| 2 | No expansion or modification of the plant should be carried out without prior approval of Ministry. | Noted |
| 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. | Being complied. Mentioned reports are being sent to MOEF&CC once in 6 months and to HSPCB on bi-monthly basis. Stack analyzers are online connected 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. | Being Complied 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. | Being Complied |
| 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. | Being complied 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. | Complied. | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|----------------|------------|----------------|--|------------|--|------------------|--|--|--|--|--|------------|----------------|------------|----------------|------------|----------------|-------|--------|-------|--------|--------|--------|
| 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). | Being complied. 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. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP and risk analysis report. | Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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. | Being complied 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"> - Promoting Sanitation - Environment Sustainability/ Renewable Energy Sources - Rural Development/ Promoting Preventive Healthcare/ Promotion of Sports - Promoting Education - Enhancement of Vocational Skills - Empowering Women - Welfare of Underprivileged | | | | | | | | | | | | | | | | | | | | | | | | |
| 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. | Being Complied 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. Complied | | | | | | | | | | | | | | | | | | | | | | | | |
| 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) | Being Implemented. Year-wise expenditure: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">FY:2018-19</th> <th colspan="2">FY:2019-20</th> <th colspan="2">FY:2020-21</th> </tr> <tr> <th colspan="6" style="text-align: center;">(Rupees In laks)</th> </tr> <tr> <th>Recu rring</th> <th>Non-recu rring</th> <th>Recu rring</th> <th>Non-recu rring</th> <th>Recu rring</th> <th>Non-recu rring</th> </tr> </thead> <tbody> <tr> <td>394.2</td> <td>1728.6</td> <td>551.8</td> <td>3060.3</td> <td>1229.8</td> <td>3465.0</td> </tr> </tbody> </table> | FY:2018-19 | | FY:2019-20 | | FY:2020-21 | | (Rupees In laks) | | | | | | Recu rring | Non-recu rring | Recu rring | Non-recu rring | Recu rring | Non-recu rring | 394.2 | 1728.6 | 551.8 | 3060.3 | 1229.8 | 3465.0 |
| FY:2018-19 | | FY:2019-20 | | FY:2020-21 | | | | | | | | | | | | | | | | | | | | | | |
| (Rupees In laks) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Recu rring | Non-recu rring | Recu rring | Non-recu rring | Recu rring | Non-recu rring | | | | | | | | | | | | | | | | | | | | | |
| 394.2 | 1728.6 | 551.8 | 3060.3 | 1229.8 | 3465.0 | | | | | | | | | | | | | | | | | | | | | |

| | | |
|----|--|--|
| 15 | Six monthly status reports on the project vis-à-vis environmental measures should be submitted to this Ministry (Regional Office, Chandigarh/ CPCB/SPCB. | Being Complied. Six monthly compliance reports along with monitoring data are being submitted regularly. |
| 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 http://www. envfor.nic.in | Complied |
| 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. | Complied |

**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 th April, 2001. | Being Complied (Stipulations are being strictly adhered for 6 MMTPA EC condition). |
| 2. | The company shall also ensure that total SO ₂ emission from the Panipat Refinery (Including expansion and MS Quality Improvement Project) will not exceed 1000 kg/hr. | Being Complied SO ₂ 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. | Complied. |
| 4. | The company shall comply with all recommendations made by EMP and risk Analysis reports | Complied. |
| 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. | Being Complied. Six monthly compliance reports along with monitoring data are being submitted regularly. |
| 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 http://envfor.nic.in 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. | Complied. |
| 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. | Complied. |

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 th April, 2001 for expansion of Panipat Refinery from 6 MMTPA to 12 MMTPA and J-11011/52/2000-IA-II dated 30 th April, 2001 for integrated Paraxylene and Purified Terephthalic acid project at Panipat by M/s IOCL. | Being Complied. |
| 2 | Total SO ₂ 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 ₂ emission is well within the limit. |
| 3 | As per the commitment given, the total quantity of treated effluent shall not exceed 255m ³ /hr from the proposed integration project. | Total quantity of treated effluent discharged into Thirana Drain is maintained well below 255m ³ /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. | Complied. |
| 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. | Being Complied. |
| 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. | Being Complied. |

COMPLIANCE TO ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEF 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 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 th April, 2001 for expansion of Panipat Refinery from 6 MMTPA to 12 MMTPA | Being Complied |
| 2. | The gaseous emissions (SO ₂ , NO _x 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. | Being Complied. 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 ₂ , NO _x , CO & PM. Gaseous emission from various process units meets the prescribed standards. |
| 3. | Adequate ambient air quality monitoring stations, (SPM, SO ₂ , NO _x 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 ₂ and NO _x . Data on VOC should be monitored and submitted to the SPCB / Ministry. | 9 nos. 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. For all stacks: SO ₂ , CO, PM & NO _x analyzers are available and connected with CPCB server. Fugitive emission monitoring for Hydrocarbon and benzene is done quarterly through approved agency. All reports are submitted to HSPCB regularly. |
| 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. | Fugitive emission monitoring for Hydrocarbon and Benzene for product storage tanks and crude oil storage tanks is done through approved agency on quarterly basis. Hydrocarbon detectors have been provided at strategic locations. |
| 5. | The company shall also ensure that the total SO ₂ 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 ₂ emissions level from the Refinery. | The total SO ₂ emission of Panipat Refinery not exceeding the mentioned limit i.e. 1000 kg/hr. 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"> • 1 no. SRU: 99% efficiency ,1X115 MT/day capacity • 4 no. SRUs: 99.9% efficiency ,4X225 MT/day capacity |

| 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 & 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 & 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 m³/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 m³/hr.</p> <p>Process Licensor M/s INVISTA has confirmed that "Recycle and Reuse" of PTA treated effluent is not feasible.</p> <p>However technical feasibility studies for Recycle and Reuse of PTA treated effluent is being taken up with leading technology providers in the field of Water Treatment.</p> |
| 8. | <p>Additional water requirement shall not exceed 400 m³/hr. The total quantity of effluent generation should not exceed 1280 m³/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 3000 m³/hr (as per EC of 6-12 MMTPA expansion).</p> <p>Adding the additional quantity of 400 m³/hr., the overall total allowable water quantity is 3400 m³/hr. Presently, fresh water consumption of the Refinery is well below the above mentioned limits.</p> <p>Total quantity of effluent generation remains <1100 m³/hr.</p> <p>ETP-1 & 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 & 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 to semi solid form.</p> |
| 10. | <p>The IOCL shall make efforts to sell petroleum coke</p> | <p>The Refinery gives Pet-coke to a separate IOCL</p> |

| SN | EC Conditions | Compliance Status |
|---------------------------|---|--|
| | (0.9 MMTPA) to organized industries having consent 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. | division called Marketing Division which sells the 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/EEMP 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. |
| General conditions | | |
| 1. | The project authorities must strictly adhere to the stipulations made by the Haryana State Pollution Control Board and the State Government. | Complied |
| 2. | No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment & Forests. | Noted. |
| 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. | Being Complied 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 ₂ , NO _x , 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. | Complied. |
| 6. | The project authorities must strictly comply with the rules and regulations with regard to handling and | Complied. |

| SN | EC Conditions | Compliance Status |
|-----|--|---|
| | disposal of hazardous wastes in accordance with the 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. | Being Implemented. |
| 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 regularly sent along with various monitoring reports. |
| 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 http://www/envfor.nic.in This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional Office. | Complied. |
| 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. | Complied |

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/S/INDIAN 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 received from HSPCB on 05.05.2020. |
| (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. |
| (v) | Total SO ₂ 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 ₂ emissions shall not exceed 375 kg/hr. Accordingly, total SO ₂ emissions from the Refinery Complex shall be limited to 1475 hg/hr. | SO ₂ emissions from the Refinery (including BS-VI Up gradation project) is within 1100 kg/hr. SO ₂ emissions from the PX-PTA petrochemical project is well within 275 Kg/hr. PX-PTA expansion project is under implementation. Post commissioning, SO ₂ 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 st July, 2010 and amended from time to time shall be followed. | Being complied. |
| (vii) | To control source and the fugitive emissions, suitable pollution control devices shall be installed with different stacks (attached to DHDT, 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 ³ /hr (8500 KLD) to be met from Munak Regulator. Necessary permission in this regard shall be obtained from the concerned regulatory authority. | Complied |
| (ix) | Process effluent/any waste water shall not be allowed to mix with storm water. Storm water drain shall be passed | Being complied |

| Sl. No. | EC Conditions | Compliance Status |
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| | 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. | Complied |
| (xi) | Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF. The ash from boiler shall be sold to brick manufacturers/cement industry. | Complied. 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. | Being complied |
| (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. | Not Applicable |
| (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. | Complied |
| (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. | Complied |
| (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. | Complied |
| (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. | Complied |
| (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. | Complied |
| (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. | Complied |
| | For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow | Complied |

| Sl. No. | EC Conditions | Compliance Status |
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| | 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. | Being complied |
| General Conditions | | |
| (i) | The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board, Central Pollution Control Board, State Government and any other statutory authority. | Complied |
| (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. | Noted |
| (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. | Complied 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 th November, 2009 shall be followed. | Complied |
| (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). | Complied |
| (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. | Complied |
| (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. | Being complied |
| (viii) | The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management and risk mitigation measures relating to the project shall be implemented. | Shall be complied |
| (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 | Complied |

| Sl. No. | EC Conditions | Compliance Status |
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| | 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. | Complied |
| (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. | Being implemented |
| (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. | Complied |
| (xiii) | The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website to the company. | This is being complied already and will continue to do so in future |
| (xiv) | The environmental statement for each financial year ending 31 st 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. | This is being complied already and will continue to do so in future |
| (xv) | The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry. | Complied and informed |
| (xvi) | The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project. | Complied |

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 |
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| General Conditions | | |
| 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 th 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 conform 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 |

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| 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 st 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 http://moef.nic.in . 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 |
| Specific Conditions | | |
| 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. | CTE dated 10.1.2020 received |
| 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 ³ /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. |

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| 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 execution. |
| 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 execution. |
| 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 execution. |
| 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 execution. |
| 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 |
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| General Conditions | | |
| 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 th 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 |

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| | 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. | 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. | Will be Complied |
| 14. | The environmental statement for each financial year ending 31 st 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 http://moef.nic.in . 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 |
| Specific Conditions | | |
| 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. | Complied |
| 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 th March 2018. | Will be ensured |
| 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. | Will be complied |
| 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 |

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| | 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 execution |
| 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 project execution |
| 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 project execution |
| 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 |
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| Specific Conditions | | |
| (i). | The project shall conform to ZLD. | Noted |
| (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. | Will be complied |
| (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. | Noted |
| (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. | Will be complied |
| (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. | Will be complied |
| (vi). | Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond. | Will be complied |
| (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. | Will be complied |
| (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. | Will be complied |
| (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: - a. Metering and control of quantities of active ingredients to minimize waste. b. Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. c. Use of automated filling to minimize spillage. d. Use of Close Feed system into batch reactors. e. Venting equipment through vapour recovery system. f. Use of high pressure hoses for equipment clearing to reduce wastewater generation. | Will be complied |

| | | |
|---------------------------|--|--------------------|
| (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. | Will be complied |
| (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. | Will be complied |
| (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. | Complied |
| (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. | Will be complied |
| (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. | Will be complied |
| (xvi). | Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act. | Will be complied |
| (xvii). | Process safety and risk assessment studies shall be further carried out using advanced models, and the mitigating measures shall be undertaken/implemented accordingly. | Will be complied |
| (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. | Noted and complied |
| General Conditions | | |
| (i). | No further expansion or modifications in the plant, other than mentioned in the EIA Notification, 2006 and its amendments, shall be carried out without prior 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. | Noted |
| (ii). | The energy source for lighting purpose shall be preferably LED based, or advanced having preference in energy conservation and environment betterment. | Will be complied |
| (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 | Will be complied |

| | | |
|---------|--|--|
| | 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. | Will be complied |
| (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. | Will be complied |
| (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. | Complied |
| (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. | This is being complied already and will continue to do so in future |
| (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. | This is being complied already and will continue to do so in future |
| (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 SPCD/Committee and may also be seen at Website of the Ministry and at https://parivesh.nic.in/ . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry. | Complied and informed |
| (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. | Will be complied |
| (xi). | This Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project. | Noted |

Test Report

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

Test Report No.: 20210722013-114
Test Report Date: 03/08/2021

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. Veerpal Singh

| 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 ³ | Kg/hr | PPM |
| 1 | SRU-57 | 22/07/2021 | 70 | 1.9 | 31 | 233 | 10.18 | 84 | 5.33 | 73.32 |
| 2 | SRU-26 | 22/07/2021 | 70 | 1.9 | 30 | 225 | 10.38 | 97 | 5.94 | 86.67 |
| Permissible Limits (mg/Nm ³) | | | | | | | Old | 150 | | |
| | | | | | | | New | 100 | | |

Remark:

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (LOQ-1.0)
Sample Analyzed 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

ULR No.: TC 636621000001213-1214
Test Report Date: 03/08/2021

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. Veerpal Singh

| 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 ₂ S) | | |
|--|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM |
| 1 | SRU-57 | 22/07/2021 | 70 | 1.9 | 31 | 233 | 10.18 | BDL | - | - |
| 2 | SRU-26 | 22/07/2021 | 70 | 1.9 | 30 | 225 | 10.38 | BDL | - | - |
| Permissible Limits (mg/Nm ³) | | | | | | | Old | 15 | | |
| | | | | | | | New | 10 | | |
| Test Method | | | | | | | | IS:11255 (P-4) | | |

Remark:

BDL: Below Detection Limit, *Hydrogen Sulphide (as H₂S) (LDL: 0.1).
Sample Analyzed 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.: 20210722013-114
Test Report Date: 03/08/2021

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

| 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 ₂) | | | Oxides of Nitrogen (as NO _x) | | | |
|---------|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|-------|-----|--|-------|-------|--|
| | | | | | | | | mg/N m ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM | |
| 1 | SRU-57 | 22/07/2021 | 70 | 1.9 | 31 | 233 | 10.18 | 14 | 0.9 | 5.3 | 31 | 1.90 | 16.48 | |
| 2 | SRU-26 | 22/07/2021 | 70 | 1.9 | 30 | 225 | 10.38 | 19 | 1.2 | 7.3 | 25 | 1.59 | 13.29 | |
| | | | | | | | | Permissible Limits (mg/Nm ³) | | | | | | |
| | | | | | | | | Old | - | | | 350 | | |
| | | | | | | | | New | - | | | 250 | | |

Remark:

BCL-Below Detection Limit, Oxides of Sulphur (as SO₂)-BCL (LCO-1.0)
Sample Analyzed 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.: 202107220110-113, 202107230110-113, 202107260110-114
Date: 03/08/2021

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. Veerpal Singh

| 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 ³ | Kg/hr | PPM |
| 20 | HGU 77 | 22/07/2021 | 60 | 3.4 | 33 | 245 | 9.14 | 40 | 6.88 | 34.92 |
| 21 | HGU-PDS | 22/07/2021 | 60 | 1.7 | 32 | 243 | 10.86 | 44 | 2.25 | 38.41 |
| 22 | AVU-2 | 22/07/2021 | 100 | 5.1 | 31 | 211 | 10.33 | 0 | 0.00 | 0.00 |
| 23 | DHDS | 22/07/2021 | 60 | 1.25 | 31 | 199 | 9.53 | 1 | 0.03 | 0.87 |
| 24 | OHCU LP Section | 23/07/2021 | 65 | 2.42 | 31 | 225 | 10.11 | 74 | 7.42 | 64.59 |
| 25 | OHCU RG Heater | 23/07/2021 | 63 | 1.35 | 32 | 207 | 9.67 | 84 | 2.60 | 73.32 |
| 26 | RFCC Heater | 23/07/2021 | 59 | 0.9 | 32 | 246 | 10.28 | 70 | 0.95 | 61.10 |
| 27 | RFCC Boiler | 23/07/2021 | 100 | 2.4 | 33 | 252 | 9.46 | 79 | 6.91 | 68.96 |
| 28 | MSQ-1 | 26/07/2021 | 60 | 1.64 | 32 | 214 | 9.12 | 47 | 2.00 | 41.03 |
| 29 | MSQ-2 | 26/07/2021 | 50 | 1.64 | 33 | 221 | 9.68 | 50 | 2.22 | 43.65 |
| 30 | HGU 76 | 26/07/2021 | 60 | 3.3 | 31 | 180 | 8.95 | 34 | 6.17 | 29.68 |
| 31 | HGU 06 | 26/07/2021 | 50 | 2.64 | 32 | 225 | 9.15 | 1 | 0.11 | 0.87 |
| 32 | New Prime G | 26/07/2021 | 60 | 0.8 | 33 | 178 | 8.18 | 98 | 0.96 | 85.54 |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 150 | |
| | | | | | | | | Liquid | 200 | |
| | | | | | | | | FCCU | 400 | |

Remark:

BDL-Below Detection Limit, Carbon Monoxide (as CO) 80% (LOD-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 MITAL)

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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.: 202107070110-114, 202107080110-112, 202107090110-114
202107160110-112

Date: 03/08/2021

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. Veerpal Singh

| 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 ³ | Kg/hr | PPM |
| 1 | HRS-G-1 | 7/7/2021 | 65 | 3.3 | 32 | 157 | 8.79 | 12 | 2.25 | 10.47 |
| 2 | HRS-G-2 | 7/7/2021 | 70 | 3.3 | 34 | 162 | 9.45 | 10 | 1.99 | 8.73 |
| 3 | HRS-G-3 | 7/7/2021 | 70 | 3.3 | 31 | 167 | 10.35 | 10 | 2.16 | 8.73 |
| 4 | HRS-G-4 | 7/7/2021 | 70 | 3.3 | 33 | 168 | 9.61 | 4 | 0.80 | 3.49 |
| 5 | HRS-G-5 | 7/7/2021 | 70 | 3.3 | 34 | 172 | 9.37 | 6 | 1.16 | 5.24 |
| 6 | CPP-VHP-1 | 8/7/2021 | 100 | 3.34 | 35 | 150 | 10.21 | 4 | 0.91 | 3.49 |
| 7 | CPP-VHP-2 | 8/7/2021 | 100 | 3.34 | 34 | 149 | 9.60 | 4 | 0.86 | 3.49 |
| 8 | UB-02 | 8/7/2021 | 100 | 3.04 | 36 | 151 | 9.53 | 4 | 0.70 | 3.49 |
| 9 | PX Isomer | 9/7/2021 | 56 | 1.2 | 33 | 227 | 9.93 | 1 | 0.02 | 0.87 |
| 10 | PX Tatory | 9/7/2021 | 56 | 1.2 | 35 | 226 | 10.86 | 10 | 0.26 | 8.73 |
| 11 | PXCCR | 9/7/2021 | 100 | 1.9 | 32 | 273 | 11.58 | 60 | 3.87 | 52.37 |
| 12 | PX-Xylene | 9/7/2021 | 78 | 2 | 34 | 130 | 9.96 | 1 | 0.08 | 0.87 |
| 13 | PX NHT | 9/7/2021 | 30 | 1 | 36 | 290 | 11.10 | 26 | 0.43 | 22.70 |
| 14 | PTA/FCPH | 10/7/2021 | 60 | 2.35 | 35 | 258 | 11.41 | 24 | 2.40 | 20.95 |
| 15 | PTA/Hot Oil Heater | 10/7/2021 | 60 | 2.35 | 36 | 263 | 11.44 | 20 | 1.99 | 17.46 |
| 16 | PTA/Thermal Oxidiser | 10/7/2021 | 60 | 2.35 | 34 | 79 | 6.39 | 14 | 1.18 | 12.22 |
| 17 | CCRU Reformer Heater-205 FF | 16/07/2021 | 60 | 1.26 | 33 | 249 | 9.89 | 16 | 0.41 | 13.97 |
| 18 | CCRU NHT Heater | 16/07/2021 | 70 | 2.34 | 35 | 259 | 9.77 | 17 | 1.44 | 14.84 |
| 19 | CCRU Reformer Heater-201, 202, 203 FF | 16/07/2021 | 60 | 1.64 | 32 | 254 | 10.12 | 55 | 2.39 | 48.01 |
| Permissible Limits (mg/Nm³) | | | | | | | Gas | 150 | | |
| | | | | | | | Liquid | 200 | | |
| | | | | | | | FCCU | 400 | | |

Remark:

BDL-Below Detection Limit, Carbon Monoxide (as CO) BDL (100-1.0)
Sample Analyzed 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.: 202107220110-113, 202107230110-113, 202107260110-114
Date: 03/08/2021

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. Veerpal Singh

| 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 _x) | | | Oxides of Nitrogen (as NO _x) | | | |
|--|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-----|--|-------|-------|--|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM | |
| 20 | HGU 77 | 22/07/2021 | 60 | 3.4 | 33 | 245 | 9.14 | 6 | 1.0 | 2.3 | 6 | 1.03 | 3 | |
| 21 | HGU-PDS | 22/07/2021 | 60 | 1.7 | 32 | 243 | 10.86 | 8 | 0.4 | 3.1 | 8 | 0.41 | 4.25 | |
| 22 | AVU-2 | 22/07/2021 | 100 | 5.1 | 31 | 211 | 10.33 | 3 | 1.4 | 1.1 | 51 | 23.87 | 27.11 | |
| 23 | DHDS | 22/07/2021 | 60 | 1.25 | 31 | 199 | 9.53 | 3 | 0.1 | 1.1 | 60 | 1.59 | 31.89 | |
| 24 | DHCU LP Section | 23/07/2021 | 65 | 2.42 | 31 | 225 | 10.11 | 8 | 0.8 | 3.1 | 41 | 4.11 | 21.79 | |
| 25 | DHCU RG Heater | 23/07/2021 | 63 | 1.35 | 32 | 207 | 9.67 | 10 | 0.3 | 3.8 | 35 | 1.08 | 18.60 | |
| 26 | RFCC Heater | 23/07/2021 | 59 | 0.9 | 32 | 246 | 10.28 | 8 | 0.1 | 3.1 | 120 | 1.62 | 63.78 | |
| 27 | RFCC Boiler | 23/07/2021 | 100 | 2.4 | 33 | 252 | 9.46 | 10 | 0.9 | 3.8 | 117 | 10.24 | 62.19 | |
| 28 | MSQ-1 | 26/07/2021 | 60 | 1.64 | 32 | 214 | 9.12 | 9 | 0.4 | 3.4 | 76 | 3.23 | 40.40 | |
| 29 | MSQ-2 | 26/07/2021 | 60 | 1.64 | 33 | 221 | 9.68 | 7 | 0.3 | 2.7 | 76 | 3.38 | 40.40 | |
| 30 | HGU 76 | 26/07/2021 | 60 | 3.3 | 31 | 180 | 8.95 | 3 | 0.5 | 1.1 | 82 | 14.88 | 43.58 | |
| 31 | HGU 06 | 26/07/2021 | 50 | 2.64 | 32 | 226 | 9.15 | 3 | 0.3 | 1.1 | 35 | 3.78 | 18.60 | |
| 32 | New Prime G | 26/07/2021 | 60 | 0.8 | 33 | 178 | 8.18 | 3 | 0.0 | 1.1 | 33 | 0.32 | 17.54 | |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 50 | | | 350 | | |
| | | | | | | | | Liquid | 1700 | | | 450 | | |

Remark:

BDL-Below Detection Limit. Oxides of Sulphur (as SO_x)-BDL (LOQ-5.0)
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.: 202107070110-114, 202107080110-112, 202107090110-114
202107160110-112

Date: 03/08/2021

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. Veerpal Singh

| 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 ₂) | | | Oxides of Nitrogen (as NO _x) | | |
|---------|---------------------------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|-------|-----|--|-------|--------|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM |
| 1 | HRSG-1 | 7/7/2021 | 65 | 3.3 | 32 | 157 | 8.79 | 8 | 1.5 | 3.1 | 229 | 42.95 | 121.72 |
| 2 | HRSG-2 | 7/7/2021 | 70 | 3.3 | 34 | 167 | 9.45 | 11 | 2.2 | 4.2 | 112 | 22.33 | 59.53 |
| 3 | HRSG-3 | 7/7/2021 | 70 | 3.3 | 31 | 167 | 10.35 | 18 | 3.9 | 6.9 | 114 | 24.61 | 60.59 |
| 4 | HRSG-4 | 7/7/2021 | 70 | 3.3 | 33 | 168 | 9.61 | 13 | 2.6 | 5.0 | 226 | 45.19 | 120.12 |
| 5 | HRSG-5 | 7/7/2021 | 70 | 3.3 | 34 | 172 | 9.37 | 18 | 3.5 | 6.9 | 214 | 41.38 | 113.75 |
| 6 | CPP-VHP-1 | 8/7/2021 | 100 | 3.34 | 35 | 150 | 10.21 | 9 | 2.0 | 3.4 | 240 | 54.49 | 127.57 |
| 7 | CPP-VHP-2 | 8/7/2021 | 100 | 3.34 | 34 | 149 | 9.60 | 9 | 1.9 | 3.4 | 226 | 48.34 | 120.12 |
| 8 | UB-02 | 8/7/2021 | 100 | 3.04 | 36 | 151 | 9.53 | 9 | 1.6 | 3.4 | 228 | 39.93 | 121.19 |
| 9 | PX Isomer | 9/7/2021 | 56 | 1.2 | 33 | 227 | 9.93 | 3 | 0.1 | 1.1 | 80 | 1.93 | 42.52 |
| 10 | PX Tatory | 9/7/2021 | 56 | 1.2 | 35 | 226 | 10.86 | 3 | 0.1 | 1.1 | 78 | 2.06 | 41.46 |
| 11 | PXCCR | 9/7/2021 | 100 | 1.9 | 32 | 273 | 11.58 | 3 | 0.2 | 1.1 | 107 | 6.90 | 56.87 |
| 12 | PX-Xylene | 9/7/2021 | 78 | 2 | 34 | 130 | 11.56 | 3 | 0.2 | 1.1 | 86 | 7.17 | 45.71 |
| 13 | PX NHT | 9/7/2021 | 30 | 1 | 36 | 290 | 11.10 | 3 | 0.0 | 1.1 | 90 | 1.50 | 47.84 |
| 14 | PTA/FCPH | 10/7/2021 | 60 | 2.35 | 35 | 258 | 11.41 | 6 | 0.6 | 2.3 | 119 | 11.90 | 63.25 |
| 15 | PTA/Hot Oil Heater | 10/7/2021 | 60 | 2.35 | 36 | 263 | 11.44 | 6 | 0.6 | 2.3 | 107 | 10.63 | 56.87 |
| 16 | PTA/Thermal Oxidiser | 10/7/2021 | 60 | 2.35 | 34 | 79 | 6.39 | 15 | 1.3 | 5.7 | 138 | 11.66 | 73.35 |
| 17 | CCRU Reformer Heater-205 FF | 16/07/2021 | 60 | 1.26 | 33 | 249 | 9.89 | 3 | 0.1 | 1.1 | 80 | 2.03 | 42.52 |
| 18 | CCRU NHT Heater | 16/07/2021 | 70 | 2.34 | 35 | 259 | 9.77 | 3 | 0.3 | 1.1 | 72 | 6.10 | 38.27 |
| 19 | CCRU Reformer Heater-201, 202, 203 FF | 16/07/2021 | 60 | 1.64 | 32 | 254 | 10.12 | 6 | 0.3 | 2.3 | 140 | 6.09 | 74.41 |
| | | | | | | | | Permissible Limits (mg/Nm ³) | | | | | |
| | | | | | | | Gas | 50 | | | 350 | | |
| | | | | | | | Liquid | 1700 | | | 450 | | |

Remark:

BDL-Below Detection Limit, Oxides of Sulphur (as SO₂)-BDL (100-1.0)
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.

ULR No.: TC 636621000001209-1212, 1223-1235, 1240-1242
Test Report Date: 03/08/2021

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. Veerpal Singh

| 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 ¹ (as PM) | | Nickel & Vanadium ² (as Ni & V) ² | | |
|--|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|------------------------|---|-------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | mg/Nm ³ | Kg/hr | PPM |
| 20 | HGU 77 | 22/07/2021 | 60 | 3.4 | 33 | 245 | 9.14 | 21.26 | 3.7 | BDL | - | - |
| 21 | HGU-PDS | 22/07/2021 | 60 | 1.7 | 32 | 243 | 10.86 | 10.36 | 0.5 | BDL | - | - |
| 22 | AVU-2 | 22/07/2021 | 100 | 5.1 | 31 | 211 | 10.33 | 16.28 | 7.6 | BDL | - | - |
| 23 | DHDS | 22/07/2021 | 60 | 1.25 | 31 | 199 | 11.33 | 12.28 | 0.33 | BDL | - | - |
| 24 | OHCU LP Section | 23/07/2021 | 65 | 2.42 | 31 | 225 | 10.11 | 15.23 | 1.5 | BDL | - | - |
| 25 | OHCU RG Heater | 23/07/2021 | 63 | 1.35 | 32 | 207 | 9.67 | 8.96 | 0.3 | BDL | - | - |
| 26 | RFCC Heater | 23/07/2021 | 59 | 0.9 | 32 | 246 | 10.28 | 9.24 | 0.1 | BDL | - | - |
| 27 | RFCC Boiler | 23/07/2021 | 100 | 2.4 | 33 | 252 | 9.46 | 8.42 | 0.7 | BDL | - | - |
| 28 | MSQ-1 | 26/07/2021 | 60 | 1.64 | 32 | 214 | 9.12 | 8.96 | 0.4 | BDL | - | - |
| 29 | MSQ-2 | 26/07/2021 | 60 | 1.64 | 33 | 221 | 9.68 | 7.34 | 0.3 | BDL | - | - |
| 30 | HGU 76 | 26/07/2021 | 60 | 3.3 | 31 | 180 | 8.95 | 21.24 | 3.9 | BDL | - | - |
| 31 | HGU 06 | 26/07/2021 | 50 | 2.64 | 32 | 225 | 9.15 | 17.84 | 1.9 | BDL | - | - |
| 32 | New Prime G | 26/07/2021 | 60 | 0.8 | 33 | 178 | 8.18 | 9.84 | 0.1 | BDL | - | - |
| Permissible Limits (mg/Nm ³) | | | | | | | Gas | 10 | | - | | |
| Test Method | | | | | | | Liquid | 100 | | 5 | | |
| Test Method | | | | | | | IS-11255 (P-1) | | USEPA Method 29 By AAS | | | |

Remark:

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



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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

ULR No.: TC 6366.1000001115-1122, 1129-1136,1153-1155
Test Report Date: 03/08/2021

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. Veerpal Singh

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 ¹ (as PM) | | Nickel & Vanadium ² (as Ni & V) ³ | | |
|--|---------------------------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|-------|---|-------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | mg/Nm ³ | Kg/hr | PPM |
| 1 | HRS-1 | 7/7/2021 | 65 | 3.3 | 32 | 157 | 8.79 | 7.29 | 1.4 | BDL | - | - |
| 2 | HRS-2 | 7/7/2021 | 70 | 3.3 | 34 | 162 | 9.45 | 9.36 | 1.9 | BDL | - | - |
| 3 | HRS-3 | 7/7/2021 | 70 | 3.3 | 31 | 167 | 10.35 | 9.23 | 2.0 | BDL | - | - |
| 4 | HRS-4 | 7/7/2021 | 70 | 3.3 | 33 | 168 | 9.61 | 6.26 | 1.3 | BDL | - | - |
| 5 | HRS-5 | 7/7/2021 | 70 | 3.3 | 34 | 172 | 9.37 | 21.94 | 4.2 | BDL | - | - |
| 6 | CPP-VHP-1 | 8/7/2021 | 100 | 3.34 | 35 | 150 | 10.21 | 14.46 | 3.3 | BDL | - | - |
| 7 | CPP-VHP-2 | 8/7/2021 | 100 | 3.34 | 34 | 149 | 9.60 | 15.64 | 3.3 | BDL | - | - |
| 8 | UB-02 | 8/7/2021 | 100 | 3.04 | 36 | 151 | 9.53 | 13.24 | 2.3 | BDL | - | - |
| 9 | PX Isomer | 9/7/2021 | 56 | 1.2 | 33 | 227 | 9.93 | 10.24 | 0.2 | BDL | - | - |
| 10 | PX Toluene | 9/7/2021 | 56 | 1.2 | 35 | 226 | 10.86 | 18.84 | 0.5 | BDL | - | - |
| 11 | PXCCR | 9/7/2021 | 100 | 1.9 | 32 | 273 | 11.58 | 24.32 | 1.6 | BDL | - | - |
| 12 | PX-Xylene | 9/7/2021 | 78 | 2 | 34 | 130 | 9.96 | 13.27 | 1.1 | BDL | - | - |
| 13 | PX NHT | 9/7/2021 | 30 | 1 | 36 | 290 | 11.10 | 21.29 | 0.4 | BDL | - | - |
| 14 | PTA/FCPH | 10/7/2021 | 60 | 2.35 | 35 | 258 | 11.41 | 6.29 | 0.6 | BDL | - | - |
| 15 | PTA/Hot Oil Heater | 10/7/2021 | 60 | 2.35 | 36 | 263 | 11.44 | 8.92 | 0.9 | BDL | - | - |
| 16 | PTA/Thermal Oxidiser | 10/7/2021 | 60 | 2.35 | 34 | 79 | 6.39 | 10.2 | 0.9 | BDL | - | - |
| 17 | CCRU Reformer Heater-205 FF | 16/07/2021 | 60 | 1.26 | 33 | 249 | 9.89 | 9.28 | 0.2 | BDL | - | - |
| 18 | CCRU NHT Heater | 16/07/2021 | 70 | 2.34 | 35 | 259 | 9.77 | 8.46 | 0.7 | BDL | - | - |
| 19 | CCRU Reformer Heater-201, 202, 203 FF | 16/07/2021 | 60 | 1.64 | 32 | 254 | 10.12 | 8.24 | 0.4 | BDL | - | - |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 10 | - | | |
| | | | | | | | | Liquid | 100 | 5 | | |
| Test Method | | | | | | | | IS-11255 (P-1) | | USEPA Method 29 By AAS | | |

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



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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

ULR No.: TC 636621000001388-1394
Test Report Date: 28/08/2021

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. Veerpal Singh

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 ¹ (as PM) | | Nickel & Vanadium ² (as Ni & V) ² | | |
|---|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|-------------------------------|---|-------|-----|
| | | | | | | | | mg/N m ³ | Kg/hr | mg/N m ³ | Kg/hr | PPM |
| 1 | DHDT-1 | 19/08/2021 | 70 | 1.8 | 35 | 225 | 9.59 | 16.54 | 0.9 | BDL | - | - |
| 2 | DHDT New | 19/08/2021 | 70 | 1.8 | 36 | 155 | 9.53 | 19.32 | 1.2 | BDL | - | - |
| 3 | DHDT H-02 | 19/08/2021 | 70 | 1.8 | 35 | 235 | 9.30 | 20.21 | 1.0 | BDL | - | - |
| 4 | DCU | 20/08/2021 | 70 | 3 | 33 | 156 | 9.08 | 16.86 | 2.7 | BDL | - | - |
| 5 | HGU BSVI | 20/08/2021 | 59.7 | 4 | 32 | 152 | 8.83 | 13.76 | 3.9 | BDL | - | - |
| 6 | New MSQ-3 | 20/08/2021 | 60 | 1.64 | 34 | 273 | 11.02 | 17.43 | 0.8 | BDL | - | - |
| 7 | HCU Unit | 20/08/2021 | 70 | 1.7 | 32 | 172 | 9.95 | 12.56 | 0.7 | BDL | - | - |
| Permissible Limits (mg/Nm³) | | | | | | | | Gas | 10 | - | | |
| | | | | | | | | Liquid | 100 | 5 | | |
| Test Method | | | | | | | | IS-11255 (P-1) | USEPA Method 29 By AAS | | | |

Remark

BDL: Below Detection Limit, ¹ Particulate Matters (as PM)-BDL [LOQ: 5.0], ² Nickel & Vanadium (as Ni & V)-BDL [LOQ: 0.5]
Sample Analysed within six 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.: 202108190110-112, 202108200110-113
Test Report Date: 28/08/2021

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. Veerpal Singh

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 ₂) | | | Oxides of Nitrogen (as NO _x) | | |
|--|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-----|--|-------|--------|
| | | | | | | | | mg/N m ³ | Kg/hr | PPM | mg/N m ³ | Kg/hr | PPM |
| 1 | DHDT-1 | 19/08/2021 | 70 | 1.8 | 35 | 225 | 9.59 | 16 | 0.8 | 6.1 | 210 | 11.04 | 111.62 |
| 2 | DHDT New | 19/08/2021 | 70 | 1.8 | 36 | 155 | 9.53 | 18 | 1.1 | 6.9 | 74 | 4.50 | 39.33 |
| 3 | DHDT H-02 | 19/08/2021 | 70 | 1.8 | 35 | 235 | 9.30 | 10 | 0.5 | 3.8 | 92 | 4.60 | 48.90 |
| 4 | DCU | 20/08/2021 | 70 | 3 | 33 | 156 | 9.08 | 4 | 0.6 | 1.5 | 69 | 11.08 | 36.68 |
| 5 | HCU-BSV1 | 20/08/2021 | 59.7 | 4 | 32 | 152 | 8.83 | 6 | 1.7 | 2.3 | 94 | 26.34 | 49.96 |
| 6 | New MSO-3 | 20/08/2021 | 60 | 1.64 | 34 | 223 | 11.02 | 9 | 0.4 | 3.4 | 97 | 4.44 | 51.56 |
| 7 | HCU Unit | 20/08/2021 | 70 | 1.7 | 32 | 172 | 9.95 | 12 | 0.7 | 4.6 | 89 | 4.85 | 47.31 |
| Permissible Limits (mg/Nm ²) | | | | | | | Gas | 50 | | | 350 | | |
| | | | | | | | Liquid | 1700 | | | 450 | | |

Remark:

NDL Below Detection Limit, Oxides of Sulphur (as SO₂) ND (100-1.0)
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

ULR No.: TC 635621000001476-1477
Test Report Date: 08/09/2021

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. Veerpal Singh

Analysis Report

| Sl. 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 ₂ S) | | |
|---|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM |
| 1 | SRU-57 | 31/08/2021 | 70 | 1.9 | 33 | 227 | 9.75 | BDL | - | - |
| 2 | SRU-26 | 31/08/2021 | 70 | 1.9 | 34 | 217 | 10.07 | BDL | - | - |
| Permissible Limits (mg/Nm³) | | | | | | | Old | 15 | | |
| | | | | | | | New | 10 | | |
| Test Method | | | | | | | | IS:11255 (P-4) | | |

Remark:

BDL (Below Detection Limit), Hydrogen Sulphide (as H₂S) BDL (0.05 PPM).
Sample Analyzed within six days from the date of sampling.



Certificate No.
T-6366

(Handwritten Signature)
(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.: 202108310110-111
Test Report Date: 08/09/2021

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. Veerpal Singh

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 _x) | | | Oxides of Nitrogen (as NO _x) | | |
|---|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-----|--|-------|-------|
| | | | | | | | | mg/N m ³ | Kg/hr | PPM | mg/N m ³ | Kg/hr | PPM |
| 1 | SRU-57 | 31/08/2021 | 70 | 1.9 | 33 | 227 | 9.75 | 17 | 1.0 | 6.5 | 26 | 1.54 | 13.82 |
| 2 | SRU-26 | 31/08/2021 | 70 | 1.9 | 34 | 217 | 10.07 | 21 | 1.3 | 8.0 | 29 | 1.81 | 15.41 |
| Permissible Limits (mg/Nm³) | | | | | | | Old | - | | | 350 | | |
| | | | | | | | New | - | | | 250 | | |

Remark:

NB: Below Detection Limit, Oxides of Sulphur (as SO_x)-601 (B&A)-1-B
Sample Analyzed within 10 days from the date of sampling. All above Parameters are measured 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.: 202106310110-111
Test Report Date: 08/09/2021

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. Veerpal Singh

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 ³ | Kg/hr | PPM |
| 1 | SRU-57 | 31/06/2021 | 70 | 1.9 | 33 | 227 | 9.75 | 88 | 5.22 | 76.82 |
| 2 | SRU-26 | 31/06/2021 | 70 | 1.9 | 34 | 217 | 10.07 | 81 | 5.06 | 70.71 |
| Permissible Limits (mg/Nm³) | | | | | | | Old | 150 | | |
| | | | | | | | New | 100 | | |

Remarks:

SDI (New) Detection Limit: Carbon Monoxide (as CO) 60.0 (0.021-01)
Sample analysed within six days from the date of sampling. All above Parameters are measured with Flow 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

ULR No.: TC 63662100001566-1570, 1574, 1583-1587, 1609-1612, 1618-1622
Test Report Date: 04/10/2021

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 ¹ (as PM) | | Nickel & Vanadium ² (as Ni & V) ³ | | |
|---------|---------------------------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|-------------------------------|---|------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | mg/Nm ³ | Kg/h | PPM |
| 1 | HRS-G-1 | 10/9/2021 | 65 | 3.3 | 31 | 162 | 9.03 | 8.28 | 1.6 | BDL | - | - |
| 2 | HRS-G-2 | 10/9/2021 | 70 | 3.3 | 29 | 159 | 10.83 | 7.14 | 1.6 | BDL | - | - |
| 3 | HRS-G-3 | 10/9/2021 | 70 | 3.3 | 28 | 162 | 9.60 | 8.16 | 1.7 | BDL | - | - |
| 4 | HRS-G-4 | 10/9/2021 | 70 | 3.3 | 29 | 165 | 11.66 | 5.23 | 1.3 | BDL | - | - |
| 5 | HRS-G-5 | 10/9/2021 | 70 | 3.3 | 28 | 169 | 10.61 | 16.34 | 3.6 | BDL | - | - |
| 6 | CPP-VHP-1 | 13/09/2021 | 100 | 3.34 | 30 | 166 | 10.66 | 14.46 | 3.3 | BDL | - | - |
| 7 | HGU-76 | 14/09/2021 | 60 | 3.4 | 34 | 204 | 10.12 | 18.96 | 3.9 | BDL | - | - |
| 8 | HGU-PDS | 14/09/2021 | 60 | 1.7 | 34 | 217 | 10.82 | 9.28 | 0.5 | BDL | - | - |
| 9 | MSQ-1 | 14/09/2021 | 60 | 1.64 | 31 | 219 | 11.22 | 9.46 | 0.5 | BDL | - | - |
| 10 | MSQ-2 | 14/09/2021 | 60 | 1.64 | 31 | 221 | 12.20 | 9.31 | 0.5 | BDL | - | - |
| 11 | New Prime G | 14/09/2021 | 60 | 0.8 | 31 | 272 | 12.97 | 9.16 | 0.1 | BDL | - | - |
| 12 | OHCU LP Section | 15/09/2021 | 65 | 2.42 | 31 | 219 | 10.15 | 16.24 | 1.7 | BDL | - | - |
| 13 | OHCU RG Heater | 15/09/2021 | 63 | 1.35 | 32 | 210 | 9.94 | 9.21 | 0.3 | BDL | - | - |
| 14 | RFCC Heater | 15/09/2021 | 59 | 0.9 | 34 | 293 | 12.86 | 8.46 | 0.1 | BDL | - | - |
| 15 | RFCC Boiler | 15/09/2021 | 100 | 2.4 | 40 | 287 | 13.56 | 9.24 | 1.1 | BDL | - | - |
| 16 | CCRU Reformer Heater-205 FF | 16/09/2021 | 60 | 1.26 | 32 | 159 | 10.41 | 8.24 | 0.3 | BDL | - | - |
| 17 | CCRU NHT Heater | 16/09/2021 | 70 | 2.34 | 34 | 261 | 10.14 | 9.64 | 0.8 | BDL | - | - |
| 18 | CCRU Reformer Heater-201, 202, 203 FF | 16/09/2021 | 60 | 1.64 | 32 | 252 | 10.35 | 10.64 | 0.5 | BDL | - | - |
| 19 | DHDT H-01 | 16/09/2021 | 70 | 1.8 | 34 | 230 | 11.55 | 8.94 | 0.6 | BDL | - | - |
| | | | | | | | Gas | 10 | | | | |
| | | | | | | | Liquid | 100 | | 5 | | |
| | | | | | | | IS-11255 (P-1) | | USEPA Method 29 By AAS | | | |

Remark: BDL-Below Detection Limit, ¹ Particulate Matters (as PM) BDL [LDQ² SCL² Nickel & Vanadium (as Ni & V)³ BDL
Sample Analyzed within six days from the date of sampling.



(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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

Test Report

ULR No.: TC 636621000001652-1654, 1660-1664, 1680-1682, 1702, 1729

1730, 1755-1756

Test Report Date: 01/10/2021

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

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 ¹ (as PM) | | Nickel & Vanadium ² (as Ni & V) ² | | |
|--|----------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|------------------------|---|-------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | mg/Nm ³ | Kg/hr | PPM |
| 20 | DHDT H-02 | 16/09/2021 | 70 | 1.8 | 33 | 235 | 9.48 | 9.12 | 0.5 | BDL | | |
| 21 | AVU-1 | 18/09/2021 | 100 | 5.1 | 32 | 223 | 10.84 | 14.86 | 7.1 | BDL | | |
| 22 | HGU 06 | 18/09/2021 | 50 | 2.64 | 33 | 190 | 9.08 | 15.92 | 1.8 | BDL | | |
| 23 | UB-02 | 18/09/2021 | 100 | 3.04 | 35 | 166 | 9.88 | 14.28 | 2.50 | BDL | | |
| 24 | PX Isomer | 20/09/2021 | 56 | 1.2 | 35 | 221 | 9.86 | 12.33 | 0.3 | BDL | | |
| 25 | PX Tatory | 20/09/2021 | 56 | 1.2 | 35 | 220 | 10.80 | 17.26 | 0.5 | BDL | | |
| 26 | PX CCR | 20/09/2021 | 100 | 1.9 | 33 | 274 | 11.50 | 19.26 | 1.2 | BDL | | |
| 27 | PX-Xylene | 20/09/2021 | 78 | 2 | 34 | 167 | 10.56 | 12.21 | 1.0 | BDL | | |
| 28 | PX NHT | 20/09/2021 | 30 | 1 | 34 | 260 | 11.65 | 18.34 | 0.3 | BDL | | |
| 29 | DHDT BSIV | 21/09/2021 | 70 | 1.8 | 37 | 180 | 11.73 | 7.26 | 0.5 | BDL | | |
| 30 | HGU-BS-VI | 21/09/2021 | 0 | 3.4 | 38 | 180 | 11.22 | 9.14 | 2.2 | BDL | | |
| 31 | DCU Heater-1 | 21/09/2021 | 70 | 3 | 35 | 175 | 11.03 | 11.34 | 2.1 | BDL | | |
| 32 | HGU 75 F-101 | 23/09/2021 | 60 | 3.3 | 33 | 231 | 11.81 | 10.32 | 2.2 | BDL | | |
| 33 | DHDS | 24/09/2021 | 60 | 1.25 | 28 | 187 | 9.51 | 11.18 | 0.3 | BDL | | |
| 34 | AVU-II | 24/09/2021 | 100 | 5.1 | 34 | 198 | 11.28 | 14.22 | 7.5 | BDL | | |
| 35 | PTA/Hot Oil Heater | 27/09/2021 | 60 | 2.35 | 38 | 257 | 13.00 | 10.28 | 1.2 | BDL | | |
| 36 | PTA/Thermal Oxidiser | 27/09/2021 | 60 | 2.35 | 35 | 253 | 12.96 | 9.22 | 1.1 | BDL | | |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 10 | | | |
| | | | | | | | | Liquid | 100 | 5 | | |
| Test Method | | | | | | | | IS-11255 (P-1) | USEPA Method 29 By AAS | | | |

Remark:
BDL: Below Detection Limit, ¹ Particulate Matters (as PM) BDL (LDG: 5.0), ² Nickel & Vanadium (as Ni & V) BDL (LDG: 0.5)
Sample Analysed within six days from the date of sampling.



(Signature)
(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.: 202109100110-114, 202109130110, 202109140110-114,
202109150110-113, 202109160110-113

Date: 04/10/2021

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 _x) | | | Oxides of Nitrogen (as NO _x) | | |
|---------|---------------------------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-------|--|-------|--------|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM |
| 1 | HRS-G-1 | 10/9/2021 | 65 | 3.3 | 31 | 162 | 9.03 | 6 | 1.1 | 2.3 | 29 | 5.52 | 15.41 |
| 2 | HRS-G-2 | 10/9/2021 | 70 | 3.3 | 29 | 159 | 10.83 | 7 | 1.6 | 2.7 | 22 | 5.06 | 11.69 |
| 3 | HRS-G-3 | 10/9/2021 | 70 | 3.3 | 28 | 162 | 9.60 | 7 | 1.4 | 2.7 | 26 | 5.27 | 13.82 |
| 4 | HRS-G-4 | 10/9/2021 | 70 | 3.3 | 29 | 165 | 11.66 | 16 | 3.9 | 6.1 | 230 | 56.20 | 122.25 |
| 5 | HRS-G-5 | 10/9/2021 | 70 | 3.3 | 28 | 169 | 10.61 | 14 | 3.1 | 5.3 | 221 | 48.71 | 117.47 |
| 6 | CPP-VHP-1 | 13/09/2021 | 100 | 3.34 | 30 | 166 | 10.66 | 298 | 68.0 | 113.7 | 148 | 33.78 | 78.67 |
| 7 | HGU-76 | 14/09/2021 | 60 | 3.4 | 34 | 204 | 10.12 | 6 | 1.2 | 2.3 | 16 | 3.31 | 8.50 |
| 8 | HGU-PDS | 14/09/2021 | 60 | 1.7 | 34 | 247 | 10.82 | 6 | 0.3 | 2.3 | 6 | 0.30 | 3.19 |
| 9 | MSQ-1 | 14/09/2021 | 60 | 1.64 | 31 | 219 | 11.22 | 6 | 0.3 | 2.3 | 7 | 0.36 | 3.72 |
| 10 | MSQ-2 | 14/09/2021 | 60 | 1.64 | 31 | 221 | 12.20 | 6 | 0.3 | 2.3 | 8 | 0.45 | 4.25 |
| 11 | New Prime G | 14/09/2021 | 60 | 0.8 | 31 | 272 | 12.87 | 4 | 0.1 | 1.5 | 7 | 0.09 | 3.72 |
| 12 | OHCU LP Section | 15/09/2021 | 65 | 2.42 | 31 | 219 | 10.15 | 6 | 0.6 | 2.3 | 20 | 2.04 | 10.63 |
| 13 | OHCU RG Heater | 15/09/2021 | 63 | 1.35 | 32 | 210 | 9.94 | 6 | 0.2 | 2.3 | 10 | 0.32 | 5.32 |
| 14 | RFCC Heater | 15/09/2021 | 59 | 0.9 | 34 | 293 | 12.86 | 6 | 0.1 | 2.3 | 13 | 0.20 | 6.91 |
| 15 | RFCC Boiler | 15/09/2021 | 100 | 2.4 | 40 | 287 | 13.56 | 3 | 0.4 | 1.1 | 112 | 13.17 | 59.53 |
| 16 | CCRU Reformer Heater-205 FF | 16/09/2021 | 60 | 1.26 | 32 | 159 | 10.41 | 8 | 0.3 | 3.1 | 38 | 1.22 | 20.20 |
| 17 | CCRU NHT Heater | 16/09/2021 | 70 | 2.34 | 34 | 261 | 10.14 | 5 | 0.4 | 1.9 | 52 | 4.56 | 27.64 |
| 18 | CCRU Reformer Heater-201, 202, 203 FF | 16/09/2021 | 60 | 1.64 | 32 | 252 | 10.35 | 7 | 0.3 | 2.7 | 6 | 0.27 | 3.19 |
| 19 | DHDT H-01 | 16/09/2021 | 70 | 1.8 | 34 | 230 | 11.55 | 14 | 0.9 | 5.3 | 189 | 11.85 | 100.46 |
| | | | | | | | Gas | 50 | | | 350 | | |
| | | | | | | | Liquid | 1700 | | | 450 | | |

Remark:

BDL: Below Detection Limit, Oxides of Sulphur (as SO_x) BDL (LOD: 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.: 202109160114, 202109180110-112, 202109200110-114
202109210110-113, 202109230110, 202109240110-111
202109270110-111

Date: 04/10/2021

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 ₂) | | | Oxides of Nitrogen (as NO _x) | | |
|---------|----------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|------|--|-------|-------|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM |
| 20 | DHDT H-02 | 16/09/2021 | 70 | 1.8 | 33 | 235 | 9.48 | 12 | 0.6 | 4.6 | 104 | 5.30 | 55.28 |
| 21 | AVU-I | 18/09/2021 | 100 | 5.1 | 32 | 223 | 10.84 | 5 | 2.4 | 1.9 | 57 | 27.30 | 30.30 |
| 22 | HGU 06 | 18/09/2021 | 50 | 2.64 | 33 | 190 | 9.08 | 6 | 0.7 | 2.3 | 46 | 5.30 | 24.49 |
| 23 | UB-02 | 18/09/2021 | 100 | 3.04 | 35 | 166 | 9.88 | 124 | 21.7 | 47.3 | 44 | 7.72 | 23.39 |
| 24 | PX Isomer | 20/09/2021 | 56 | 1.2 | 35 | 221 | 9.85 | 6 | 0.1 | 2.3 | 52 | 1.26 | 27.66 |
| 25 | PX Tatory | 20/09/2021 | 56 | 1.2 | 35 | 220 | 10.80 | 5 | 0.1 | 1.9 | 47 | 1.25 | 24.98 |
| 26 | PXCCR | 20/09/2021 | 100 | 1.9 | 33 | 274 | 11.50 | 6 | 0.4 | 2.3 | 26 | 1.66 | 13.82 |
| 27 | PX-Xylene | 20/09/2021 | 78 | 2 | 34 | 167 | 10.56 | 6 | 0.5 | 2.3 | 18 | 1.46 | 9.57 |
| 28 | PX NHT | 20/09/2021 | 30 | 1 | 34 | 260 | 11.65 | 6 | 0.1 | 2.3 | 15 | 0.28 | 7.97 |
| 29 | DHDT BSIV | 21/09/2021 | 70 | 1.8 | 37 | 180 | 11.73 | 14 | 1.0 | 5.3 | 62 | 4.39 | 32.95 |
| 30 | HGU BS-VI | 21/09/2021 | 0 | 3.4 | 38 | 180 | 11.22 | 8 | 1.9 | 3.1 | 58 | 14.00 | 30.90 |
| 31 | DCU Heater-1 | 21/09/2021 | 70 | 3 | 35 | 175 | 11.03 | 19 | 3.5 | 7.3 | 9 | 1.68 | 4.78 |
| 32 | HGU 75 F-101 | 23/09/2021 | 60 | 3.3 | 33 | 231 | 11.81 | 19 | 4.1 | 7.3 | 9 | 1.94 | 4.78 |
| 33 | DHDS | 24/09/2021 | 60 | 1.25 | 28 | 187 | 9.51 | 3 | 0.1 | 1.1 | 57 | 1.55 | 30.30 |
| 34 | AVU-II | 24/09/2021 | 100 | 5.1 | 34 | 198 | 11.26 | 173 | 90.8 | 66.0 | 27 | 14.17 | 14.35 |
| 35 | PTA/Hot Oil Heater | 27/09/2021 | 60 | 2.35 | 38 | 267 | 13.00 | 9 | 1.0 | 3.4 | 5 | 0.56 | 2.66 |
| 36 | PTA/Thermal Oxidiser | 27/09/2021 | 60 | 2.35 | 35 | 253 | 12.96 | 75 | 8.6 | 28.6 | 69 | 7.91 | 18 |
| | | | | | | | Gas | 50 | | | 350 | | |
| | | | | | | | Liquid | 1700 | | | 450 | | |

Remark:

IDL: In-line Detection Limit, Oxides of Sulphur (as SO₂) IDL (LOD): 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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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.: 202109100110-114, 202109130110, 202109140110-114,
202109150110-113, 202109160110-113

Date: 04/10/2021

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 ³ | Kg/hr | PPM |
| 1 | HRS-G-1 | 10/9/2021 | 65 | 3.3 | 31 | 162 | 9.03 | 9 | 1.71 | 7.86 |
| 2 | HRS-G-2 | 10/9/2021 | 70 | 3.3 | 29 | 159 | 10.83 | 12 | 2.76 | 10.47 |
| 3 | HRS-G-3 | 10/9/2021 | 70 | 3.3 | 28 | 162 | 9.60 | 11 | 2.23 | 9.60 |
| 4 | HRS-G-4 | 10/9/2021 | 70 | 3.3 | 29 | 165 | 11.66 | 6 | 1.47 | 5.24 |
| 5 | HRS-G-5 | 10/9/2021 | 70 | 3.3 | 28 | 169 | 10.61 | 5 | 1.10 | 4.36 |
| 6 | CPP-VHP-1 | 13/09/2021 | 100 | 3.34 | 30 | 166 | 10.66 | 12 | 2.74 | 10.47 |
| 7 | HGU 76 | 14/09/2021 | 60 | 3.4 | 34 | 204 | 10.12 | 72 | 4.55 | 19.20 |
| 8 | HGU-PDS | 14/09/2021 | 60 | 1.7 | 34 | 247 | 10.82 | 14 | 0.71 | 12.22 |
| 9 | MSQ-1 | 14/09/2021 | 60 | 1.64 | 31 | 219 | 11.22 | 106 | 5.48 | 92.53 |
| 10 | MSQ-2 | 14/09/2021 | 60 | 1.64 | 31 | 221 | 12.20 | 110 | 6.16 | 96.02 |
| 11 | New Prime G | 14/09/2021 | 60 | 0.8 | 31 | 272 | 12.87 | 129 | 1.64 | 112.60 |
| 12 | OHCU LP Section | 15/09/2021 | 65 | 2.42 | 31 | 219 | 10.15 | 70 | 7.13 | 61.10 |
| 13 | OHCU RG Heater | 15/09/2021 | 63 | 1.35 | 32 | 210 | 9.94 | 79 | 2.50 | 68.96 |
| 14 | RFCC Heater | 15/09/2021 | 59 | 0.9 | 34 | 293 | 12.86 | 128 | 1.99 | 111.73 |
| 15 | RFCC Boiler | 15/09/2021 | 100 | 2.4 | 40 | 287 | 13.56 | 131 | 15.41 | 114.35 |
| 16 | CCRU Reformer Heater-205 FF | 16/09/2021 | 60 | 1.26 | 32 | 159 | 10.41 | 22 | 0.71 | 19.20 |
| 17 | CCRU NHT Heater | 16/09/2021 | 70 | 2.34 | 34 | 261 | 10.14 | 17 | 1.49 | 14.84 |
| 18 | CCRU Reformer Heater-201, 202, 203 FF | 16/09/2021 | 60 | 1.64 | 32 | 252 | 10.35 | 6 | 0.27 | 5.24 |
| 19 | DHDT H-01 | 16/09/2021 | 70 | 1.8 | 34 | 230 | 11.55 | 12 | 0.75 | 10.47 |
| Permissible Limits (mg/Nm ³) | | | | | | | Gas | 150 | | |
| | | | | | | | Liquid | 200 | | |
| | | | | | | | FCCU | 400 | | |

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.: 202109160114, 202109180110-112, 202109200110-114
202109210110-113, 202109230110, 202109240110-111
202109270110-111

Date: 04/10/2021

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 ³ | Kg/hr | PPM |
| 20 | DHDT H-02 | 16/09/2021 | 70 | 1.8 | 33 | 235 | 9.48 | 9 | 0.46 | 7.86 |
| 21 | AVU-I | 18/09/2021 | 100 | 5.1 | 32 | 223 | 10.84 | 11 | 5.27 | 9.60 |
| 22 | HGU 06 | 18/09/2021 | 50 | 2.64 | 34 | 190 | 9.08 | 5 | 0.58 | 4.36 |
| 23 | UB-02 | 18/09/2021 | 100 | 3.04 | 35 | 166 | 9.88 | 39 | 6.84 | 34.04 |
| 24 | PX Isomer | 20/09/2021 | 56 | 1.2 | 35 | 221 | 9.86 | 40 | 0.97 | 34.92 |
| 25 | PX Tatory | 20/09/2021 | 56 | 1.2 | 35 | 220 | 10.80 | 30 | 0.80 | 26.19 |
| 26 | PXCCR | 20/09/2021 | 100 | 1.9 | 33 | 274 | 11.50 | 56 | 3.58 | 48.88 |
| 27 | PX-Xylene | 20/09/2021 | 78 | 2 | 34 | 167 | 10.56 | 100 | 8.09 | 87.29 |
| 28 | PX NHT | 20/09/2021 | 30 | 1 | 34 | 260 | 11.65 | 73 | 1.35 | 63.72 |
| 29 | DHDT BSTV | 21/09/2021 | 70 | 1.8 | 37 | 180 | 11.73 | 12 | 0.85 | 10.47 |
| 30 | HGU-BS-VI | 21/09/2021 | 0 | 3.4 | 38 | 180 | 11.22 | 49 | 11.83 | 42.77 |
| 31 | DCU Heater-I | 21/09/2021 | 70 | 3 | 35 | 175 | 11.03 | 5 | 0.93 | 4.36 |
| 32 | HGU 75 F-101 | 23/09/2021 | 60 | 3.3 | 33 | 231 | 11.81 | 5 | 1.08 | 4.26 |
| 33 | DHDS | 24/09/2021 | 60 | 1.25 | 28 | 187 | 9.51 | 7 | 0.19 | 6.11 |
| 34 | AVU-II | 24/09/2021 | 100 | 5.1 | 34 | 198 | 11.28 | 38 | 19.94 | 33.17 |
| 35 | PTA/Hot Oil Heater | 27/09/2021 | 60 | 2.35 | 38 | 267 | 13.00 | 56 | 6.28 | 48.88 |
| 36 | PTA/Thermal Oxidiser | 27/09/2021 | 60 | 2.35 | 35 | 253 | 12.96 | 9 | 1.03 | 7.86 |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 150 | |
| | | | | | | | | Liquid | 200 | |
| | | | | | | | | FCCU | 400 | |

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.: FC 626621000001731-1732

Test Report Date: 04/10/2021

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 ₂ S) | | |
|---|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|-----|
| | | | | | | | | mg/Nm ³ | Kg/hr | PDM |
| 1 | SRU-26 | 24/09/2021 | 70 | 1.9 | 35 | 225 | 11.03 | BDL | - | - |
| 2 | SRU-57 | 24/09/2021 | 70 | 1.9 | 34 | 235 | 11.00 | BDL | - | - |
| | | | | | | | Old | 15 | | |
| Permissible Limits (mg/Nm³) | | | | | | | New | 10 | | |
| Test Method | | | | | | | IS:11255 (P-4) | | | |

Remark:

BDL-Below Detection Limit, ¹ Hydrogen Sulphide (as H₂S)-BDL (LOQ: 0.1).
Sample Analysed within six days from the date of sampling.



(Signature)
(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.: 202109240112-113
Date: 04/10/2021

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 ₂) | | | Oxides of Nitrogen (as NO _x) | | |
|---|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|------|--|-------|-----|
| | | | | | | | | mg/N m ³ | Kg/hr | PPM | mg/N m ³ | Kg/hr | PPM |
| 1 | SRU-26 | 24/09/2021 | 70 | 1.9 | 35 | 225 | 11.03 | 36 | 2.4 | 13.7 | 6 | 0.46 | 3.1 |
| 2 | SRU-57 | 24/09/2021 | 70 | 1.9 | 34 | 235 | 11.08 | 37 | 2.5 | 14.1 | 8 | 0.53 | 4.2 |
| | | | | | | | Old | | | | 350 | | |
| | | | | | | | New | | | | 250 | | |
| Permissible Limits (mg/Nm³) | | | | | | | | | | | | | |

Remark:
BDL: Below Detection Limit, Oxides of Sulphur (as SO₂)-50, (100-1.0)
Sample Analyzed 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.: 202109240112-113
Date: 04/10/2021

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 ³ | Kg/hr | PPM |
| 1 | SRU-26 | 24/09/2021 | 70 | 1.9 | 35 | 225 | 11.03 | 89 | 6.00 | 77.69 |
| 2 | SRU-57 | 24/09/2021 | 70 | 1.9 | 34 | 235 | 11.08 | 52 | 3.45 | 45.39 |
| Permissible Limits (mg/Nm³) | | | | | | | | Old | 150 | |
| | | | | | | | | New | 100 | |

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 measured 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, Dist. Panipat
Haryana, INDIA

ULR No.: TC 6366/21000002704-2705, 2208-2212, 2254-2162, 2310-2115
Test Report Date: 27/12/2021

Sample Particulars

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

Stack Monitoring

To Check the Pollution Level
IS: 11255 (Part 2)
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 (as PM) | | Nickel & Vanadium (as Ni & V) | |
|---------|---------------------------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|-----------------------------|-------|-------------------------------|-------|
| | | | | | | | | mg/Nm | Kg/hr | mg/Nm | Kg/hr |
| 1 | AVU-1 | 8/11/2021 | 100 | 5.1 | 23 | 119 | 9.58 | 17.38 | 0.2 | 0.0 | |
| 2 | DHDS | 8/11/2021 | 60 | 1.25 | 24 | 200 | 10.20 | 0.52 | 0.3 | 0.0 | |
| 3 | HRS-G-1 | 9/11/2021 | 65 | 3.3 | 24 | 155 | 8.91 | 7.38 | 1.4 | 0.0 | |
| 4 | HRS-G-3 | 9/11/2021 | 70 | 3.3 | 23 | 148 | 8.68 | 6.17 | 1.8 | 0.0 | |
| 5 | HRS-G-4 | 9/11/2021 | 70 | 3.3 | 24 | 231 | 10.12 | 11.45 | 2.1 | 0.2 | |
| 6 | HRS-G-5 | 9/11/2021 | 70 | 3.3 | 23 | 226 | 10.96 | 13.21 | 2.4 | 0.0 | |
| 7 | CPP-VHP-1 | 9/11/2021 | 100 | 3.30 | 24 | 148 | 10.11 | 11.67 | 2.8 | 0.0 | |
| 8 | HGU 76 | 22/11/2021 | 60 | 3.4 | 23 | 210 | 10.47 | 14.26 | 2.9 | 0.0 | |
| 9 | HGU-PDS | 22/11/2021 | 60 | 1.7 | 26 | 237 | 10.31 | 8.74 | 0.1 | 0.0 | |
| 10 | DHDT H-01 | 22/11/2021 | 70 | 1.8 | 24 | 234 | 11.00 | 6.36 | 0.1 | 0.0 | |
| 11 | DHDT H-02 | 22/11/2021 | 70 | 1.8 | 24 | 220 | 10.06 | 6.77 | 0.5 | 0.0 | |
| 12 | HCU | 22/11/2021 | 70 | 1.3 | 25 | 157 | 9.61 | 14.71 | 0.5 | 0.0 | |
| 13 | HSG-1 | 23/11/2021 | 60 | 1.64 | 22 | 299 | 11.51 | 4.38 | 0.6 | 0.0 | |
| 14 | HSG-2 | 23/11/2021 | 60 | 1.64 | 22 | 301 | 11.62 | 4.80 | 0.4 | 0.0 | |
| 15 | New Prime G | 23/11/2021 | 60 | 0.8 | 21 | 296 | 11.14 | 6.07 | 0.1 | 0.0 | |
| 16 | AVU-II | 23/11/2021 | 100 | 5.1 | 23 | 150 | 9.30 | 14.22 | 2.2 | 0.0 | |
| 17 | DCU Heater-1 | 24/11/2021 | 70 | 3 | 23 | 147 | 9.81 | 6.74 | 1.8 | 0.0 | |
| 18 | CCRU Reformer Heater-205 FF | 24/11/2021 | 60 | 1.26 | 24 | 253 | 12.19 | 7.31 | 0.2 | 0.0 | |
| 19 | CCRU NHT Heater | 24/11/2021 | 70 | 2.34 | 24 | 261 | 13.10 | 8.57 | 0.8 | 0.0 | |
| 20 | CCRU Reformer Heater-201, 202, 203 FF | 24/11/2021 | 60 | 1.54 | 24 | 273 | 10.43 | 9.21 | 0.3 | 0.0 | |

Permissible Limits (mg/Nm³)

Gas: 10
Liquid: 100
IS-11255 (P-1) USEPA Method 29.8/AAS

Test Method

Remark: (Refinery Division only) Particulate Matters (PM) etc. (ISO) & Ni & Vanadium (as Ni & V) (ISO) (AAS) Sample analysed within 48 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 63662100002394 2397, 2412-2417, 2431-2433, 2450-2451, 2461
Test Report Date: 07/12/2021

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 Matter ¹ (as PM ₁₀) | | Nickel & Vanadium (as Ni & V) ² | |
|--|----------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|--|-------------------------|--|-------|
| | | | | | | | | mg/m ³ | kg/hr | mg/Km ³ | kg/hr |
| 21 | OHCU LP Section | 25/11/2021 | 23 | 7.42 | 23 | 127 | 8.93 | 9.67 | 1.1 | NDL | |
| 22 | OHCU RG Heater | 25/11/2021 | 23 | 1.35 | 23 | 170 | 9.77 | 8.40 | 0.3 | NDL | |
| 23 | RFCC Heater | 25/11/2021 | 23 | 0.9 | 23 | 367 | 11.18 | 8.1 | 0.13 | NDL | |
| 24 | RFCC Boiler | 25/11/2021 | 23 | 2.4 | 23 | 251 | 12.29 | 9.00 | 0.8 | NDL | |
| 25 | DHDT BSIV | 26/11/2021 | 25 | 1.8 | 25 | 128 | 9.19 | 8.71 | 0.7 | NDL | |
| 26 | HGU | 26/11/2021 | 26 | 3.8 | 26 | 159 | 10.47 | 10.23 | 2.4 | NDL | |
| 27 | VHP-3 Boiler | 26/11/2021 | 26 | 3.04 | 26 | 151 | 9.99 | 10.19 | 2.9 | NDL | |
| 28 | UB-02 | 26/11/2021 | 24 | 3.04 | 24 | 180 | 9.10 | 15.05 | 0.6 | NDL | |
| 29 | UB-01 | 26/11/2021 | 23 | 3.04 | 23 | 134 | 9.17 | 12.14 | 2.2 | NDL | |
| 30 | HGU-BS-VI | 26/11/2021 | 25 | 3.4 | 25 | 158 | 9.93 | 9.07 | 2.4 | NDL | |
| 31 | PX Isomer | 27/11/2021 | 25 | 1.2 | 25 | 236 | 10.76 | 12.01 | 0.3 | NDL | |
| 32 | PX Tatory | 27/11/2021 | 24 | 1.2 | 24 | 240 | 11.27 | 15.08 | 0.5 | NDL | |
| 33 | PXCCR | 27/11/2021 | 25 | 1.9 | 25 | 252 | 11.26 | 15.46 | 0.9 | NDL | |
| 34 | PX-Xylene | 27/11/2021 | 24 | 2 | 24 | 185 | 9.77 | 12.39 | 1.1 | NDL | |
| 35 | PX NHT | 27/11/2021 | 24 | 1 | 24 | 296 | 10.24 | 15.24 | 0.4 | NDL | |
| 36 | PTA/Hot Oil Heater | 29/11/2021 | 24 | 2.35 | 24 | 163 | 10.16 | 11.03 | 0.2 | NDL | |
| 37 | PTA/Thermal Oxidiser | 29/11/2021 | 23 | 2.35 | 23 | 78 | 1.34 | 14.45 | 0.1 | NDL | |
| 38 | PTA/FCPII | 29/11/2021 | 25 | 2.35 | 25 | 168 | 11.07 | 12.67 | 0.5 | NDL | |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 10 | | |
| Test Method | | | | | | | | Fixed | 100 | 5 | |
| | | | | | | | | (S-11255 (P-1)) | ISI Packaged 25 By: HVT | | |

Remark:
1. As per Station Limit, Particulate Matter (as PM₁₀) (500-500) Nickel & Vanadium (as Ni & V) (NDL) (NDL) (NDL)
Sample analysed within six days from the date of sampling.



TC-6366



NOTE: The laboratory accepts the responsibility for content of report. It is advised that the report should be read in conjunction with the test methods used. The report is valid only for the purpose specified. Any other use of the report is at the user's risk. If you have any complaint/feedback regarding the sample collection/testing/test report, please send an e-mail at info@nityalab.com or contact our office at 43, Sector-A1 Ext., Bhalia Enclave, Channi Himmat, Jammu-180 015, J&K (UT), India.

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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.: 202111080110-111, 202111090110-114, 202111220110-114,
202111230100-113, 202111240110-113

Date: 07/12/2021

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 ₂) | | | Oxides of Nitrogen (as NO _x) | | |
|--|--------------------------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|------|--|-------|--------|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM |
| 1 | AVU-1 | 8/11/2021 | 100 | 5.1 | 23 | 119 | 9.50 | 9 | 4.8 | 3.4 | 47 | 24.97 | 24.98 |
| 2 | DHDS | 8/11/2021 | 60 | 1.25 | 24 | 200 | 10.20 | 16 | 0.5 | 6.1 | 63 | 1.79 | 33.49 |
| 3 | HRS-G-1 | 9/11/2021 | 65 | 3.3 | 24 | 155 | 8.99 | 8 | 1.5 | 3.1 | 254 | 48.97 | 135.01 |
| 4 | HRS-G-3 | 9/11/2021 | 70 | 3.3 | 23 | 148 | 8.88 | 12 | 2.3 | 4.6 | 110 | 21.31 | 58.47 |
| 5 | HRS-G-4 | 9/11/2021 | 70 | 3.3 | 24 | 231 | 10.19 | 16 | 3.0 | 6.1 | 205 | 38.01 | 108.96 |
| 6 | HRS-G-5 | 9/11/2021 | 70 | 3.3 | 23 | 226 | 10.06 | 14 | 2.6 | 5.3 | 258 | 47.76 | 137.13 |
| 7 | CPP-VHP-1 | 9/11/2021 | 100 | 3.34 | 24 | 148 | 10.51 | 240 | 58.2 | 94.6 | 153 | 35.93 | 81.32 |
| 8 | HGU 76 | 22/11/2021 | 60 | 3.4 | 23 | 220 | 10.62 | 12 | 2.5 | 4.6 | 21 | 4.41 | 11.16 |
| 9 | HGU-PDS | 22/11/2021 | 60 | 1.7 | 26 | 232 | 10.81 | 10 | 0.5 | 3.8 | 18 | 0.94 | 9.57 |
| 10 | DHDT H-01 | 22/11/2021 | 70 | 1.8 | 24 | 234 | 11.90 | 8 | 0.5 | 3.1 | 120 | 7.69 | 63.78 |
| 11 | DHDT H-02 | 22/11/2021 | 70 | 1.8 | 24 | 220 | 10.95 | 11 | 0.7 | 4.2 | 132 | 8.01 | 70.16 |
| 12 | HCU | 22/11/2021 | 70 | 1.3 | 25 | 157 | 9.61 | 8 | 0.3 | 3.1 | 121 | 3.85 | 64.31 |
| 13 | MSQ-1 | 23/11/2021 | 60 | 1.64 | 22 | 299 | 11.51 | 8 | 0.4 | 3.1 | 54 | 2.46 | 28.70 |
| 14 | MSQ-2 | 23/11/2021 | 60 | 1.64 | 22 | 305 | 11.92 | 9 | 0.4 | 3.4 | 56 | 2.62 | 29.77 |
| 15 | New Prime G | 23/11/2021 | 60 | 0.8 | 21 | 296 | 11.73 | 6 | 0.1 | 2.3 | 48 | 0.53 | 25.51 |
| 16 | AVU-II | 23/11/2021 | 100 | 5.1 | 23 | 150 | 9.30 | 173 | 88.0 | 66.0 | 27 | 13.73 | 14.35 |
| 17 | DCU Heater-1 | 24/11/2021 | 70 | 3 | 23 | 143 | 9.81 | 14 | 2.7 | 5.3 | 43 | 8.19 | 22.86 |
| 18 | CCRU Reformer Heater-205 FF | 24/11/2021 | 60 | 1.26 | 24 | 293 | 10.44 | 3 | 0.1 | 1.1 | 105 | 2.51 | 55.81 |
| 19 | CCRU NHT Heater | 24/11/2021 | 70 | 1.94 | 24 | 264 | 10.10 | 6 | 0.5 | 2.3 | 199 | 17.83 | 105.77 |
| 20 | CCRU Reformer Heater-201, 202,203 FF | 24/11/2021 | 60 | 1.64 | 24 | 273 | 10.43 | 6 | 0.2 | 2.3 | 176 | 6.52 | 93.55 |
| Permissible Limits (mg/Nm ³) | | | | | | | Gas | 50 | | | 350 | | |
| | | | | | | | Liquid | 1700 | | | 450 | | |

Remark:

NDL: Below Detection Limit, Oxides of Sulphur (as SO₂) (IS: 11255-1.0)
Sample Analysed within 16 days from the date of sampling. All above Parameters are measured 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.: 202111250110-113, 202111260110-115, 202111270110-114,
202111290110-112

Date: 07/12/2021

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 ₂) | | | Oxides of Nitrogen (as NO _x) | | |
|--|----------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|-------|------|--|-------|--------|
| | | | | | | | | mg/Nm ³ | Kg/hr | PPM | mg/Nm ³ | Kg/hr | PPM |
| 21 | OHCU LP Section | 25/11/2021 | 23 | 2.42 | 23 | 127 | 8.93 | 8 | 1.0 | 3.1 | 47 | 5.64 | 24.98 |
| 22 | OHCU RG Heater | 25/11/2021 | 23 | 1.35 | 23 | 170 | 9.72 | 12 | 0.5 | 4.6 | 31 | 1.20 | 16.45 |
| 23 | RFCC Heater | 25/11/2021 | 23 | 0.9 | 23 | 267 | 11.18 | 27 | 0.4 | 10.3 | 89 | 1.38 | 47.31 |
| 24 | RFCC Boiler | 25/11/2021 | 23 | 2.4 | 23 | 251 | 12.29 | 48 | 4.1 | 18.3 | 172 | 14.65 | 91.42 |
| 25 | DHDT BSIV | 26/11/2021 | 25 | 1.8 | 25 | 128 | 9.19 | 9 | 0.6 | 3.4 | 70 | 4.99 | 37.21 |
| 26 | HGU | 26/11/2021 | 26 | 3.4 | 26 | 159 | 10.47 | 9 | 2.0 | 3.4 | 3 | 0.68 | 1.59 |
| 27 | VHP-3 Boiler | 26/11/2021 | 26 | 3.04 | 26 | 151 | 9.99 | 19 | 3.3 | 7.3 | 9 | 1.57 | 4.78 |
| 28 | UB-02 | 26/11/2021 | 24 | 3.04 | 24 | 150 | 9.50 | 86 | 14.4 | 32.8 | 92 | 15.45 | 48.90 |
| 29 | UB-01 | 26/11/2021 | 23 | 3.04 | 23 | 134 | 9.12 | 86 | 16.3 | 32.8 | 138 | 26.24 | 73.35 |
| 30 | HGU-BS-VI | 26/11/2021 | 25 | 3.4 | 25 | 158 | 9.93 | 14 | 3.4 | 5.3 | 74 | 18.01 | 39.33 |
| 31 | PX Isomer | 27/11/2021 | 25 | 1.2 | 25 | 236 | 10.76 | 6 | 0.2 | 2.3 | 46 | 1.21 | 24.45 |
| 32 | PX Tatory | 27/11/2021 | 24 | 1.2 | 24 | 240 | 11.02 | 6 | 0.2 | 2.3 | 103 | 2.77 | 54.75 |
| 33 | PXCCR | 27/11/2021 | 25 | 1.9 | 25 | 252 | 11.36 | 6 | 0.3 | 2.3 | 76 | 4.30 | 40.40 |
| 34 | PX-Xylene | 27/11/2021 | 24 | 2 | 24 | 185 | 9.77 | 3 | 0.2 | 1.1 | 43 | 3.33 | 22.86 |
| 35 | PX NHT | 27/11/2021 | 24 | 1 | 24 | 254 | 10.51 | 3 | 0.1 | 1.1 | 88 | 1.49 | 46.77 |
| 36 | PTA/Hot Oil Heater | 29/11/2021 | 24 | 2.35 | 24 | 163 | 10.16 | 6 | 0.7 | 2.3 | 103 | 11.17 | 54.75 |
| 37 | PTA/Thermal Oxidiser | 29/11/2021 | 23 | 2.35 | 23 | 78 | 9.34 | 197 | 24.4 | 75.2 | 86 | 10.65 | 45.71 |
| 38 | PTA/FCPH | 29/11/2021 | 25 | 2.35 | 25 | 168 | 10.07 | 6 | 0.6 | 2.3 | 220 | 23.39 | 116.93 |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 50 | | 350 | | |
| | | | | | | | | Liquid | 1700 | | 450 | | |

Remark:
BDL-Below Detection Limit, Oxides of Sulphur (as SO₂) BDL (100-1.0)
Sample Analysed within 6 days from the date of sampling. All above parameters are measured 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.: 202111080110-111, 202111090110-114, 202111220110-114,
202111230100-113, 202111240110-113
Date: 07/12/2021

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 ³ | Kg/hr | PPM |
| 1 | AVU-I | 8/11/2021 | 100 | 5.1 | 23 | 119 | 9.50 | 14 | 7.44 | 12.22 |
| 2 | DHDS | 8/11/2021 | 60 | 1.25 | 24 | 200 | 10.20 | 9 | 0.26 | 7.86 |
| 3 | HRS-1 | 9/11/2021 | 65 | 3.3 | 24 | 148 | 8.99 | 12 | 2.21 | 10.47 |
| 4 | HRS-3 | 9/11/2021 | 70 | 3.3 | 23 | 148 | 8.88 | 18 | 3.49 | 15.71 |
| 5 | HRS-4 | 9/11/2021 | 70 | 3.3 | 24 | 231 | 10.18 | 7 | 1.30 | 6.11 |
| 6 | HRS-5 | 9/11/2021 | 70 | 3.3 | 23 | 226 | 10.06 | 12 | 2.22 | 10.47 |
| 7 | CPP-VHP-1 | 9/11/2021 | 100 | 3.34 | 24 | 148 | 10.51 | 20 | 4.70 | 17.46 |
| 8 | HGU 76 | 22/11/2021 | 60 | 3.4 | 23 | 220 | 10.62 | 47 | 9.87 | 41.03 |
| 9 | HGU-PDS | 22/11/2021 | 60 | 1.7 | 26 | 232 | 10.81 | 21 | 1.10 | 18.33 |
| 10 | DHDT H-01 | 22/11/2021 | 70 | 1.8 | 24 | 234 | 11.90 | 7 | 0.45 | 6.11 |
| 11 | DHDT H-02 | 22/11/2021 | 70 | 1.8 | 24 | 220 | 10.95 | 9 | 0.55 | 7.86 |
| 12 | HCU | 22/11/2021 | 70 | 1.3 | 25 | 157 | 9.61 | 8 | 0.25 | 6.98 |
| 13 | MSQ-1 | 22/11/2021 | 60 | 1.64 | 22 | 299 | 11.51 | 9 | 0.41 | 7.86 |
| 14 | MSQ-2 | 23/11/2021 | 60 | 1.64 | 22 | 305 | 11.92 | 18 | 0.84 | 15.71 |
| 15 | New Prime G | 23/11/2021 | 60 | 0.8 | 21 | 296 | 11.73 | 73 | 0.81 | 63.72 |
| 16 | AVU-II | 23/11/2021 | 100 | 5.1 | 23 | 150 | 9.30 | 38 | 19.33 | 33.17 |
| 17 | DCU Heater-1 | 24/11/2021 | 70 | 3 | 23 | 143 | 9.81 | 147 | 28.00 | 128.32 |
| 18 | CCRU Reformer Heater-205 FF | 24/11/2021 | 60 | 1.26 | 24 | 293 | 10.44 | 64 | 1.53 | 55.87 |
| 19 | CCRU NHT Heater | 24/11/2021 | 70 | 2.34 | 24 | 264 | 10.10 | 26 | 2.34 | 22.70 |
| 20 | CCRU Reformer Heater-201, 202,203 FF | 24/11/2021 | 60 | 1.64 | 24 | 273 | 10.43 | 35 | 1.30 | 30.55 |
| | | | | | | | Gas | 150 | | |
| | | | | | | | Liquid | 200 | | |
| | | | | | | | FCCU | 400 | | |

Remark:

BDL-Below Detection Limit, Carbon Monoxide (as CO) (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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Test Report

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

Test Report No.: 202111250110-113, 202111260110-115, 202111270110-114,
202111290110-112

Date: 07/12/2021

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 ³ | Kg/hr | PPM |
| 21 | OHCU LP Section | 25/11/2021 | 23 | 2.42 | 23 | 127 | 8.93 | 91 | 10.92 | 79.43 |
| 22 | OHCU RG Heater | 25/11/2021 | 23 | 1.35 | 23 | 170 | 9.72 | 105 | 4.07 | 91.65 |
| 23 | RFCC Heater | 25/11/2021 | 23 | 0.9 | 23 | 267 | 11.18 | 145 | 0.25 | 126.57 |
| 24 | RFCC Boiler | 25/11/2021 | 23 | 2.4 | 23 | 251 | 12.29 | 147 | 12.52 | 128.32 |
| 25 | DHDT BSIV | 26/11/2021 | 25 | 1.8 | 25 | 128 | 9.19 | BDL | - | - |
| 26 | HGU | 26/11/2021 | 26 | 3.4 | 26 | 159 | 10.47 | 12 | 2.70 | 10.47 |
| 27 | VHP-3 Boiler | 26/11/2021 | 26 | 3.04 | 26 | 151 | 9.99 | 5 | 0.87 | 4.36 |
| 28 | UB-02 | 26/11/2021 | 24 | 3.04 | 24 | 150 | 9.50 | 21 | 3.53 | 18.33 |
| 29 | UB-01 | 26/11/2021 | 23 | 3.04 | 24 | 134 | 7.17 | BDL | - | - |
| 30 | HGU-BS-VI | 26/11/2021 | 25 | 3.4 | 25 | 158 | 9.93 | 1 | 0.24 | 0.87 |
| 31 | PX Isomer | 26/11/2021 | 25 | 1.2 | 25 | 236 | 10.76 | 2 | 0.05 | 1.75 |
| 32 | PX Tatory | 26/11/2021 | 24 | 1.2 | 24 | 240 | 11.02 | 14 | 0.38 | 12.22 |
| 33 | PXCCR | 26/11/2021 | 25 | 1.9 | 25 | 252 | 11.36 | 2 | 0.11 | 1.75 |
| 34 | PX-Xylene | 26/11/2021 | 24 | 2 | 24 | 185 | 9.77 | BDL | - | - |
| 35 | PX NHT | 26/11/2021 | 24 | 1 | 24 | 254 | 10.51 | 4 | 0.07 | 3.49 |
| 36 | PTA/Hot Oil Heater | 26/11/2021 | 24 | 2.35 | 24 | 163 | 10.16 | BDL | - | - |
| 37 | PTA/Thermal Oxidiser | 26/11/2021 | 23 | 2.35 | 23 | 78 | 9.34 | 34 | 4.21 | 29.68 |
| 38 | PTA/FCPH | 26/11/2021 | 25 | 2.35 | 25 | 168 | 10.07 | 2 | 0.21 | 1.75 |
| Permissible Limits (mg/Nm ³) | | | | | | | | Gas | 150 | |
| | | | | | | | | Liquid | 200 | |
| | | | | | | | | FCCU | 400 | |

Remark:
BDL-Below Detection Limit, Carbon Monoxide (as CO) (IS: 11255 (Part 7))
Sample Analysed within six days from the date of sampling. Stack Diameter are measures with Flue Gas Analyser.



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Test Report

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

LLR No.: TC 636621000002370, 2399
Test Report Date: 07/12/2021

Sample Particulars

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

: Stack Monitoring
: To Check the Pollution Level
: IS: 11255 (Part 2)
: 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 ₂ S) | | |
|---|-------------------|------------------|----------------------|------------------------|--------------------|------------------|----------------------------|---|--------|-----|
| | | | | | | | | mg/Nm ³ | Kg/Day | PPM |
| 1 | SRU-26 | 24/11/2021 | 70 | 1.9 | 25 | 219 | 10.61 | NDL | | |
| 2 | SRU-57 | 25/11/2021 | 70 | 1.9 | 25 | 225 | 11.12 | NDL | | |
| | | | | | | | | Old | 15 | |
| Permissible Limits (mg/Nm³) | | | | | | | | New | 10 | |
| Test Method | | | | | | | | IS:11255 (P-2) | | |

Remark:

NDL - Below Detection Limit, Hydrogen Sulphide (as H₂S) BDL (LOQ) 0.1.
Sample Analysed within six days from the date of sampling.



NOTE: The Client accepts the responsibility for the content of report. The report shall not be used for any purpose other than the one for which it is issued. The report shall not be used for any purpose other than the one for which it is issued. The report shall not be used for any purpose other than the one for which it is issued. The report shall not be used for any purpose other than the one for which it is issued.

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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, Dist. Panipat
Haryana, INDIA

ULR No.: TC 636621000001264, 1291, 1312, 1336, 1358, 1397, 1408, 1433

Test Report Date: 06/09/2021

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 Annex
: To Check the Pollution Load
: IS 5182 (Part 14)
: Mr. Vaerpal Singh
: 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) µg/m3 | Carbon Monoxide (as CO) mg/m3 | Ammonia (as NH3) µg/m3 | Nickel (as Ni) ng/m3 | Arsenic (as As) ng/m3 | Benzo(a)pyrene (as BAP) ng/m3 | Benzenes (C6H6) µg/m3 |
| 02/08/2021 | 40.82 | 80.62 | 20.61 | 30.62 | 16.44 | BDL | 1.08 | 40.62 | BDL | BDL | BDL | BDL |
| 06/08/2021 | 46.32 | 86.92 | 18.42 | 28.55 | 20.62 | BDL | 1.11 | 48.26 | BDL | BDL | BDL | BDL |
| 09/08/2021 | 41.22 | 82.46 | 22.68 | 30.99 | 18.55 | BDL | 0.96 | 44.96 | BDL | BDL | BDL | BDL |
| 13/08/2021 | 44.63 | 83.17 | 16.93 | 26.86 | 14.69 | BDL | 1.02 | 46.22 | BDL | BDL | BDL | BDL |
| 16/08/2021 | 47.58 | 84.24 | 21.81 | 32.68 | 22.84 | BDL | 1.13 | 42.28 | BDL | BDL | BDL | BDL |
| 20/08/2021 | 45.92 | 88.94 | 17.44 | 27.95 | 17.24 | BDL | 1.12 | 47.35 | BDL | BDL | BDL | BDL |
| 23/08/2021 | 48.66 | 82.22 | 22.68 | 24.99 | 21.38 | BDL | 0.91 | 43.92 | BDL | BDL | BDL | BDL |
| 27/08/2021 | 48.25 | 87.93 | 19.84 | 28.44 | 23.95 | BDL | 1.18 | 45.39 | BDL | BDL | BDL | BDL |
| Minimum | 40.82 | 80.62 | 16.93 | 24.99 | 14.69 | - | 0.91 | 40.62 | - | - | - | - |
| Maximum | 48.66 | 88.94 | 22.68 | 32.68 | 23.95 | - | 1.18 | 48.26 | - | - | - | - |
| Average | 45.18 | 84.56 | 20.05 | 28.89 | 19.46 | - | 1.06 | 44.88 | - | - | - | - |
| 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/SOP/AAQ-11 | IS:5182 (P-10) | Method of Air Sampling & Analysis | NL/SOP/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
BDL: Below Detection Limit, *Arsenic:BDL (LOQ: 0.5), *BAP:BDL (LOQ: 0.5), *Benzenes:BDL (LOQ: 0.5), *Lead:BDL (LOQ: 0.5), *Nickel:BDL (LOQ: 1.0)
Sample Analysed within Seven days from the date of sampling.



Certificate No.
T-6366

(Signature)
(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

UIR No.: TC 636671000001523, 1551, 1560, 1592, 1629, 1680, 1726, 1762
Test Report Date: 07/10/2021

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. Veerpal Singh
: 24 Hrs.

| Date of Sampling | Parameter | | | | | | | | | | | |
|------------------------|--|---|---|--|--|--|---|---|--|---|---|--|
| | Particulate Matter (PM2.5) µg/m ³ | Particulate Matter (PM10) µg/m ³ | Sulphur Dioxide (as SO ₂) µg/m ³ | Nitrogen Dioxide (as NO ₂) µg/m ³ | Ozone (as O ₃) µg/m ³ | Lead (as Pb ¹) µg/m ³ | Carbon Monoxide (as CO) mg/m ³ | Ammonia (as NH ₃) µg/m ³ | Nickel (as Ni ²) ng/m ³ | Arsenic (as As ²) ng/m ³ | Benzo (a) pyrene (as BAP ⁴) ng/m ³ | Benzen e (C ₆ H ₆ ⁵) µg/m ³ |
| 03/09/2021 | 36.52 | 83.87 | 16.24 | 26.71 | 18.97 | BDL | 1.18 | 46.48 | BDL | BDL | BDL | BDL |
| 07/09/2021 | 42.97 | 89.71 | 22.28 | 35.66 | 16.55 | BDL | 1.09 | 40.57 | BDL | BDL | BDL | BDL |
| 10/09/2021 | 38.52 | 86.54 | 18.47 | 32.84 | 11.73 | BDL | 0.94 | 43.88 | BDL | BDL | BDL | BDL |
| 14/09/2021 | 41.97 | 78.68 | 12.83 | 28.44 | 15.69 | BDL | 0.98 | 41.52 | BDL | BDL | BDL | BDL |
| 17/09/2021 | 43.92 | 80.21 | 23.74 | 38.46 | 20.58 | BDL | 1.05 | 48.91 | BDL | BDL | BDL | BDL |
| 21/09/2021 | 40.98 | 84.86 | 20.58 | 34.52 | 14.81 | BDL | 1.15 | 44.55 | BDL | BDL | BDL | BDL |
| 24/09/2021 | 44.66 | 87.69 | 26.84 | 40.77 | 25.91 | BDL | 1.18 | 50.49 | BDL | BDL | BDL | BDL |
| 28/09/2021 | 42.94 | 85.42 | 24.18 | 37.88 | 22.84 | BDL | 1.11 | 42.71 | BDL | BDL | BDL | BDL |
| Minimum | 36.52 | 78.68 | 12.83 | 26.71 | 11.73 | - | 0.94 | 40.57 | - | - | - | - |
| Maximum | 44.66 | 89.71 | 26.84 | 40.77 | 25.91 | - | 1.18 | 50.49 | - | - | - | - |
| Average | 41.56 | 84.62 | 20.65 | 34.41 | 18.39 | - | 1.09 | 44.89 | - | - | - | - |
| IAAQM Standards | 60 | 100 | 80 | 80 | 100 | 1 | 2 | 400 | 20 | 6 | 1 | 5 |
| Test Method | 40CFR Appendix L Part 53 CPCB Guideline 5 | 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 (18)], [Part-II-sec-3]
BDL-Below Detection Limit, Arsenic-BDL (LOQ: 0.5), NiAP-BDL (LOQ: 0.5), Benzene-BDL (LOQ: 0.5), Nickel-BDL (LOQ: 1.0)
Sample Analysed within Seven days from the date of sampling.



Certificate No.
T-6366

(Signature)
(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

ULR No.: TC 636621000001897, 1912, 1941, 1954, 2009,2091,2114,2133
Test Report Date: 09/11/2021

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 Annexa
: To Check the Pollution Load
: IS 5182 (Part 14)
: Mr. Rishi Pal
: 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) µg/m3 | Carbon Monoxide (as CO) mg/m3 | Ammonia (as NH3) µg/m3 | Nickel (as Ni) ng/m3 | Arsenic (as As) ng/m3 | Benzo (a) pyrene (as BAP) ng/m3 | Benzen e (C6H6) (ug/m3) |
| 01/10/2021 | 38.47 | 81.94 | 18.69 | 34.12 | 22.94 | BDL | 1.12 | 42.67 | BDL | BDL | BDL | BDL |
| 05/10/2021 | 45.98 | 85.64 | 20.58 | 30.99 | 20.92 | BDL | 1.04 | 45.14 | BDL | BDL | BDL | BDL |
| 08/10/2021 | 42.46 | 82.86 | 15.91 | 28.43 | 18.24 | BDL | 0.96 | 40.58 | BDL | BDL | BDL | BDL |
| 12/10/2021 | 46.96 | 92.45 | 14.66 | 24.49 | 21.64 | BDL | 0.94 | 44.19 | BDL | BDL | BDL | BDL |
| 19/10/2021 | 40.88 | 80.96 | 20.28 | 36.11 | 17.58 | BDL | 1.01 | 41.85 | BDL | BDL | BDL | BDL |
| 22/10/2021 | 35.49 | 70.80 | 17.59 | 33.42 | 19.66 | BDL | 1.12 | 43.86 | BDL | BDL | BDL | BDL |
| 26/10/2021 | 34.58 | 81.46 | 25.66 | 43.91 | 26.21 | BDL | 1.13 | 56.29 | BDL | BDL | BDL | BDL |
| 29/10/2021 | 41.88 | 84.42 | 22.92 | 40.53 | 23.84 | BDL | 1.16 | 48.51 | BDL | BDL | BDL | BDL |
| Minimum | 34.58 | 76.85 | 14.66 | 24.49 | 17.58 | - | 0.94 | 40.58 | - | - | - | - |
| Maximum | 46.98 | 92.45 | 25.66 | 43.91 | 26.21 | - | 1.16 | 56.29 | - | - | - | - |
| Average | 40.84 | 83.32 | 19.57 | 34.00 | 21.32 | - | 1.06 | 45.39 | - | - | - | - |
| 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 (B), Part-II-sec-3(i) 16.11.2009
BDL-Below Detection Limit, Arsenic-BDL [LOQ: 0.5], Pb-BDL [LOQ: 0.5], Benzene-BDL [LOQ: 0.5], Lead-BDL [LOQ: 0.5], Ni-BDL [LOQ: 1.0]
Sample Analyzed within Seven days from the date of sampling.



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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

ULR No.: TC 636621000002185, 2198, 2217, 2262, 2307, 2325, 2367, 2422, 2443

Test Report Date: 07/12/2021

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 ³ | Particulate Matter (PM10) µg/m ³ | Sulphur Dioxide (as SO ₂) µg/m ³ | Nitrogen Dioxide (as NO ₂) µg/m ³ | Ozone (as O ₃) µg/m ³ | Lead (as Pb ²⁺) µg/m ³ | Carbon Monoxide (as CO) mg/m ³ | Ammonia (as NH ₃) µg/m ³ | Nickel (as Ni ²⁺) ng/m ³ | Arsenic (as As ³⁺) ng/m ³ | Benzo (a) pyrene (as BAP ⁴) ng/m ³ | Benzen e (C ₆ H ₆ ⁵) µg/m ³ |
| 02/11/2021 | 34.34 | 78.28 | 16.22 | 30.41 | 24.71 | BDL | 1.08 | 44.69 | BDL | BDL | BDL | BDL |
| 05/11/2021 | 40.66 | 82.64 | 22.41 | 35.75 | 28.22 | BDL | 1.06 | 48.41 | BDL | BDL | BDL | BDL |
| 09/11/2021 | 38.46 | 80.96 | 18.69 | 26.19 | 21.43 | BDL | 0.92 | 43.58 | BDL | BDL | BDL | BDL |
| 12/11/2021 | 42.84 | 88.47 | 20.84 | 28.92 | 26.58 | BDL | 0.97 | 46.42 | BDL | BDL | BDL | BDL |
| 16/11/2021 | 44.67 | 92.68 | 24.78 | 34.92 | 30.73 | BDL | 1.05 | 42.81 | BDL | BDL | BDL | BDL |
| 19/11/2021 | 37.17 | 82.47 | 20.44 | 37.48 | 32.46 | BDL | 1.14 | 40.94 | BDL | BDL | BDL | BDL |
| 23/11/2021 | 35.97 | 75.21 | 17.95 | 25.88 | 22.58 | BDL | 1.18 | 50.47 | BDL | BDL | BDL | BDL |
| 26/11/2021 | 43.64 | 96.44 | 21.73 | 32.73 | 27.49 | BDL | 1.15 | 45.28 | BDL | BDL | BDL | BDL |
| 29/11/2021 | 41.26 | 90.34 | 23.48 | 35.67 | 23.52 | BDL | 1.09 | 47.21 | BDL | BDL | BDL | BDL |
| Minimum | 44.67 | 96.44 | 24.78 | 37.48 | 32.46 | - | 1.18 | 50.47 | - | - | - | - |
| Maximum | 34.34 | 75.21 | 16.22 | 25.88 | 21.43 | - | 0.92 | 40.94 | - | - | - | - |
| Average | 39.89 | 85.28 | 20.73 | 31.99 | 26.41 | - | 1.07 | 45.54 | - | - | - | - |
| NAAQM Standards | 60 | 100 | 80 | 80 | 100 | 1 | 2 | 400 | 20 | 6 | 1 | 5 |
| Test Method | 40CFR Appendix L Part 53 CPCB Guideline 5 | 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) |

Remarks:

*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (38)], [Part-II-sec.-3(i)] 16.11.2009
BDL-Below Detection Limit, ¹Arsenic-BDL [LOQ- 0.5], ²BAP-BDL [LOQ- 0.5], ³Benzen-BDL [LOQ- 0.5], ⁴Lead-BDL [LOQ- 0.5], ⁵Nickel-BDL [LOQ- 1.0]
Sample Analysed within Seven days from the date of sampling.



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.:TC636621000001162
Test Report Date: 27/07/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 19/07/2021
Test Completed : 26/07/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/07/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-I O/L (PRI)

Test Report

| Sr. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|---|------|----------------|--------------------|----------------------------|
| 1 | pH | ... | 7.74 | 6.0-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 12.8 | 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 | 8.4 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/l | BDL (LOQ-1.0) | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ OH) | mg/L | 0.24 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.42 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.42 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁶⁺) | mg/L | BDL (LOQ-0.1) | 0.1 | IS:3025 (P-52) |
| 11 | Copper (Cu) | mg/L | BDL (LOQ-0.25) | 1.0 | APHA -23 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.08 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.01) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 3.15 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.61 | 1.0 | APHA-23 rd 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: 202107170110
Test Report Date: 27/07/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 19/07/2021
Test Completed : 26/07/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/07/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-1 O/L (PR)

Test Report

| Sr. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|-----------------|------|---------------|--------------------|---------------------------|
| 1 | Ammonia (N) | mg/L | 7.14 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.2) | 0.20 | APHA-23 rd Ed. |
| 3 | Total Chromium | mg/L | BDL(LOQ-2.0) | 2.0 | IS:3025 (P-52) |
| 4 | Vanadium (V) | mg/L | BDL(LOQ-0.2) | 0.2 | APHA-23 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.1) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo[a]-Pyreen | mg/L | BDL(LOQ-0.2) | 0.2 | APHA-23 rd 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.


(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.:IC636621000001163
Test Report Date: 27/07/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 19/07/2021
Test Completed : 26/07/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/07/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-2 O/L (PR)

Test Report

| Sr. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|---|------|----------------|--------------------|----------------------------|
| 1 | pH | ... | 7.61 | 6.0-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 14.6 | 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 | 6.8 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/L | BDL (LOQ-1.0) | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ OH) | mg/L | 0.22 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.48 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.51 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁶⁺) | mg/L | BDL (LOQ-0.1) | 0.1 | IS:3025 (P-52) |
| 11 | Copper (Cu) | mg/L | BDL (LOQ-0.25) | 1.0 | APHA -23 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.04 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.01) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 1.88 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.65 | 1.0 | APHA-23 rd 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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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: 202107170111

Test Report Date: 27/07/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 19/07/2021
Test Completed : 26/07/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/07/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-2 O/L (PR)

Test Report

| Sr. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|-----------------|------|---------------|--------------------|---------------------------|
| 1 | Ammonia (N) | mg/L | 7.86 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.2) | 0.20 | APHA-23 rd Ed. |
| 3 | Total Chromium | mg/L | BDL(LOQ-2.0) | 2.0 | IS:3025 (P-52) |
| 4 | Vanadium (V) | mg/L | BDL(LOQ-0.2) | 0.2 | APHA-23 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.1) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo[a]-Pyrene | mg/L | BDL(LOQ-0.2) | 0.2 | APHA-23 rd 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.:TC636621000001164
Test Report Date: 27/07/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 19/07/2021
Test Completed : 26/07/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/07/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : 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 | 52 | 100 | IS:3025 (P-17) |
| 3 | Chemical Oxygen Demand (COD) | mg/L | 130 | 250 | IS:3025 (P-58) |
| 4 | Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD) | mg/L | 12.6 | 30 | IS:3025 (P-44) |
| 5 | Phenols(C ₆ H ₅ OH) | mg/L | 0.06 | <1 | IS:3025 (P-43) |
| 6 | Sulphide (S) | mg/L | 1.6 | 2.0 | IS:3025 (P-29) |
| 7 | Fluoride | mg/L | 2.8 | <5 | IS:3025 (P-60) |
| 8 | Chromium Hexavalent (Cr ⁶⁺) | mg/L | BDL(LOQ-0.1) | 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: 202107170112

Test Report Date: 27/07/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 19/07/2021
Test Completed : 26/07/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/07/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-3 (PTA-ETP)

Test Report

| Sl. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|----------------|------|---------------|--------------------|---------------------------|
| 1 | Cyanide (CN) | mg/L | BDL (LOQ-0.2) | 0.20 | APHA-23 rd Ed. |
| 2 | Total Chromium | mg/L | BDL(LOQ-2.0) | 2.0 | IS:3025 (P-52) |

Remarks: 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.: TC636621000001342
Test Report Date: 23/08/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/08/2021
Test Completed : 21/08/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/08/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : 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 | 16.8 | 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 | 10 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/L | BDL (LOQ=1.0) | 5.0 | IS:3025 (P-39) |
| 6 | Phenols (C ₆ H ₅ OH) | mg/L | 0.21 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.42 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ=0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.69 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁺⁶) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.05 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ=0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 3.6 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.72 | 1.0 | APHA-23 rd 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
Dist. Panipat, Haryana, INDIA

Test Report No: 202108130110
Test Report Date: 23/08/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/08/2021
Test Completed : 21/08/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/08/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-1 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 | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo(a)-Pyrene | mg/L | BDL(LOQ-0.02) | 0.2 | APHA 23 rd Ed. |

Remarks:

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.:TC636621000001343
Test Report Date: 23/08/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/08/2021
Test Completed : 21/08/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/08/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-2 Q/L (PR)

Test Report

| Sr. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|---|------|-----------------|--------------------|---------------------------|
| 1 | pH | ... | 7.55 | 6.0-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 12.8 | 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 | 8.2 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/L | BDL (LOQ-1.0) | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ OH) | mg/L | 0.24 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.42 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.94 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁺⁶) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.06 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 2.18 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.68 | 1.0 | APHA-23 rd Ed. |

Remark: BDL-Below Detection Level, LOQ-Level 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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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

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

Test Report No: 202108130111
Test Report Date: 23/08/2021

Sample Particulars:

| | |
|-----------------------------|-------------------------|
| Sample Quantity & Packaging | : 1.0 Liter, Pet Bottle |
| Test Started on | : 14/08/2021 |
| Test Completed | : 21/08/2021 |
| Method of Sampling | : SOP/B/D-3 |
| Date of Sampling | : 13/08/2021 |
| Sampling Conducted By | : Mr. Veerpal Singh |
| Place of Sampling | : ETP-2 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 | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benz(a)-Pyrene | mg/L | BDL(LOQ-0.02) | 0.2 | APHA-23 rd Ed. |

Remarks:

BDL-Below Detection Limit, LOQ-Limit of Quantitation, 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.: TC636621000001344
Test Report Date: 23/08/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/08/2021
Test Completed : 21/08/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/08/2021
Sampling Conducted By : Mr. Veerpal Singh
Place of Sampling : ETP-3 (PTA-ETP)

Test Report

| Sr. No. | Parameter | Unit | Result | Permissible Limits | Protocol |
|---------|---|------|---------------|--------------------|----------------|
| 1 | pH | ... | 7.53 | 6.5-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 68 | 100 | IS:3025 (P-17) |
| 3 | Chemical Oxygen Demand (COD) | mg/L | 140 | 250 | IS:3025 (P-58) |
| 4 | Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD) | mg/L | 14.8 | 30 | IS:3025 (P-44) |
| 5 | Phenols (C ₆ H ₅ OH) | mg/L | 0.07 | <1 | IS:3025 (P-43) |
| 6 | Sulphide (S) | mg/L | 1.4 | 2.0 | IS:3025 (P-29) |
| 7 | Fluoride | mg/L | 2.2 | <5 | IS:3025 (P-60) |
| 8 | Chromium Hexavalent (Cr ⁺⁶) | mg/L | BDL(LOQ-0.05) | 0.1 | IS:3025 (P-52) |

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



Certificate No.
T-6388

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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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

Test Report No: 202108130112
Test Report Date: 23/08/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/08/2021
Test Completed : 21/08/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/08/2021
Sampling Conducted By : Mr. Veerpal Singh
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 rd Ed. |
| 2 | Total Chromium | mg/L | BDL (LOQ-0.05) | 2.0 | IS:3025 (P-52) |

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

ULR No.:TC636621000001575
Test Report Date: 22/09/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/09/2021
Test Completed : 21/09/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/09/2021
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 | ... | 7.27 | 6.0-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 17.8 | 20.0 | IS:3025 (P-17) |
| 3 | Chemical Oxygen Demand (COD) | mg/L | 56 | 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 | 2 | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ 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 ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.21 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁺⁶) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.08 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 3.2 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.53 | 1.0 | APHA-23 rd Ed. |

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



Certificate No.
T-6366


(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: 202109130110
Test Report Date: 22/09/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/09/2021
Test Completed : 21/09/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/09/2021
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 | 7.4 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo(a)-Pyreen | mg/L | BDL(LOQ-0.02) | 0.2 | APHA-23 rd 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.: TC636621000001576
Test Report Date: 22/09/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Dottle
Test Started on : 14/09/2021
Test Completed : 21/09/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/09/2021
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 | pH | ... | 8.23 | 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 | 88 | 125.0 | IS:3025 (P-58) |
| 4 | Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD) | mg/L | 14 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/L | 2 | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ OH) | mg/L | 0.22 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.42 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ-0.2) | 10 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.064 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁺⁶) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.04 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 2.58 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.37 | 1.0 | APHA-23 rd 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.



(Handwritten Signature)
(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

Certificate No. T-2225

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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: 202109130111
Test Report Date: 22/09/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/09/2021
Test Completed : 21/09/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/09/2021
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 | 0.258 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo(a)-Pyreen | mg/L | BDL(LOQ-0.02) | 0.2 | APHA-23 rd 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.: TC636621000001577
Test Report Date: 22/09/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/09/2021
Test Completed : 21/09/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/09/2021
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 | ... | 7.23 | 6.5-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 25 | 100 | IS:3025 (P-17) |
| 3 | Chemical Oxygen Demand (COD) | mg/L | 136 | 250 | IS:3025 (P-58) |
| 4 | Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD) | mg/L | 22 | 30 | IS:3025 (P-44) |
| 5 | Phenols(C ₆ H ₅ OH) | mg/L | 0.14 | <1 | IS:3025 (P-43) |
| 6 | Sulphide (S) | mg/L | 1.6 | 2.0 | IS:3025 (P-29) |
| 7 | Fluoride | mg/L | 2.48 | <5 | IS:3025 (P-60) |
| 8 | Chromium Hexavalent (Cr ⁶⁺) | 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 specific 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: 202109130112
Test Report Date: 22/09/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 14/09/2021
Test Completed : 21/09/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 13/09/2021
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 rd Ed. |
| 2 | Total Chromium | mg/L | BDL(LOQ-0.05) | 2.0 | IS:3025 (P-52) |

Remark:

BDL (Below Detection Limit), LOQ (Limit of Quantitation), 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.:TC636621000001914

Test Report Date:15/10/2021

Sample Particulars:

| | |
|-----------------------------|-------------------------|
| Sample Quantity & Packaging | : 1.0 Liter, Pet Bottle |
| Test Started on | : 07/10/2021 |
| Test Completed | : 15/10/2021 |
| Method of Sampling | : SOP/B/D-3 |
| Date of Sampling | : 06/10/2021 |
| 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 | ... | 7.65 | 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 | 60 | 125.0 | IS:3025 (P-58) |
| 4 | Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD) | mg/L | 8 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/L | 3.8 | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ 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 ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.35 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ^{VI}) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.06 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 3.5 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.41 | 1.0 | APHA-23 rd 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: 202110060110

Test Report Date: 16/10/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 07/10/2021
Test Completed : 15/10/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 06/10/2021
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 | 5.8 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo(a)-Pyreen | mg/L | BDL(LOQ-0.02) | 0.2 | APHA-23 rd 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.:TC636621000001916
Test Report Date: 16/10/2021

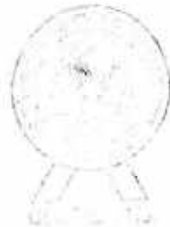
Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 07/10/2021
Test Completed : 15/10/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 06/10/2021
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 | ... | 7.67 | 6.5-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 54 | 100 | IS:3025 (P-17) |
| 3 | Chemical Oxygen Demand (COD) | mg/L | 160 | 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 ₆ H ₅ OH) | mg/L | 0.16 | <1 | IS:3025 (P-43) |
| 6 | Sulphide (S) | mg/L | 1.8 | 2.0 | IS:3025 (P-29) |
| 7 | Fluoride | mg/L | 2.82 | <5 | IS:3025 (P-60) |
| 8 | Chromium Hexavalent (Cr ⁶⁺) | 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.



(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: 202110060112
Test Report Date: 16/10/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Liter, Pet Bottle
Test Started on : 07/10/2021
Test Completed : 15/10/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 06/10/2021
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 rd Ed. |
| 2 | Total Chromium | mg/L | BDL (LOQ-0.05) | 2.0 | IS:3025 (P-52) |

Remarks:

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)

ULR No.:TC636621000002315

Test Report Date: 26/11/2021

Panipat Refinery
Distt. Panipat, Haryana, INDIA

Sample Particulars:

Sample Quantity & Packaging : 1.0 Litre, Pet Bottle
Test Started on : 18/11/2021
Test Completed : 25/11/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/11/2021
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 | ... | 7.49 | 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 | 70 | 125.0 | IS:3025 (P-58) |
| 4 | Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD) | mg/L | 6 | 15.0 | IS:3025 (P-44) |
| 5 | Oil & Grease (O&G) | mg/L | 2.9 | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ OH) | mg/L | 0.21 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.26 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/L | 0.67 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁶⁺) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.08 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/L | 3.1 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.67 | 1.0 | APHA-23 rd 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)

Test Report No: 202111170110

Test Report Date: 26/11/2021

Panipat Refinery
Distt. Panipat, Haryana, INDIA

Sample Particulars:

Sample Quantity & Packaging : 1.0 Litre, Pet Bottle
Test Started on : 18/11/2021
Test Completed : 25/11/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/11/2021
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 | 3.8 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo(a)-Pyreen | mg/L | BDL(LOQ 0.02) | 0.2 | APHA-23 rd 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

U/LR No.: TC636621000002316

Test Report Date: 26/11/2021

Sample Particulars:

Sample Quantity & Packaging : 1.0 Litre, Pet Bottle
Test Started on : 18/11/2021
Test Completed : 25/11/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/11/2021
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 | pH | | 7.69 | 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 | 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 | 1.8 | 5.0 | IS:3025 (P-39) |
| 6 | Phenols(C ₆ H ₅ OH) | mg/l | 0.26 | 0.35 | IS:3025 (P-43) |
| 7 | Sulphide (S) | mg/L | 0.3 | 0.5 | IS:3025 (P-29) |
| 8 | Total Kjeldahl Nitrogen (NH ₃) | mg/L | BDL (LOQ-0.2) | 40 | IS:3025 (P-34) |
| 9 | Phosphate | mg/l | 0.43 | 3.0 | IS:3025 (P-31) |
| 10 | Chromium Hexavalent (Cr ⁶⁺) | 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 rd Ed. |
| 12 | Lead (Pb) | mg/L | 0.04 | 0.1 | APHA-23 rd Ed. |
| 13 | Mercury (Hg) | mg/L | BDL (LOQ-0.005) | 0.01 | APHA-23 rd Ed. |
| 14 | Zinc (Zn) | mg/l | 2.62 | 5.0 | APHA-23 rd Ed. |
| 15 | Nickel (Ni) | mg/L | 0.84 | 1.0 | APHA-23 rd 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-6765



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Test Report

Issued to: M/s Indian Oil Corporation Limited
(Refinery Division)

Test Report No: 202111170111

Test Report Date: 26/11/2021

Panipat Refinery
Distt. Panipat, Haryana, INDIA

Sample Particulars:

Sample Quantity & Packaging : 1.0 Litre, Pet Bottle
Test Started on : 18/11/2021
Test Completed : 25/11/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/11/2021
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 | 3.6 | 15.0 | IS:3025 (P-34) |
| 2 | Cyanide (CN) | mg/L | BDL (LOQ-0.1) | 0.20 | APHA-23 rd 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 rd Ed. |
| 5 | Benzene | mg/L | BDL(LOQ-0.01) | 0.1 | APHA-23 rd Ed. |
| 6 | Benzo(a)-Pyreen | mg/L | BDL(LOQ-0.02) | 0.2 | APHA-23 rd 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.

(AUTHORISED SIGNATORY)
(AUTHORISED)
(RAVINDER MITTAL)

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Test Report

Issued to: M/s Indian Oil Corporation Limited
(Refinery Division)

ULR No.:TC636621000002317

Test Report Date: 26/11/2021

Panipat Refinery
Distt. Panipat, Haryana, INDIA

Sample Particulars:

Sample Quantity & Packaging : 1.0 Litre, Pet Bottle
Test Started on : 18/11/2021
Test Completed : 25/11/2021
Method of Sampling : SOP/B/D-3
Date of Sampling : 17/11/2021
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 | ... | 7.92 | 6.5-8.5 | IS:3025 (P-11) |
| 2 | Total Suspended Solids (TSS) | mg/L | 68 | 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 | 18.0 | 30 | IS:3025 (P-44) |
| 5 | Phenols(C ₆ H ₅ OH) | mg/L | 0.26 | <1 | IS:3025 (P-43) |
| 6 | Sulphide (S) | mg/L | 1.4 | 2.0 | IS:3025 (P-29) |
| 7 | Fluoride | mg/L | 3.57 | <5 | IS.3025 (P-60) |
| 8 | Chromium Hexavalent (Cr ⁶⁺) | 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)

Test Report No: 202111170112

Test Report Date: 26/11/2021

Panipat Refinery
Distt. Panipat, Haryana, INDIA

Sample Particulars:

| | |
|-----------------------------|-------------------------|
| Sample Quantity & Packaging | : 1.0 Litre, Pet Bottle |
| Test Started on | : 18/11/2021 |
| Test Completed | : 25/11/2021 |
| Method of Sampling | : SOP/B/D-3 |
| Date of Sampling | : 17/11/2021 |
| 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 rd Ed. |
| 2 | Total Chromium | mg/L | BDL(LOQ-0.05) | 2.0 | IS:3025 (P-52) |

Remark:

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



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TLV for Noise (OISD-GDN-166, First Edition, July, 1997)

| Exposure Time (In hours) | TLV (in dB) |
|--------------------------|-------------|
| 8 | 90 |
| 4 | 95 |
| 2 | 100 |
| 1 | 105 |
| 1/2 hrs. | 110 |

SOUND LEVEL METER MODEL NO. :- RT-5001

METER SR. NO. :- 111102404

MAKE :- REYTHON TECHNOLOGY

CALIBRATION ON :- 10.12.2020

NEXT DUE DATE OF CLIBRATION :- 10.12.2021

Noise survey of Target units of PR & PREP December-2021

| S.NO | Plant/Unit | Area | Source | Sound Level(dB) | DATE |
|------|------------|----------------|------------|-----------------|------------|
| 1 | SRU-I | 21-PM-CF-002-A | PUMP | 84.3 | 02.12.2021 |
| 2 | SRU-I | 21-PM-CF-001-C | PUMP | 86.7 | 02.12.2021 |
| 3 | SRU-I | 21-PM-CF-003-C | PUMP | 89.9 | 02.12.2021 |
| 4 | SRU-I | 21-PM-CF-007-A | PUMP | 87.3 | 02.12.2021 |
| 5 | SRU-I | 18-PA-CF-004-B | PUMP | 87.5 | 02.12.2021 |
| | | | | | |
| 1 | SRU-II | 51-PM-104-B | PUMP | 87.8 | 02.12.2021 |
| 2 | SRU-II | 51-PM-109-B | PUMP | 89.1 | 02.12.2021 |
| 3 | SRU-II | 53-PM-103-A | PUMP | 88.4 | 02.12.2021 |
| 4 | SRU-II | 53-PM-101-B | PUMP | 86.7 | 02.12.2021 |
| 5 | SRU-II | 54-PM-103-B | PUMP | 85.1 | 02.12.2021 |
| 6 | SRU-II | 54-PM-102-A | PUMP | 87.4 | 02.12.2021 |
| 7 | SRU-II | 57-PM-101-A | PUMP | 90 | 02.12.2021 |
| 8 | SRU-II | 57-PM-103-A | PUMP | 90 | 02.12.2021 |
| 9 | SRU-II | 57-PM-102-B | PUMP | 89.9 | 02.12.2021 |
| 10 | SRU-II | 26-KM-101-B | COMPRESSOR | 88.5 | 02.12.2021 |
| 11 | SRU-II | 57-KM-101-B | COMPRESSOR | 90 | 02.12.2021 |
| 12 | SRU-II | 57-KM-101-A | COMPRESSOR | 89.9 | 02.12.2021 |
| 13 | SRU-II | 20-PM-103-B | PUMP | 89.7 | 02.12.2021 |
| 14 | SRU-II | 20-PM-102-A | PUMP | 88.9 | 02.12.2021 |
| 15 | SRU-II | 25-PM-109-B | PUMP | 87.9 | 02.12.2021 |
| 16 | SRU-II | 25-PM-108-B | PUMP | 88 | 02.12.2021 |
| 17 | SRU-II | 88-PM-1002-B | PUMP | 89.6 | 02.12.2021 |
| 18 | SRU-II | 26-PM-101-B | PUMP | 86 | 02.12.2021 |
| 19 | SRU-II | 26-PM-103-A | PUMP | 89.7 | 02.12.2021 |
| 20 | SRU-II | 26-PM-102-A | PUMP | 90 | 02.12.2021 |

| | | | | | |
|----|-----|--------------|------------|------|------------|
| 1 | MSQ | 301-KM-201-B | COMPRESSOR | 77.9 | 03.12.2021 |
| 2 | MSQ | 301-KM-101-A | COMPRESSOR | 76.2 | 03.12.2021 |
| 3 | MSQ | 301-PM-101-B | PUMP | 83 | 03.12.2021 |
| 4 | MSQ | 303-PM-206-A | PUMP | 79.6 | 03.12.2021 |
| 5 | MSQ | 303-PM-202-A | PUMP | 84.5 | 03.12.2021 |
| 6 | MSQ | 303-PM-102-A | PUMP | 84.7 | 03.12.2021 |
| 7 | MSQ | 303-PM-204-B | PUMP | 86.2 | 03.12.2021 |
| 8 | MSQ | 303-PM-202-B | PUMP | 87.5 | 03.12.2021 |
| 9 | MSQ | 303-PM-101-B | PUMP | 85.8 | 03.12.2021 |
| 10 | MSQ | 303-PM-210-A | PUMP | 85 | 03.12.2021 |
| 11 | MSQ | 301-PM-211-B | PUMP | 83.6 | 03.12.2021 |
| 12 | MSQ | 301-PM-213-A | PUMP | 83 | 03.12.2021 |
| 13 | MSQ | 301-PM-214-B | PUMP | 81.9 | 03.12.2021 |
| 14 | MSQ | 301-PM-212-B | PUMP | 84.2 | 03.12.2021 |
| 15 | MSQ | 301-PM-201-A | PUMP | 88.5 | 03.12.2021 |
| 16 | MSQ | 301-PM-203-A | PUMP | 83.5 | 03.12.2021 |
| 17 | MSQ | 301-PM-215-A | PUMP | 82.4 | 03.12.2021 |
| 18 | MSQ | 301-PM-254-A | PUMP | 81 | 03.12.2021 |

| | | | | | |
|----|-----|------------------------|------------|------|------------|
| 19 | MSQ | 301-PM-253-B | PUMP | 88.8 | 03.12.2021 |
| 20 | MSQ | 303-K-201-B | COMPRESSOR | 80 | 03.12.2021 |
| 21 | MSQ | UNDER COMPRESSOR HOUSE | COMPRESSOR | 77.9 | 03.12.2021 |
| 22 | MSQ | 303-K-301-B | COMPRESSOR | 89.7 | 03.12.2021 |
| 23 | MSQ | 303-P-303-A | PUMP | 82.7 | 03.12.2021 |
| 24 | MSQ | 303-P-301-A | PUMP | 87.8 | 03.12.2021 |
| 25 | MSQ | 303-P-111-A | PUMP | 84.2 | 03.12.2021 |

| | | | | | |
|---|------|-------------------|------------|------|------------|
| 1 | DHDT | 72-PM-003-B | PUMP | 90 | 04.12.2021 |
| 2 | DHDT | 72-P-02-C | PUMP | 85.7 | 04.12.2021 |
| 3 | DHDT | 72-PM-004-A | PUMP | 87.9 | 04.12.2021 |
| 4 | DHDT | 72-PM-005-B | PUMP | 87.7 | 04.12.2021 |
| 5 | DHDT | 72-PM-007-B | PUMP | 88.3 | 04.12.2021 |
| 6 | DHDT | UNDER COMP. HOUSE | COMPRESSOR | 85.5 | 04.12.2021 |
| 7 | DHDT | 72-KM-002-A | COMPRESSOR | 86.6 | 04.12.2021 |
| 8 | DHDT | 72-KM-002-B | COMPRESSOR | 88.3 | 04.12.2021 |
| 9 | DHDT | 72-PM-001-A | PUMP | 83.5 | 04.12.2021 |

| | | | | | |
|---|-------------|-------------------|------------|------|------------|
| 1 | HGU-II (76) | 76-P-103-B | PUMP | 85.8 | 04.12.2021 |
| 2 | HGU-II (76) | 76-KM-001-B | COMPRESSOR | 77.9 | 04.12.2021 |
| 3 | HGU-II (76) | 76-KM-103-A | COMPRESSOR | 78.7 | 04.12.2021 |
| 4 | HGU-II (76) | UNDER COMP. HOUSE | COMPRESSOR | 77.2 | 04.12.2021 |
| 5 | HGU-II (76) | 76-P-002-A | PUMP | 88 | 04.12.2021 |
| 6 | HGU-II (76) | 76-P-101-B | PUMP | 89.8 | 04.12.2021 |

| | | | | | |
|----|---------|----------------------|--------------|------|------------|
| 1 | CPP/TPS | UB CONTROL ROOM | CONTROL ROOM | 64.2 | 07.12.2021 |
| 2 | CPP/TPS | VHP CONTROL ROOM | CONTROL ROOM | 69.3 | 07.12.2021 |
| 3 | CPP/TPS | GTG-3 | GENERATOR | 92.5 | 07.12.2021 |
| 4 | CPP/TPS | GTG-2 | GENERATOR | 92.8 | 07.12.2021 |
| 5 | CPP/TPS | BOILER NO.1 STG | BOILER | 92.8 | 07.12.2021 |
| 6 | CPP/TPS | BOILER NO.3 STG | BOILER | 89.8 | 07.12.2021 |
| 7 | CPP/TPS | 9060-39-FD-FM-101-A | FD FAN 1 A | 89.6 | 07.12.2021 |
| 8 | CPP/TPS | 9060-39-FD-FM-101-B | FD FAN 1 B | 87.5 | 07.12.2021 |
| 9 | CPP/TPS | 9060-39-ID-PM-101-B | ID FAN | 85.6 | 07.12.2021 |
| 10 | CPP/TPS | 9060-39-ID-PM-101-A | ID FAN | 87 | 07.12.2021 |
| 11 | CPP/TPS | 9060-39-PM-CF-408-B | PUMP | 80.9 | 07.12.2021 |
| 12 | CPP/TPS | 9060-89-PM-CF-608-B | PUMP | 85.6 | 07.12.2021 |
| 13 | CPP/TPS | 9060-89-PM-CF-508-A | PUMP | 87.7 | 07.12.2021 |
| 14 | CPP/TPS | 89 PM CF 808-A | PUMP | 84.1 | 07.12.2021 |
| 15 | CPP/TPS | 9060-89-FD-FM-1103-A | FD FAN | 87.2 | 07.12.2021 |
| 16 | CPP/TPS | 9060-39-ID-FM-301-B | ID FAN 3 B | 85 | 07.12.2021 |
| 17 | CPP/TPS | 9060-39-FD-FM-301-B | FD FAN 3 B | 87 | 07.12.2021 |
| 18 | CPP/TPS | 9060-39-FD-FM-301-A | FD FAN 3 A | 89.9 | 07.12.2021 |
| 19 | CPP/TPS | 9060-39-PM-CF-457-B | PUMP | 89.8 | 07.12.2021 |
| 20 | CPP/TPS | 9060-89-PA-CF-9904-A | PUMP | 89 | 07.12.2021 |
| 21 | CPP/TPS | 9060-89-PA-CF-9904-C | PUMP | 88.7 | 07.12.2021 |
| 22 | CPP/TPS | 9060-89-PA-CF-9902-A | PUMP | 89.4 | 07.12.2021 |
| 23 | CPP/TPS | 9060-89-FD-FM-1103-B | FD FAN | 89.4 | 07.12.2021 |

Noise survey of Target units of PR & PREP November-2021

| S.NO | Plant/Unit | Area | Source | Sound Level(dB) | DATE |
|------|------------|----------------|--------|-----------------|------------|
| 1 | AVU-I | 03-PM-CF-103-C | PUMP | 89.8 | 05.11.2021 |
| 2 | AVU-I | 03-PM-CF-103-A | PUMP | 90 | 05.11.2021 |
| 3 | AVU-I | 03-P-22-A | PUMP | 89.4 | 05.11.2021 |
| 4 | AVU-I | 03-PM-CF-21-A | PUMP | 93.5 | 05.11.2021 |
| 5 | AVU-I | 03-P-102-A | PUMP | 94.2 | 05.11.2021 |
| 6 | AVU-I | 03-P-61-B | PUMP | 90 | 05.11.2021 |
| 7 | AVU-I | 03-PM-CF-16-B | PUMP | 93.8 | 05.11.2021 |
| 8 | AVU-I | 03-PM-CF-15-B | PUMP | 94.6 | 05.11.2021 |
| 9 | AVU-I | 03-PM-CF-5-B | PUMP | 97.2 | 05.11.2021 |

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|----|-------|------------------------|------------|-------|------------|
| 10 | AVU-I | 03-PM-CF-4-B | PUMP | 98.6 | 05.11.2021 |
| 11 | AVU-I | 03-P-13-A | PUMP | 89.6 | 05.11.2021 |
| 12 | AVU-I | 04-P-04-B | PUMP | 93.8 | 05.11.2021 |
| 13 | AVU-I | 03-P-07-B | PUMP | 90 | 05.11.2021 |
| 14 | AVU-I | 03-PM-CF-7-A | PUMP | 93.8 | 05.11.2021 |
| 15 | AVU-I | 04-P-02-B | PUMP | 94.6 | 05.11.2021 |
| 16 | AVU-I | 04-PM-CF-3-D | PUMP | 90 | 05.11.2021 |
| 17 | AVU-I | 04-FF-FN-04 | ID FAN | 89.5 | 05.11.2021 |
| 18 | AVU-I | 04-FF-FN-03-A | FD FAN | 86.9 | 05.11.2021 |
| 19 | AVU-I | 04-FF-FN-03-B | FD FAN | 84.5 | 05.11.2021 |
| 20 | AVU-I | 03-FF-FN-04 | ID FAN | 88.1 | 05.11.2021 |
| 21 | AVU-I | 03-FF-FN-03-B | FD FAN | 85.2 | 05.11.2021 |
| 22 | AVU-I | 03-FF-FN-03-A | FD FAN | 84.2 | 05.11.2021 |
| 23 | AVU-I | 03-P-9-A | PUMP | 89.9 | 05.11.2021 |
| 24 | AVU-I | 03-P-9-B | PUMP | 89.8 | 05.11.2021 |
| 25 | AVU-I | 03-PM-CF-14-A | PUMP | 99.8 | 05.11.2021 |
| 26 | AVU-I | 03-PM-CF-14-D | PUMP | 90 | 05.11.2021 |
| 27 | AVU-I | 03-PM-CF-8-A | PUMP | 89.9 | 05.11.2021 |
| 28 | AVU-I | 03-PM-CF-6-A | PUMP | 95.1 | 05.11.2021 |
| 29 | AVU-I | 03-PM-CF-6-B | PUMP | 96.2 | 05.11.2021 |
| 30 | AVU-I | 03-PM-CF-8-B | PUMP | 93.6 | 05.11.2021 |
| 31 | AVU-I | 19-PM-CF-01-B | PUMP | 89.5 | 05.11.2021 |
| 32 | AVU-I | 03-P-35-A | PUMP | 93.4 | 05.11.2021 |
| 33 | AVU-I | 03-PM-CF-36-B | PUMP | 93.1 | 05.11.2021 |
| 34 | AVU-I | 04-P-101-A | PUMP | 90 | 05.11.2021 |
| 35 | AVU-I | 03-PM-CF-11-B | PUMP | 93.4 | 05.11.2021 |
| 36 | AVU-I | 03-P-01-B | PUMP | 96 | 05.11.2021 |
| 37 | AVU-I | 03-P-01-C | PUMP | 95.2 | 05.11.2021 |
| | | | | | |
| 1 | PTA | 21-P1-125-A | PUMP | 86.1 | 09.11.2021 |
| 2 | PTA | Process Air Compressor | COMPRESSOR | 104.5 | 09.11.2021 |
| 3 | PTA | 21-FN-164-A | FD FAN | 89.5 | 09.11.2021 |
| 4 | PTA | 21-FN-165 | FD FAN | 89.4 | 09.11.2021 |
| 5 | PTA | 21-P1-0512 | PUMP | 88.9 | 09.11.2021 |
| 6 | PTA | 21-P1-632-B | PUMP | 88.8 | 09.11.2021 |
| 7 | PTA | 21-P1-407-B | PUMP | 87.8 | 09.11.2021 |
| 8 | PTA | 21-P1-1606-B | PUMP | 90 | 09.11.2021 |
| 9 | PTA | 21-P1-165-A | PUMP | 89.9 | 09.11.2021 |
| 10 | PTA | 21-P1-606-A | PUMP | 90 | 09.11.2021 |
| 11 | PTA | 21-P1-607-B | PUMP | 92.5 | 09.11.2021 |
| 12 | PTA | P1-1207-A | PUMP | 90 | 09.11.2021 |
| 13 | PTA | P1-1209-A | PUMP | 89.9 | 09.11.2021 |
| 14 | PTA | P1-1209-D | PUMP | 89.8 | 09.11.2021 |
| 15 | PTA | P1-1209-D | PUMP | 89.7 | 09.11.2021 |
| 16 | PTA | K1-1260 | ID FAN | 86.6 | 09.11.2021 |
| 17 | PTA | FN-1259-A | FD FAN | 88.7 | 09.11.2021 |
| 18 | PTA | FN-1259-B | FD FAN | 89.1 | 09.11.2021 |
| 19 | PTA | 21-P1-1251-C | PUMP | 88.8 | 09.11.2021 |
| 20 | PTA | 21-P1-1251-A | PUMP | 89.5 | 09.11.2021 |
| 21 | PTA | 21-P1-1407 | PUMP | 88.7 | 09.11.2021 |
| 22 | PTA | 21-P1-1602-B | PUMP | 89.6 | 09.11.2021 |
| 23 | PTA | 21-P1-1616-B | PUMP | 88.2 | 09.11.2021 |
| 24 | PTA | P1-1410-B | PUMP | 88.7 | 09.11.2021 |
| 25 | PTA | 21-P1-1420-A | PUMP | 85 | 09.11.2021 |
| 26 | PTA | P1-2301-A | PUMP | 89.8 | 09.11.2021 |
| 27 | PTA | P1-1816-B | PUMP | 90 | 09.11.2021 |
| 28 | PTA | 21-P1-2202-A | PUMP | 89.6 | 09.11.2021 |
| 29 | PTA | 21-P1-2210-B | PUMP | 89.9 | 09.11.2021 |
| 30 | PTA | 21-P1-2625-B | PUMP | 90 | 09.11.2021 |
| 31 | PTA | 21-K1-830-A | COMPRESSOR | 86.7 | 09.11.2021 |
| 32 | PTA | 21-P1-2401-B | PUMP | 87.6 | 09.11.2021 |

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|----|-------|-----------------------|------------|-------|------------|
| 33 | PTA | 21-P1-2401-B | PUMP | 88.1 | 09.11.2021 |
| 34 | PTA | Near Combuster Heater | COMPRESSOR | 103.1 | 09.11.2021 |
| 1 | PX-I | 202-P-10-A | PUMP | 85.4 | 12.11.2021 |
| 2 | PX-I | 202-PM-16-A | PUMP | 87.1 | 12.11.2021 |
| 3 | PX-I | 202-PM-02-A | PUMP | 84.4 | 12.11.2021 |
| 4 | PX-I | 202-P-01-B | PUMP | 88.6 | 12.11.2021 |
| 5 | PX-I | 202-P-03-A | PUMP | 88 | 12.11.2021 |
| 6 | PX-I | 202-P-04-P | PUMP | 87.5 | 12.11.2021 |
| 7 | PX-I | 201-PM-01-A | PUMP | 90 | 12.11.2021 |
| 8 | PX-I | 201-P-08-B | PUMP | 89.4 | 12.11.2021 |
| 9 | PX-I | 201-P-02-A | PUMP | 87.6 | 12.11.2021 |
| 10 | PX-I | 202-KM-2-A | COMPRESSOR | 89.6 | 12.11.2021 |
| 11 | PX-I | 202-KM-4 | COMPRESSOR | 89.1 | 12.11.2021 |
| 12 | PX-I | 202-KM-3 | COMPRESSOR | 89.3 | 12.11.2021 |
| 13 | PX-I | 201-KM-1-A | COMPRESSOR | 88.5 | 12.11.2021 |
| 1 | PX-II | 205-P-101-B | PUMP | 88.3 | 12.11.2021 |
| 2 | PX-II | 205-PM-02-A | PUMP | 90 | 12.11.2021 |
| 3 | PX-II | 205-PM-02-B | PUMP | 89.8 | 12.11.2021 |
| 4 | PX-II | 205-P-04-B | PUMP | 89.4 | 12.11.2021 |
| 5 | PX-II | 205-P-08-B | PUMP | 89.7 | 12.11.2021 |
| 6 | PX-II | 206-P-07-B | PUMP | 88.8 | 12.11.2021 |
| 7 | PX-II | 207-PM-01-B | PUMP | 83.5 | 12.11.2021 |
| 8 | PX-II | 205-P-03-A | PUMP | 89.5 | 12.11.2021 |
| 9 | PX-II | 205-PM-07-B | PUMP | 90 | 12.11.2021 |
| 10 | PX-II | 206-PM-03-B | PUMP | 89.9 | 12.11.2021 |
| 11 | PX-II | 205-PM-06-A | PUMP | 89.1 | 12.11.2021 |
| 12 | PX-II | 205-PM-05-A | PUMP | 82.1 | 12.11.2021 |
| 13 | PX-II | 206-PM-04-C | PUMP | 83.6 | 12.11.2021 |
| 14 | PX-II | 206-PM-04-A | PUMP | 83.9 | 12.11.2021 |
| 15 | PX-II | 206-PM-02-B | PUMP | 90 | 12.11.2021 |
| 16 | PX-II | 206-FN-02 | FD FAN | 91.2 | 12.11.2021 |
| 17 | PX-II | 206-FN-01 | FD FAN | 90 | 12.11.2021 |
| 18 | PX-II | 206-FN-03 | ID FAN | 89.7 | 12.11.2021 |
| 19 | PX-II | 207-PM-04-B | PUMP | 89.7 | 12.11.2021 |
| 20 | PX-II | 207-PM-02-A | PUMP | 89.3 | 12.11.2021 |
| 21 | PX-II | 207-PM-03-A | PUMP | 88.9 | 12.11.2021 |
| 22 | PX-II | 208-KM-01 | COMPRESSOR | 87 | 12.11.2021 |
| 23 | PX-II | 208-P-03-A | PUMP | 88.2 | 12.11.2021 |
| 24 | PX-II | 208-P-02-A | PUMP | 87.4 | 12.11.2021 |
| 25 | PX-II | 208-P-01-A | PUMP | 89.8 | 12.11.2021 |
| 26 | PX-II | 206-P-013-A | PUMP | 87.5 | 12.11.2021 |
| 1 | RFCCU | 12-KM-001-A | COMPRESSOR | 89.1 | 20.11.2021 |
| 2 | RFCCU | 07-P-002-A | PUMP | 90 | 20.11.2021 |
| 3 | RFCCU | 07-PM-CF-302-B | PUMP | 89.5 | 20.11.2021 |
| 4 | RFCCU | 07-PM-CF-212-B | PUMP | 87.4 | 20.11.2021 |
| 5 | RFCCU | 07-PM-CF-209-A | PUMP | 89.1 | 20.11.2021 |
| 6 | RFCCU | 07-PM-CF-202-A | PUMP | 90.1 | 20.11.2021 |
| 7 | RFCCU | 07-PM-CF-207-B | PUMP | 89.6 | 20.11.2021 |
| 8 | RFCCU | 07-PM-CF-202-B | PUMP | 90 | 20.11.2021 |
| 9 | RFCCU | 07-PM-CF-201-B | PUMP | 89 | 20.11.2021 |
| 10 | RFCCU | 07-PM-CF-303-A | PUMP | 89.1 | 20.11.2021 |
| 11 | RFCCU | 07-PM-CF-303-B | PUMP | 87.1 | 20.11.2021 |
| 12 | RFCCU | 07-PM-CF-204-B | PUMP | 90 | 20.11.2021 |
| 13 | RFCCU | 07-PM-CF-205-A | PUMP | 89.9 | 20.11.2021 |
| 14 | RFCCU | 07-PM-CF-306-A | PUMP | 89.5 | 20.11.2021 |
| 15 | RFCCU | 07-PM-CF-203-A | PUMP | 89.6 | 20.11.2021 |
| 16 | RFCCU | 07-PM-CF-311-A | PUMP | 87 | 20.11.2021 |
| 17 | RFCCU | 07-PM-CF-305-A | PUMP | 87.9 | 20.11.2021 |

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|----|-------|------------------------|------------|------|------------|
| 18 | RFCCU | 07-PM-CF-210-A | PUMP | 90 | 20.11.2021 |
| 19 | RFCCU | 07-PM-CF-210-B | PUMP | 89.9 | 20.11.2021 |
| 1 | CCRU | KA-RP-202-A | COMPRESSOR | 86.9 | 22.11.2021 |
| 2 | CCRU | KA-RP-301-A | COMPRESSOR | 90 | 22.11.2021 |
| 3 | CCRU | KA-RP-202-C | COMPRESSOR | 80.9 | 22.11.2021 |
| 4 | CCRU | KA-RP-101-A | COMPRESSOR | 86.7 | 22.11.2021 |
| 5 | CCRU | UNDER COMPRESSOR HOUSE | COMPRESSOR | 81.9 | 22.11.2021 |
| 6 | CCRU | 08-KM-RP-303-B | COMPRESSOR | 82.6 | 22.11.2021 |
| 7 | CCRU | 08-PM-CF-202-A | PUMP | 85.6 | 22.11.2021 |
| 8 | CCRU | 08-PM-CF-104-A | PUMP | 84.8 | 22.11.2021 |
| 9 | CCRU | 08-PM-CF-102-A | PUMP | 87.4 | 22.11.2021 |
| 10 | CCRU | 08-PM-CF-203-B | PUMP | 89.8 | 22.11.2021 |
| 11 | CCRU | 08-PM-CF-201-B | PUMP | 90 | 22.11.2021 |
| 12 | CCRU | 08-PM-CF-204-A | PUMP | 88.5 | 22.11.2021 |
| 13 | CCRU | 08-PM-CF-101-A | PUMP | 88.3 | 22.11.2021 |
| 14 | CCRU | 08-PM-CF-105-A | PUMP | 89.1 | 22.11.2021 |
| 15 | CCRU | 08-PM-CF-701-A | PUMP | 89.9 | 22.11.2021 |

Noise survey of Target units of PR & PREP October -2021

| S.NO | Plant/Unit | Area | Source | Sound Level(dB) | DATE |
|------|------------|----------------|----------------|-----------------|------------|
| 1 | OHCU | 05-PMRC-07-F | PUMP | 91.8 | 04.10.2021 |
| 2 | OHCU | P-001-A | PUMP | 87.8 | 04.10.2021 |
| 3 | OHCU | 05-PM-CF-503-B | PUMP | 91.5 | 04.10.2021 |
| 4 | OHCU | 05-PM-CF-511-A | PUMP | 95.2 | 04.10.2021 |
| 5 | OHCU | 05-PM-CF-301-A | PUMP | 93.8 | 04.10.2021 |
| 6 | OHCU | 05-PM-CF-504-B | PUMP | 94.6 | 04.10.2021 |
| 7 | OHCU | 05-PM-CF-501-A | PUMP | 94.2 | 04.10.2021 |
| 8 | OHCU | 05-PM-CF-505-A | PUMP | 92.1 | 04.10.2021 |
| 9 | OHCU | 05-PM-CF-508-A | PUMP | 93.8 | 04.10.2021 |
| 10 | OHCU | 05-PM-CF-502-B | PUMP | 91.3 | 04.10.2021 |
| 11 | OHCU | 05-PM-CF-507-A | PUMP | 91.8 | 04.10.2021 |
| 12 | OHCU | 05-PM-CF-506-A | PUMP | 91.2 | 04.10.2021 |
| 13 | OHCU | 05-PM-CF-510-A | PUMP | 91.5 | 04.10.2021 |
| 14 | OHCU | 05-PM-CF-509-B | PUMP | 85.8 | 04.10.2021 |
| 15 | OHCU | 05-PM-CF-529-A | PUMP | 81.5 | 04.10.2021 |
| 1 | HGU-1 | 06-P-202-A | PUMP | 89.9 | 04.10.2021 |
| 2 | HGU-1 | 06-P-203-B | PUMP | 89.4 | 04.10.2021 |
| 3 | HGU-1 | 06-KA-203-A | ID FAN | 82 | 04.10.2021 |
| 4 | HGU-1 | 06-KA-202 | ID FAN | 86.2 | 04.10.2021 |
| 5 | HGU-1 | 06-KA-201 | FD FAN | 81 | 04.10.2021 |
| 1 | AVU-II | 73-FN-002 | ID FAN | 79.3 | 05.10.2021 |
| 2 | AVU-II | 73-FN-02 | ID FAN TURBINE | 93.5 | 05.10.2021 |
| 3 | AVU-II | 73-FN-001 | ID FAN | 93.1 | 05.10.2021 |
| 4 | AVU-II | 73-FN-01 | ID FAN | 89.2 | 05.10.2021 |
| 5 | AVU-II | 74-PM-05-B | PUMP | 89.7 | 05.10.2021 |
| 6 | AVU-II | 74-PM-05-A | PUMP | 88.5 | 05.10.2021 |
| 7 | AVU-II | 73-PM-10-B | PUMP | 89.2 | 05.10.2021 |
| 8 | AVU-II | 73-PM-10-A | PUMP | 88.9 | 05.10.2021 |
| 9 | AVU-II | 74-PM-01-B | PUMP | 86.3 | 05.10.2021 |
| 10 | AVU-II | 74-PM-02-B | PUMP | 88.6 | 05.10.2021 |
| 11 | AVU-II | 73-P-013-C | PUMP | 88.7 | 05.10.2021 |
| 12 | AVU-II | 73-P-013-B | PUMP | 88.8 | 05.10.2021 |
| 13 | AVU-II | 73-P-09-C | PUMP | 93.8 | 05.10.2021 |
| 14 | AVU-II | 73-PM-08-B | PUMP | 86.6 | 05.10.2021 |
| 15 | AVU-II | 74-PM-06-A | PUMP | 88.4 | 05.10.2021 |
| 16 | AVU-II | 74-PM-06-B | PUMP | 89.3 | 05.10.2021 |
| 17 | AVU-II | 59-PM-01-A | PUMP | 94.5 | 05.10.2021 |

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|----|--------|-------------------|------------|------|------------|
| 18 | AVU-II | 59-PM-02-B | PUMP | 89.7 | 05.10.2021 |
| 19 | AVU-II | 73-PM-14-B | PUMP | 86.3 | 05.10.2021 |
| 20 | AVU-II | 73-PM-02-D | PUMP | 88.3 | 05.10.2021 |
| 21 | AVU-II | 73-PM-02-B | PUMP | 85.9 | 05.10.2021 |
| 22 | AVU-II | 73-PM-02-A | PUMP | 87 | 05.10.2021 |
| 23 | AVU-II | 73-PM-003-A | PUMP | 83.3 | 05.10.2021 |
| 24 | AVU-II | 73-PM-032-A | PUMP | 90.1 | 05.10.2021 |
| 25 | AVU-II | 73-PM-024-B | PUMP | 86.8 | 05.10.2021 |
| 26 | AVU-II | 73-PM-811-C | PUMP | 84.8 | 05.10.2021 |
| 27 | AVU-II | 74-PM-04-A | PUMP | 89 | 05.10.2021 |
| 28 | AVU-II | 73-P-01-A | PUMP | 85.3 | 05.10.2021 |
| 29 | AVU-II | 73-P-01-B | PUMP | 86.2 | 05.10.2021 |
| 30 | AVU-II | 73-P-01-D | PUMP | 88.5 | 05.10.2021 |
| 31 | AVU-II | 73-PM-04-A | PUMP | 88 | 05.10.2021 |
| 32 | AVU-II | 73-PM-015-B | PUMP | 89.9 | 05.10.2021 |
| 33 | AVU-II | 59-PM-04-B | PUMP | 87.4 | 05.10.2021 |
| 34 | AVU-II | 73-P-012-A | PUMP | 85 | 05.10.2021 |
| 35 | AVU-II | 73-P-006-A | PUMP | 88.7 | 05.10.2021 |
| 36 | AVU-II | 73-PM-036-A | PUMP | 87.7 | 05.10.2021 |
| 37 | AVU-II | 73-P-007-A | PUMP | 85.7 | 05.10.2021 |
| 38 | AVU-II | 74-P-007-A | PUMP | 84.2 | 05.10.2021 |
| 39 | AVU-II | 74-P-03-A | PUMP | 83.1 | 05.10.2021 |
| 40 | AVU-II | 74-P-03-C | PUMP | 88.7 | 05.10.2021 |
| 41 | AVU-II | 73-PM-020-A | PUMP | 88.9 | 05.10.2021 |
| 42 | AVU-II | 73-PM-05-B | PUMP | 88.1 | 05.10.2021 |
| | | | | | |
| 1 | HCU | 75-FN-103 | ID FAN | 81.9 | 06.10.2021 |
| 2 | HCU | 75-FN-102 | ID FAN | 80.7 | 06.10.2021 |
| 3 | HCU | 75-FN-101 | ID FAN | 82 | 06.10.2021 |
| 4 | HCU | 75-PM-106-B | PUMP | 86.8 | 06.10.2021 |
| 5 | HCU | 75-PM-107-A | PUMP | 89.1 | 06.10.2021 |
| 6 | HCU | 75-PM-111-B | PUMP | 93.1 | 06.10.2021 |
| 7 | HCU | 75-PM-104-A | PUMP | 92 | 06.10.2021 |
| 8 | HCU | 75-PM-103-B | PUMP | 89.9 | 06.10.2021 |
| 9 | HCU | 75-PM-102-A | PUMP | 89.8 | 06.10.2021 |
| 10 | HCU | 75-PM-113-B | PUMP | 91.2 | 06.10.2021 |
| 11 | HCU | 75-PM-114-B | PUMP | 92.3 | 06.10.2021 |
| 12 | HCU | 75-PM-112-B | PUMP | 89.8 | 06.10.2021 |
| 13 | HCU | 75-PM-116-B | PUMP | 96.5 | 06.10.2021 |
| 14 | HCU | 75-PM-115-B | PUMP | 89.7 | 06.10.2021 |
| 15 | HCU | 75-PM-201-B | PUMP | 89.8 | 06.10.2021 |
| 16 | HCU | 75-K-002-A | COMPRESSOR | 92.1 | 06.10.2021 |
| 17 | HCU | 75-K-002-B | COMPRESSOR | 92.8 | 06.10.2021 |
| 18 | HCU | UNDER COMP. HOUSE | COMPRESSOR | 88.4 | 06.10.2021 |
| 19 | HCU | 75-PT-2034 | PUMP | 78.5 | 06.10.2021 |
| 20 | HCU | 75-P-001-A | PUMP | 84.6 | 06.10.2021 |
| | | | | | |
| 1 | DCU | PB-79-PM-01-B | PUMP | 80.7 | 12.10.2021 |
| 2 | DCU | 78-PM-135-B | PUMP | 88.1 | 12.10.2021 |
| 3 | DCU | 78-PM-148-B | PUMP | 87.3 | 12.10.2021 |
| 4 | DCU | 78-PM-131-A | PUMP | 87.4 | 12.10.2021 |
| 5 | DCU | 78-PM-112-A | PUMP | 89.9 | 12.10.2021 |
| 6 | DCU | 78-PM-105-A | PUMP | 89.9 | 12.10.2021 |
| 7 | DCU | 78-PM-113-B | PUMP | 87.9 | 12.10.2021 |
| 8 | DCU | 78-PM-124-B | PUMP | 86.9 | 12.10.2021 |
| 9 | DCU | 78-PM-111-A | PUMP | 88.3 | 12.10.2021 |
| 10 | DCU | 78-PM-161-B | PUMP | 88 | 12.10.2021 |
| 11 | DCU | 78-PM-122-B | PUMP | 89.4 | 12.10.2021 |
| 12 | DCU | 78-PM-109-A | PUMP | 88.9 | 12.10.2021 |
| 13 | DCU | 78-PM-108-B | PUMP | 89.4 | 12.10.2021 |
| 14 | DCU | 78-PM-107-A | PUMP | 89.9 | 12.10.2021 |

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|----|------|-------------------|------------|------|------------|
| 15 | DCU | 78-PM-110-B | PUMP | 88.8 | 12.10.2021 |
| 16 | DCU | 78-PM-125-A | PUMP | 87 | 12.10.2021 |
| 17 | DCU | 78-PM-104-A | PUMP | 86.3 | 12.10.2021 |
| 18 | DCU | 78-PM-116-B | PUMP | 87.7 | 12.10.2021 |
| 19 | DCU | 78-PM-125-A | PUMP | 86.7 | 12.10.2021 |
| 20 | DCU | 78-PM-127-B | PUMP | 87.1 | 12.10.2021 |
| 21 | DCU | 78-P-134-A | PUMP | 87.5 | 12.10.2021 |
| 22 | DCU | 78-FD-101-A | FD FAN | 79.1 | 12.10.2021 |
| 23 | DCU | 78-FD-101-B | FD FAN | 78.9 | 12.10.2021 |
| 24 | DCU | 78-FD-102-B | FD FAN | 77.3 | 12.10.2021 |
| 25 | DCU | 78-FD-102-A | FD FAN | 78.6 | 12.10.2021 |
| 26 | DCU | 78-ID-102 | ID FAN | 80.5 | 12.10.2021 |
| 27 | DCU | 78-ID-101 | ID FAN | 82.1 | 12.10.2021 |
| 28 | DCU | 78-PM-101-B | PUMP | 89.9 | 12.10.2021 |
| 29 | DCU | 78-PM-114-A | PUMP | 83.5 | 12.10.2021 |
| 30 | DCU | 78-PM-104-P1-A | PUMP | 83.8 | 12.10.2021 |
| 31 | DCU | 78-P-118-B | PUMP | 88.2 | 12.10.2021 |
| | | | | | |
| 1 | DHDS | FD-01-B | FD FAN | 68.1 | 13.10.2021 |
| 2 | DHDS | FD-01-A | FD FAN | 68.5 | 13.10.2021 |
| 3 | DHDS | 52-PA-CF-107-B | PUMP | 90 | 13.10.2021 |
| 4 | DHDS | 52-PA-CF-123-B | PUMP | 85.2 | 13.10.2021 |
| 5 | DHDS | 52-PA-CF-101-A | PUMP | 89.9 | 13.10.2021 |
| 6 | DHDS | 52-PM-CF-102-B | PUMP | 87.4 | 13.10.2021 |
| 7 | DHDS | 52-KM-RP-101-B | COMPRESSOR | 82.3 | 13.10.2021 |
| 8 | DHDS | UNDER COMP. HOUSE | COMPRESSOR | 81.1 | 13.10.2021 |

Noise survey of Target units of PR & PREP September -2021

| S.NO | Plant/Unit | Area | Source | Sound Level(dB) | DATE |
|------|------------|----------------------------------|------------|-----------------|------------|
| 1 | CPP | GTG-3 | GENERATOR | 97.3 | 03.09.2021 |
| 2 | CPP | BURNER-4 | BURNER-UBP | 89.8 | 03.09.2021 |
| 3 | CPP | 9060-397D-PM-101 A-ID FAN-1A | ID FAN-1 A | 89.5 | 03.09.2021 |
| 4 | CPP | 9060-39-ID-FD-FM-101 B-FD FAN 1D | ID FAN-1 B | 89.3 | 03.09.2021 |
| 5 | CPP | 9060-39-ID-FD-FM-101-B-FD FAN | FD FAN | 88.6 | 03.09.2021 |
| 6 | CPP | 9060-89-FM-CF-1203-B-FD FAN | FD FAN | 89.2 | 03.09.2021 |
| 7 | CPP | 9060-89-PM-CF-1203-A | FD FAN | 92.6 | 03.09.2021 |
| 8 | CPP | 9060-89-PM-CF-508-A | FD FAN | 88 | 03.09.2021 |
| 9 | CPP | 89-PM-CF-508-A | PUMP | 88.5 | 03.09.2021 |
| 10 | CPP | 89-PM-CF-808-A | PUMP | 88.5 | 03.09.2021 |
| 11 | CPP | 9060-39-DB-FM-413-A | COMPRESURE | 89.2 | 03.09.2021 |
| 12 | CPP | 9060-89-PA-CF-9904-A | PUMP | 87.4 | 03.09.2021 |
| 13 | CPP | 9060-39-PM-CF-457-A | PUMP | 86.4 | 03.09.2021 |
| 14 | CPP | OLD CONTROL ROOM | GENERATOR | 64.2 | 03.09.2021 |
| 15 | CPP | NEAR OUTER CABIN CABIN | GENERATOR | 88.2 | 03.09.2021 |
| 16 | CPP | GT CABIN OUTER SIDE | GENERATOR | 76.2 | 03.09.2021 |
| 17 | CPP | GT CABIN INNER SIDE | GENERATOR | 62.1 | 03.09.2021 |
| 18 | CPP | CONTROL ROOM | GENERATOR | 66.9 | 03.09.2021 |
| 19 | CPP | OUTER UHP SIDE | EA CABIN | 79.8 | 03.09.2021 |
| 20 | CPP | RSG / BOP CABIN OUTER | EA CABIN | 61.7 | 03.09.2021 |
| 21 | CPP | STG / BOP CABIN INNER | EA CABIN | 75.6 | 03.09.2021 |
| 22 | CPP | MP HOUSE CABIN OUTER | EA CABIN | 76.9 | 03.09.2021 |
| 23 | CPP | UMP HOUSE CABIN OUTER | EA CABIN | 81.5 | 03.09.2021 |
| 24 | CPP | UMP HOUSE CABIN INNER | EA CABIN | 61.6 | 03.09.2021 |
| | | | | | |
| 1 | MSQ | 301-KM-201-A | COMPRESURE | 79.1 | 21.09.2021 |
| 2 | MSQ | 301-KM-101-B | PUMP | 80.5 | 21.09.2021 |
| 3 | MSQ | 301-PM-101-A | PUMP | 86.3 | 21.09.2021 |
| 4 | MSQ | 303-PM-206-B | PUMP | 80.1 | 21.09.2021 |
| 5 | MSQ | 303-PM-202-B | PUMP | 81.8 | 21.09.2021 |
| 6 | MSQ | 303-PM-102-A | PUMP | 84.3 | 21.09.2021 |

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|----|----------|------------------------|------------|------|------------|
| 7 | MSQ | 303-PM-204-B | PUMP | 86.3 | 21.09.2021 |
| 8 | MSQ | 303-PM-201-A | PUMP | 87.4 | 21.09.2021 |
| 9 | MSQ | 303-PM-101-B | PUMP | 87.4 | 21.09.2021 |
| 10 | MSQ | 301-PM-210-B | PUMP | 82.5 | 21.09.2021 |
| 11 | MSQ | 301-PM-211-B | PUMP | 84.6 | 21.09.2021 |
| 12 | MSQ | 301-PM-213-B | PUMP | 83.8 | 21.09.2021 |
| 13 | MSQ | 301-PM-212-A | PUMP | 86.8 | 21.09.2021 |
| 14 | MSQ | 301-PM-203-A | PUMP | 82.9 | 21.09.2021 |
| 15 | MSQ | 301-PM-201-B | PUMP | 85.3 | 21.09.2021 |
| 16 | MSQ | 301-PM-215-B | PUMP | 82.8 | 21.09.2021 |
| 17 | MSQ | 301-PM-254-B | PUMP | 79.8 | 21.09.2021 |
| 18 | MSQ | 301-PM-253-B | PUMP | 85.9 | 21.09.2021 |
| | | | | | |
| 1 | HGU-(76) | 76 ID - FAN | ID-FAN | 88.5 | 23.09.2021 |
| 2 | HGU (76) | 76 P 002 A | PUMP | 89.5 | 23.09.2021 |
| 3 | HGU-(76) | 76 - P -103-A | COMPRESURE | 92.4 | 23.09.2021 |
| 4 | HGU-(76) | 76 - KM -001-A | COMPRESURE | 84.8 | 23.09.2021 |
| 5 | HGU-(76) | 76 - KM -103-A | COMPRESURE | 81.3 | 23.09.2021 |
| 6 | HGU-(76) | UNDER COMPRESURE HOUSE | COMPRESURE | 80.4 | 23.09.2021 |
| 7 | HGU-(76) | UPPER SIDE | COMPRESURE | 85.2 | 23.09.2021 |
| 8 | HGU-(76) | 76 - E -114-B | DRUM HEAD | 83.4 | 23.09.2021 |
| 9 | HGU-(76) | 76 - E -115 | DRUM HEAD | 81.3 | 23.09.2021 |
| 10 | HGU-(76) | 76 - E -114-A | DRUM HEAD | 79.5 | 23.09.2021 |
| | | | | | |
| 1 | DHDT | 72-FD-004-B | FD FAN | 81.2 | 23.09.2021 |
| 2 | DHDT | 72-PM-004-A | PUMP | 89.1 | 23.09.2021 |
| 3 | DHDT | 72-PM-007-B | PUMP | 88.9 | 23.09.2021 |
| 4 | DHDT | UNDER COMPRESURE HOUSE | COMPRESURE | 86.7 | 23.09.2021 |
| 5 | DHDT | 72-KM-002-B | COMPRESURE | 89.8 | 23.09.2021 |
| 6 | DHDT | 72-KM-002-C | COMPRESURE | 88.3 | 23.09.2021 |
| 7 | DHDT | 72-PM-001-A | PUMP | 87.6 | 23.09.2021 |
| 8 | DHDT | 72-PM-003-A | PUMP | 92.2 | 23.09.2021 |
| 9 | DHDT | 72-P-002-C | PUMP | 85.5 | 23.09.2021 |
| | | | | | |
| 1 | SRU-I | 18-PA-CF-004-B | PUMP | 81.1 | 28.09.2021 |
| 2 | SRU-I | 21-PA-CF-002-A | PUMP | 87.1 | 28.09.2021 |
| 3 | SRU-I | 21-PA-CF-001-A | PUMP | 90.4 | 28.09.2021 |
| 4 | SRU-I | 21-PA-CF-001-B | PUMP | 90.7 | 28.09.2021 |
| 5 | SRU-I | 21-PM-CF-003-B | PUMP | 93.1 | 28.09.2021 |
| 6 | SRU-I | 21-PM-CF-003-A | PUMP | 94.7 | 28.09.2021 |
| | | | | | |
| 1 | SRU-II | 51-PM-104-B | PUMP | 87.2 | 28.09.2021 |
| 2 | SRU-II | 51-PM-101-B | PUMP | 89.7 | 28.09.2021 |
| 3 | SRU-II | 51-PM-102-A | PUMP | 87.3 | 28.09.2021 |
| 4 | SRU-II | 53-PM-103-A | PUMP | 89.4 | 28.09.2021 |
| 5 | SRU-II | 54-PM-103-A | PUMP | 86.1 | 28.09.2021 |
| 6 | SRU-II | 54-PM-102-A | PUMP | 88.1 | 28.09.2021 |
| 7 | SRU-II | 53-PM-101-A | PUMP | 86.1 | 28.09.2021 |
| 8 | SRU-II | 53-PM-102-A | PUMP | 90.1 | 28.09.2021 |
| 9 | SRU-II | 26-KM-101-B | COMPRESSOR | 89.8 | 28.09.2021 |
| 10 | SRU-II | 57-KM-101-B | COMPRESSOR | 90.9 | 28.09.2021 |
| 11 | SRU-II | 26-PM-104-A | PUMP | 89.9 | 28.09.2021 |
| 12 | SRU-II | 21-PM-102-A | PUMP | 90.8 | 28.09.2021 |
| 13 | SRU-II | 26-PM-103-B | PUMP | 87.5 | 28.09.2021 |
| 14 | SRU-II | 26-PM-101-A | PUMP | 89.2 | 28.09.2021 |
| 15 | SRU-II | 26-PM-103-A | PUMP | 90.5 | 28.09.2021 |
| 16 | SRU-II | 25-PM-109-C | PUMP | 89.3 | 28.09.2021 |
| 17 | SRU-II | 25-PM-108-C | PUMP | 88.6 | 28.09.2021 |

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|----|-------|--------------------|------|------|------------|
| 30 | AVU-1 | 03 PM - CF - 01 -B | PUMP | 90 | 18.08.2021 |
| 31 | AVU-1 | 03 PM - CF - 1 -D | PUMP | 87.6 | 18.08.2021 |

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|----|-----|------------------------|-----------------|-------|------------|
| 1 | PTA | 21-P-125-B | PUMP | 84.1 | 17.08.2021 |
| 2 | PIA | 21-FN-164-B | FD FAN | 85.7 | 17.08.2021 |
| 3 | PTA | 21-FN-164-A | FD FAN | 83.9 | 17.08.2021 |
| 4 | PTA | 21-FN-165 | FD FAN | 86 | 17.08.2021 |
| 5 | PTA | 21-B1-0553 | AIR BLOWER PUMP | 90 | 17.08.2021 |
| 6 | PTA | 21-P1-556-B | PUMP | 88.1 | 17.08.2021 |
| 7 | PTA | 21-P1-173-A | PUMP | 89.1 | 17.08.2021 |
| 8 | PTA | 21-FN-1259-B | FD FAN | 84.1 | 17.08.2021 |
| 9 | PTA | 21-FD-1259-A | FD FAN | 83.6 | 17.08.2021 |
| 10 | PTA | K1-1260 | COMPRESSOR | 84.3 | 17.08.2021 |
| 11 | PTA | P1-1207-B | PUMP | 90.1 | 17.08.2021 |
| 12 | PTA | P1-1209-A | PUMP | 90.5 | 17.08.2021 |
| 13 | PTA | P1-1209-B | PUMP | 90.2 | 17.08.2021 |
| 14 | PTA | P1-1209-D | PUMP | 91.4 | 17.08.2021 |
| 15 | PTA | 21-P1-1251-C | PUMP | 88.7 | 17.08.2021 |
| 16 | PTA | 21-1251-A | PUMP | 89.8 | 17.08.2021 |
| 17 | PTA | 21-P1-1420-B | PUMP | 82.8 | 17.08.2021 |
| 18 | PTA | P1-2301-A | PUMP | 87.9 | 17.08.2021 |
| 19 | PTA | P1-1816-B | PUMP | 84.4 | 17.08.2021 |
| 20 | PTA | 21-P1-2210-B | PUMP | 88.1 | 17.08.2021 |
| 21 | PTA | 21-P1-2202-B | PUMP | 89 | 17.08.2021 |
| 22 | PTA | 21-P1-2203-A | PUMP | 85.5 | 17.08.2021 |
| 23 | PTA | P1-1410-A | PUMP | 84.6 | 17.08.2021 |
| 24 | PTA | 21-P1-702-B | PUMP | 86.7 | 17.08.2021 |
| 25 | PTA | P1-507-B | PUMP | 87 | 17.08.2021 |
| 26 | PTA | 21-P1-607-B | PUMP | 89 | 17.08.2021 |
| 27 | PTA | 21-P1-606-B | PUMP | 88 | 17.08.2021 |
| 28 | PTA | 21-P1-615-R | PUMP | 88.9 | 17.08.2021 |
| 29 | PTA | 21-P1-632-A | PUMP | 88 | 17.08.2021 |
| 30 | PTA | 21-P1-407-A | PUMP | 87 | 17.08.2021 |
| 31 | PTA | 21-P1-4313-A | PUMP | 89.8 | 17.08.2021 |
| 32 | PTA | 21-P1-1606-B | PUMP | 87.4 | 17.08.2021 |
| 33 | PTA | 21-P1-0710-B | PUMP | 82.8 | 17.08.2021 |
| 34 | PTA | 21-P1-2221-B | PUMP | 81.7 | 17.08.2021 |
| 35 | PTA | 21-P1-2625-A | PUMP | 90.1 | 17.08.2021 |
| 36 | PTA | 21-P1-2401-B | PUMP | 82 | 17.08.2021 |
| 37 | PTA | 21-P1-2401-A | PUMP | 83.5 | 17.08.2021 |
| 38 | PTA | Process Air Compressor | COMPRESSOR | 102.4 | 17.08.2021 |

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|----|------|-------------------|-------------|------|------------|
| 1 | PX-1 | 203 - P - 2 A | PUMP | 80.4 | 09.08.2021 |
| 2 | PX-1 | 201 - P - 08 - A | PUMP | 86.6 | 09.08.2021 |
| 3 | PX-1 | 201 - PM - 01 - B | PUMP | 88.3 | 09.08.2021 |
| 4 | PX-1 | 202 - P - 03 - B | PUMP | 83.2 | 09.08.2021 |
| 5 | PX-1 | 202 - P - 01 - A | PUMP | 85.2 | 09.08.2021 |
| 6 | PX-1 | 202 - P - 02 - A | PUMP | 85.2 | 09.08.2021 |
| 7 | PX-1 | 202 - PM - 16 - A | PUMP | 85.5 | 09.08.2021 |
| 8 | PX-1 | 202 - K2 - B | COMPRESSURE | 84.3 | 09.08.2021 |
| 9 | PX-1 | 201 - K - 1 - B | COMPRESSURE | 89.2 | 09.08.2021 |
| 10 | PX-1 | 202 - KM - 4 | COMPRESSURE | 83.7 | 09.08.2021 |
| 11 | PX-1 | 209 - PM 05 - A | PUMP | 84.7 | 09.08.2021 |
| 12 | PX-1 | 209 - PM - 05 - A | PUMP | 88.8 | 09.08.2021 |
| 13 | PX-1 | 204 - PM - 06 - B | PUMP | 83.2 | 09.08.2021 |
| 14 | PX-1 | 204 - PM - 07 - B | PUMP | 86.5 | 09.08.2021 |
| 15 | PX-1 | 206 - FM - 03 | ID FAN | 81.4 | 09.08.2021 |
| 16 | PX-1 | 206 - FM - 01 | ID FAN | 83.5 | 09.08.2021 |
| 17 | PX-1 | 206 - FM - 02 | ID FAN | 83.2 | 09.08.2021 |
| 18 | PX-1 | 207 - PM - 04 - A | PUMP | 87.2 | 09.08.2021 |
| 19 | PX-1 | 207 - P - 03-A | PUMP | 85.1 | 09.08.2021 |

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|----|-------|-------------------|------|------|------------|
| 20 | PX-1 | 207 - P - 03 - B | PUMP | 86.2 | 09.08.2021 |
| 1 | PX-II | 208 - P - 03 | PUMP | 83.1 | 09.08.2021 |
| 2 | PX-II | 208 - P - 02 - A | PUMP | 85.5 | 09.08.2021 |
| 3 | PX-II | 208 - P - 01 - A | PUMP | 88.8 | 09.08.2021 |
| 4 | PX-II | 206 - P 013 - A | PUMP | 83.2 | 09.08.2021 |
| 5 | PX-II | 205 - P - 02 - A | PUMP | 90.1 | 09.08.2021 |
| 6 | PX-II | 205 - P - 101 - B | PUMP | 86.3 | 09.08.2021 |
| 7 | PX-II | 205 - PM - 02 - B | PUMP | 84.8 | 09.08.2021 |
| 8 | PX-II | 205 - P - 04 - A | PUMP | 85.1 | 09.08.2021 |
| 9 | PX-II | 207 - PM - 01 - A | PUMP | 89.4 | 09.08.2021 |
| 10 | PX-II | 206 - 07 - P | PUMP | 90.1 | 09.08.2021 |
| 11 | PX-II | 205 - PM - 07 - B | PUMP | 86.1 | 09.08.2021 |
| 12 | PX-II | 205 - PM - 03 - B | PUMP | 90.1 | 09.08.2021 |
| 13 | PX-II | 205 - P - 07 - A | PUMP | 86.9 | 09.08.2021 |
| 14 | PX-II | 205 - PM - 03 - A | PUMP | 90.2 | 09.08.2021 |
| 15 | PX-II | 205 - P - 06 - A | PUMP | 87.6 | 09.08.2021 |
| 16 | PX-II | 206 - PM - 06 - B | PUMP | 89.2 | 09.08.2021 |
| 17 | PX-II | 206 - PM - 06 - A | PUMP | 88.1 | 09.08.2021 |
| 18 | PX-II | 205 - PM - 05 - A | PUMP | 89.5 | 09.08.2021 |
| 19 | PX-II | 205 - PM - 04 - C | PUMP | 90.5 | 09.08.2021 |
| 20 | PX-II | 206 - PM 04 - A | PUMP | 90.1 | 09.08.2021 |
| 21 | PX-II | 206 - P 01 - A | PUMP | 86 | 09.08.2021 |
| 22 | PX-II | 206 - PM - 02 - A | PUMP | 86.7 | 09.08.2021 |

Noise survey of Target units of PR & PREP July-2021

| S.NO | Plant/Unit | Area | Source | Sound Level(dB) | DATE |
|------|------------|------------------|------------|-----------------|------------|
| 1 | DHDS | 52-PA-MT-120-B | PUMP | 85.5 | 21.07.2021 |
| 2 | DHDS | 52-PA-CF-102-A | PUMP | 89.9 | 21.07.2021 |
| 3 | DHDS | 52-PA-CF-107-B | PUMP | 90.5 | 21.07.2021 |
| 4 | DHDS | 52-PA-CF-104-A | PUMP | 89.2 | 21.07.2021 |
| 5 | DHDS | UNDER COMPRESSOR | COMPRESSOR | 83.2 | 21.07.2021 |
| 6 | DHDS | 52-KM-RP-101-B | COMPRESSOR | 83.5 | 21.07.2021 |
| 1 | HGU-06 | 06-K-A-202 | ID FAN | 82.9 | 22.07.2021 |
| 2 | HGU-06 | 06-P-202-B | PUMP | 91.2 | 22.07.2021 |
| 3 | HGU-06 | 06-P-203-B | PUMP | 89.9 | 22.07.2021 |
| 4 | HGU-06 | 06-K-A-203-A | PUMP | 86.2 | 22.07.2021 |
| 1 | AVU-II | 73-PM-024-B | PUMP | 84.3 | 22.07.2021 |
| 2 | AVU-II | 73-PM-022-B | PUMP | 84 | 22.07.2021 |
| 3 | AVU-II | 73-PM-021-B | PUMP | 83.3 | 22.07.2021 |
| 4 | AVU-II | 73-PM-032-A | PUMP | 87.4 | 22.07.2021 |
| 5 | AVU-II | 73-PM-03-B | PUMP | 84.4 | 22.07.2021 |
| 6 | AVU-II | 73-PM-02-B | PUMP | 86.1 | 22.07.2021 |
| 7 | AVU-II | 73-PM-02-C | PUMP | 86.5 | 22.07.2021 |
| 8 | AVU-II | 73-PM-02-D | PUMP | 86.5 | 22.07.2021 |
| 9 | AVU-II | 73-PM-14-B | PUMP | 86.3 | 22.07.2021 |
| 10 | AVU-II | 73-PM-9-A | PUMP | 85.4 | 22.07.2021 |
| 11 | AVU-II | 73-PM-13-B | PUMP | 89.2 | 22.07.2021 |
| 12 | AVU-II | 73-PM-13-C | PUMP | 89.6 | 22.07.2021 |
| 13 | AVU-II | 74-PM-02-A | PUMP | 85.7 | 22.07.2021 |
| 14 | AVU-II | 74-PM-01-B | PUMP | 84.6 | 22.07.2021 |
| 15 | AVU-II | 74-PM-03-C | PUMP | 84.7 | 22.07.2021 |
| 16 | AVU-II | 74-PM-03-A | PUMP | 82.8 | 22.07.2021 |
| 17 | AVU-II | 74-PM-07-A | PUMP | 85.2 | 22.07.2021 |
| 18 | AVU-II | 74-PM-10-B | PUMP | 84.7 | 22.07.2021 |
| 19 | AVU-II | 73-PM-07-B | PUMP | 87 | 22.07.2021 |

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|----|--------|------------------|------------|------|------------|
| 20 | AVU-II | 73-PM-036-A | PUMP | 86.8 | 22.07.2021 |
| 21 | AVU-II | 73-PM-06-B | PUMP | 88 | 22.07.2021 |
| 22 | AVU-II | 73-PM-12-A | PUMP | 85.1 | 22.07.2021 |
| 23 | AVU-II | 59-PM-04-A | PUMP | 86.6 | 22.07.2021 |
| 24 | AVU-II | 73-PM-015-C | PUMP | 88.8 | 22.07.2021 |
| 25 | AVU-II | 73-PM-04-A | PUMP | 86.8 | 22.07.2021 |
| 26 | AVU-II | 73-PM-01-D | PUMP | 87.5 | 22.07.2021 |
| 27 | AVU-II | 73-PM-01-B | PUMP | 87.9 | 22.07.2021 |
| 28 | AVU-II | 74-PM-04-B | PUMP | 88.9 | 22.07.2021 |
| 29 | AVU-II | 73-PM-10-B | PUMP | 88.6 | 22.07.2021 |
| 30 | AVU-II | 73-PM-10-C | PUMP | 89.5 | 22.07.2021 |
| 31 | AVU-II | 73-FN-001-A | FD FAN | 83.3 | 22.07.2021 |
| 32 | AVU-II | 73-FN-001-B | FD FAN | 90.7 | 22.07.2021 |
| | | | | | |
| 1 | OHCU | 05-PM-RC-07-E | PUMP | 88.5 | 23.07.2021 |
| 2 | OHCU | 05-PM-CF-503-A | PUMP | 88.7 | 23.07.2021 |
| 3 | OHCU | 05-PM-CF-513-A | PUMP | 89.2 | 23.07.2021 |
| 4 | OHCU | 05-PM-CF-514-A | PUMP | 89.3 | 23.07.2021 |
| 5 | OHCU | 05-PM-CF-511-A | PUMP | 94.1 | 23.07.2021 |
| 6 | OHCU | 05-PM-CF-301-A | PUMP | 93.7 | 23.07.2021 |
| 7 | OHCU | 05-PM-CF-504-A | PUMP | 89.9 | 23.07.2021 |
| 8 | OHCU | 05-PM-CF-501-A | PUMP | 92.2 | 23.07.2021 |
| 9 | OHCU | 05-PM-CF-505-A | PUMP | 93.7 | 23.07.2021 |
| 10 | OHCU | 05-PM-CF-508-B | PUMP | 90 | 23.07.2021 |
| 11 | OHCU | 05-PM-CF-502-C | PUMP | 89.3 | 23.07.2021 |
| 12 | OHCU | 05-PM-CF-507-A | PUMP | 89.4 | 23.07.2021 |
| 13 | OHCU | 05-PM-CF-506-A | PUMP | 90.4 | 23.07.2021 |
| 14 | OHCU | 05-PM-CF-502-A | PUMP | 90.7 | 23.07.2021 |
| 15 | OHCU | 05-PM-CF-516-A | PUMP | 85.5 | 23.07.2021 |
| 16 | OHCU | FF-FN-505 | ID FAN | 83.7 | 23.07.2021 |
| 17 | OHCU | FF-FN-504-B | FD FAN | 82.9 | 23.07.2021 |
| 18 | OHCU | 05-KA-RP-01-A | COMPRESSOR | 87.4 | 23.07.2021 |
| 19 | OHCU | 05-KA-RP-01-C | COMPRESSOR | 86 | 23.07.2021 |
| 20 | OHCU | 05-KA-RP-01-D | COMPRESSOR | 87.7 | 23.07.2021 |
| 21 | OHCU | UNDER COMPRESSOR | COMPRESSOR | 87 | 23.07.2021 |
| | | | | | |
| 1 | DCU | 78-PM-135-A | PUMP | 88.6 | 26.07.2021 |
| 2 | DCU | 78-PM-148-B | PUMP | 88.7 | 26.07.2021 |
| 3 | DCU | 78-PM-131-B | PUMP | 87 | 26.07.2021 |
| 4 | DCU | 78-PM-105-B | PUMP | 89.4 | 26.07.2021 |
| 5 | DCU | 78-PM-124-B | PUMP | 89.6 | 26.07.2021 |
| 6 | DCU | 78-PM-161-B | PUMP | 88.9 | 26.07.2021 |
| 7 | DCU | 78-PM-125-A | PUMP | 90.7 | 26.07.2021 |
| 8 | DCU | 78-PM-104-A | PUMP | 88.1 | 26.07.2021 |
| 9 | DCU | 78-PM-116-A | PUMP | 88.9 | 26.07.2021 |
| 10 | DCU | 78-PM-122-B | PUMP | 91.3 | 26.07.2021 |
| 11 | DCU | 78-PM-109-B | PUMP | 89.7 | 26.07.2021 |
| 12 | DCU | 78-PM-108-B | PUMP | 90.9 | 26.07.2021 |
| 13 | DCU | 78-FD-101-B | FD FAN | 83 | 26.07.2021 |
| 14 | DCU | 78-FD-101-A | FD FAN | 82.1 | 26.07.2021 |
| 15 | DCU | 78-FD-102-B | FD FAN | 80 | 26.07.2021 |
| 16 | DCU | 78-FD-102-A | FD FAN | 82 | 26.07.2021 |
| 17 | DCU | 78-ID-101 | ID FAN | 83.1 | 26.07.2021 |
| 18 | DCU | 78-ID-102 | ID FAN | 83.1 | 26.07.2021 |
| | | | | | |
| 1 | HCU | 75-FNM-102 | PUMP | 81 | 28.07.2021 |
| 2 | HCU | 75-FNM-101 | PUMP | 82.2 | 28.07.2021 |
| 3 | HCU | 75-PM-106-A | PUMP | 85.6 | 28.07.2021 |
| 4 | HCU | 75-PM-107-B | PUMP | 88.1 | 28.07.2021 |
| 5 | HCU | 75-PM-111-B | PUMP | 90 | 28.07.2021 |
| 6 | HCU | 75-PM-104-B | PUMP | 89.9 | 28.07.2021 |

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|----|-----|------------------------|------------|------|------------|
| 7 | HCU | 75-PM-103-A | PUMP | 89.3 | 28.07.2021 |
| 8 | HCU | 75-PM-113-B | PUMP | 90.1 | 28.07.2021 |
| 9 | HCU | 75-PM-114-A | PUMP | 88.9 | 28.07.2021 |
| 10 | HCU | 75-PM-112-B | PUMP | 89.8 | 28.07.2021 |
| 11 | HCU | 75-PM-116-0 | PUMP | 91.3 | 28.07.2021 |
| 12 | HCU | 75-PM-117-B | PUMP | 86.8 | 28.07.2021 |
| 13 | HCU | 75-PM-201-A | PUMP | 88.9 | 28.07.2021 |
| 14 | HCU | 75-K-002-C | COMPRESSOR | 89.1 | 28.07.2021 |
| 15 | HCU | COMPRESSOR HOUSE | COMPRESSOR | 88.4 | 28.07.2021 |
| 16 | HCU | 75-K-002-B | COMPRESSOR | 90.2 | 28.07.2021 |
| 17 | HCU | UNDER COMPRESSOR HOUSE | COMPRESSOR | 84.8 | 28.07.2021 |

Ind. Hygienist

OH Physician