इंडियन ऑयल कॉर्पोरेशन लिमिटेड
पानीपत रिफाइनरी एवं पेट्रोकेमिकल कॉम्प्लेक्स
पानीपत, हरियाणा - 132140
Indian Oil Corporation Limited
Panipat Refinery & Petrochemical Complex
Panipat, Haryana - 132140
वेबसाइट : www.iocl.com; ई–मेल : panipatrefinery@indianoil.in
दूरभाष : 0180-2524001; फैक्स : 0180-2578833

रिफाइनरीज़ प्रभाग
Refineries Division

Ref No: PR/HSE/EC Compliance

Date: 25.01.2021

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 (ECs) 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 Jul'2020 to Dec'2020 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.

Thanking you,

Yours faithfully,

25/01/2021

(Utpal Deka)
General Manager (HS&E)
For and on behalf of
Executive Director & Refinery Head
Panipat Refinery & Petrochemical Complex

Copy to:
Regional Officer, HSPCB, Panipat
Chairman, HSPCB, Panchkula

INDEX

S N	EC General & Specific Conditions / Environmental Monitoring Reports	Compliance Status
1.	EC Letter No. J-11011/27/91-IA II(I) dated 16.07.1992 for setting up of a grass root refinery at Karnal district by Indian Oil Corporation Limited.	Attached as Annexure 1
2.	EC Letter No. J.11011/60/2000-IA.II dated 09.04.2001 for Expansion of Panipat Refinery (PREP) from 6 MMTPA to 12 MMTPA.	Attached as Annexure 2
3.	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.	Attached as Annexure 3
4.	EC Letter No. J.11011/9/2001-IA II (I) dated 06.12.2001 for MS Quality Up-gradation Project at Panipat Refinery by IOCL.	Attached as Annexure 4
5.	EC Letter No. J.11011/52/2000-IA II (I) dated 20.01.2003 for Modification in Plant layout of Paraxylene and Purified Terephthalic Acid (PX/PTA) Project within Panipat Refinery Complex and Integrated with Panipat Refinery (PR) and Panipat Refinery Expansion Project (PREP).	Attached as Annexure 5
6.	EC Letter No. J.11011/7/2004-IA II (I) dated 09.08.2004 for expansion of Panipat Refinery (From 12 MMTPA to 15 MMTPA) and Setting up of Indalin+ unit at Panipat Refinery Complex of IOCL, Panipat Refinery Haryana.	Attached as Annexure 6
7.	Amendments in the environmental clearance granted by the Ministry vide 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 on 20th May'2020.	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 8
10.	Six Monthly Ambient Air Quality and Stack Monitoring Data	Attached as Annexure 10
11.	Six Monthly Treated Effluent Quality Data (ETP and STP)	Attached as Annexure 11
12.	Six Monthly Fugitive Emission Data	Attached as Annexure 12
13.	Noise Survey Data	Attached as Annexure 13

COMPLIANCE TO ENVIRONMENTAL CLEARANCE STIPULATIONS FROM MOEF 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 (3 units of 99.9 % recovery and 1 of 99% efficiency) out of 5 units are in operation: • 2 no. SRUs: 99% efficiency ,2X115 MT/day capacity • 3 no. SRUs: 99.9% efficiency ,2X225 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 SO2 from the refinery should not exceed 1 Ton/hr.	**Being Complied** SO_2 emission from the Refinery is below 1 TPH.
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	**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,

SN	Stipulation	Compliance
	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.	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.
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 of Effluent Treatment Plant. Also final Treated Effluent Quality parameters (pH, BOD,COD & TSS) are connected online to CPCB/HSPCB server.
16.	Maximum recovery of oil from the sludge should be done and residual oily sludge should be incinerated.	The raw oily sludge generated from the Refinery is subjected to Oil recovery / Melting Pit treatment for recovery of oil. The recovered

SN	Stipulation	Compliance
		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 be provided. Where only restricted growth on nonpolluting industries may be allowed (Action – State Govt.)	Action by State Government. 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**

<table>
<tr><th>SN</th><th>Stipulation</th><th>Compliance</th></tr>
<tr><td>23.</td><td>A detailed Rehabilitation Plan for the affected people should be prepared and submitted to this Ministry within 3 months.</td><td>Complied</td></tr>
<tr><td>24.</td><td>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.</td><td>Complied</td></tr>
<tr><td>25.</td><td>A comprehensive EIA must be prepared and submitted to this Ministry by September, 1993 covering regional implications and 'no development zone' aspects.</td><td>Complied</td></tr>
<tr><td>26.</td><td>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.</td><td>Bulk Movement of Products through Pipeline and Rail.</td></tr>
<tr><td>27.</td><td>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.</td><td>Being Complied</td></tr>
<tr><td>28.</td><td>The State Govt. should prepare a Master Plan for the region to avoid haphazard growth of industries and human settlements in the area.</td><td>Action by State Government.</td></tr>
<tr><td>29.</td><td>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.</td><td>Complied</td></tr>
<tr><td>30.</td><td>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.</td><td>Complied</td></tr>
<tr><td>31.</td><td>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.</td><td>Being Implemented.
Year-wise expenditure:
<table>
<tr><th colspan="2">FY:2017-18</th><th colspan="2">FY:2018-19</th><th colspan="2">FY:2019-20</th></tr>
<tr><th colspan="6">(Rupees in laks)</th></tr>
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<tr><td>151.3</td><td>640.4</td><td>394.2</td><td>1728.6</td><td>551.77</td><td>3060.26</td></tr>
</table></td></tr>
</table>

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 :

Status of Panipat Refinery Expansion Project from 6MMTPA to 12 MMTPA -Reference letter no. J.11011/60/2000-IA II issued by Government of India, MOE&F I.A. Division dated 09.04.2001 on the subject of "Issuing Environmental Clearance"

SN	Conditions stipulated in the EC letter	Status/Action Plan
1.	The company should strictly adhere to the stipulations made by MOE&F vide O.M. No. J.11011/76/96-IAII dated 5th 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** SO_2 emission from the Refinery is below 1000 kg/hr.
	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** Three 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, NOx, 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.
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.** Drawl of water from Munak Head Works is not exceeding 30 cusecs even after expansion.

General conditions:

SN	Conditions stipulated in the EC letter	Status/Action Plan
1.	The project authorities must strictly adhere to the stipulations made by the Haryana State Pollution Control Board and the State Government.	**Being complied**
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 3rd 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	**Being complied.**

	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.	
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 – Enhancement of Vocational Skills – Empowering Women – Welfare of Underprivileged CSR expenditures details: • FY 2017-18 : Rs. 461.02 Lacs • FY 2018-19 : Rs. 746.34 Lacs • FY 2019-20 : Rs. 531.00 Lacs
12.	A separate environmental management cell equipped with full fledged laboratory facilities must be set up to carry out the environmental management and	**Being Complied** Separate Environment Management Cell is in

<table>
<tr><td></td><td>monitored functions.</td><td>place.</td></tr>
<tr><td>13.</td><td>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.</td><td>Being Implemented.
Details Year-wise expenditure:<table><tr><th colspan="2">FY:2017-18</th><th colspan="2">FY:2018-19</th><th colspan="2">FY:2019-20</th></tr><tr><td colspan="6">(Rupees In laks)</td></tr><tr><td>Recurring</td><td>Non-recurring</td><td>Recurring</td><td>Non-recurring</td><td>Recurring</td><td>Non-recurring</td></tr><tr><td>151.3</td><td>640.4</td><td>394.2</td><td>1728.6</td><td>551.8</td><td>3060.3</td></tr></table></td></tr>
<tr><td>14.</td><td>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.</td><td>Being Complied.

Six monthly compliance reports along with monitoring data are being submitted regularly.</td></tr>
<tr><td>15.</td><td>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.</td><td>Complied.</td></tr>
<tr><td>16.</td><td>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.</td><td>Complied</td></tr>
</table>

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/Action plan
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. 45 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	For Treating liquid effluent generated from Petrochemical complex separate ETP has been installed. PTA-ETP treated

	to the load based standards and concentration limits prescribed under EPA rules (MINAS standards).	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.
	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).
	d) 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.	**Complied.** 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	**Noted**

	approval of Ministry.	
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	**Being complied.** Silencers are provided on compressor discharge, acoustic leggings on turbo generators & ejectors and acoustic chambers at the burners.

<table>
<tr><td></td><td>noise levels should conform to the standards prescribed under EPA Rules, 1989 viz 75 dBA (day time) and 70 dBA (night time).</td><td>The ambient noise level meets the standards.</td></tr>
<tr><td>9</td><td>Occupational Health Surveillance of the workers should be done on regular basis and records maintained.</td><td>Complied</td></tr>
<tr><td>10</td><td>The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP and risk analysis report.</td><td>Complied</td></tr>
<tr><td>11</td><td>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.</td><td>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
– Enhancement of Vocational Skills
– Empowering Women
– Welfare of Underprivileged
CSR expenditures details:
• FY 2017-18 : Rs. 461.02 Lacs
• FY 2018-19 : Rs. 746.34 Lacs
• FY 2019-20 : Rs. 531.00 Lacs</td></tr>
<tr><td>12</td><td>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.</td><td>Being Complied

Separate environment management cell is in place.</td></tr>
<tr><td>13</td><td>The company must obtain ISO-14000 certification within a time frame of 5 years or so after the commissioning.</td><td>ISO-14000 certification has been obtained. Validity of same is up to Jan'2021.</td></tr>
<tr><td>14</td><td>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)</td><td>Being Implemented.
Details of Year-wise expenditure:
<table><tr><th colspan="2">FY:2017-18</th><th colspan="2">FY:2018-19</th><th colspan="2">FY:2019-20</th></tr><tr><th colspan="6">(Rupees In lakh)</th></tr><tr><th>Recurring</th><th>Non-recurring</th><th>Recurring</th><th>Non-recurring</th><th>Recurring</th><th>Non-recurring</th></tr><tr><td>151.3</td><td>640.4</td><td>394.2</td><td>1728.6</td><td>551.8</td><td>3060.3</td></tr></table></td></tr>
<tr><td>15</td><td>Six monthly status reports on the project vis-à-vis environmental measures should</td><td>Being Complied.
Six monthly compliance reports along</td></tr>
</table>

	be submitted to this Ministry (Regional Office, Chandigarh/ CPCB/SPCB.	with monitoring data is 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 9th 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 below 1000 kg/hr.
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 Paraxylne 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	Conditions stipulated in the EC letter	Status/Action Plan
1	The company shall ensure strict implementation / compliance to the stipulations made by MOEF vide OM no. J-11011/60/2000-IA-II dated 9th April, 2001 for expansion of Panipat Refinery from 6 MMTPA to 12 MMTPA and J-11011/52/2000-IA-II dated 30th 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/CPP Project.)	**Being Complied.** SO_2 emission is being maintained below 1275 Kg /hr.
3	As per the commitment given, the total quantity of treated effluent shall not exceed 255m3/hr from the proposed integration project.	**Being Complied.** 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 9th 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.

SN	EC Conditions	Compliance Status
5.	The company shall also ensure that the total SO2 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 SO2 emissions level from the Refinery.	The total SO2 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 (3 units of 99.9 % recovery and 1 of 99% efficiency) out of 5 units are in operation: • 2 no. SRUs: 99% efficiency ,2X115 MT/day capacity • 3 no. SRUs: 99.9% efficiency ,2X225 MT/day capacity
6.	As per the commitment given, there should be zero effluent discharge due to the proposed expansion. 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. 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.	There is no discharge of treated effluent from Refinery operation 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.
7.	The IOCL shall ensure installation of continuous flow measurement devices so that only the permitted quantity of treated effluent from PX-PTA plant (255 m^3/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.	Flow meters were installed at the time of setting up PTA-ETP. At no point of time discharge of treated effluent is exceeding the prescribed limit of 255 m^3/hr. Process Licensor M/s INVISTA has confirmed that "Recycle and Reuse" of PTA treated effluent is not feasible. 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.
8.	Additional water requirement shall not exceed 400 m^3/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.	The total allowable withdrawal of fresh water as per previous EC was 3000 m^3/hr (as per EC of 6-12 MMTPA expansion). Adding the additional quantity of 400 m^3/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.

SN	EC Conditions	Compliance Status
		Total quantity of effluent generation remains <1100 m^3/hr. 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. PTA-ETP treated effluent meeting Petrochemical MINAS is discharged into Thirana Drain as per approvals/ Consent to Operate from MOEFCC, HSPCB, and Irrigation Department.
9.	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.	Greenbelts with adequate width & density were already provided. These greenbelts were developed in consultation with the District Forest Deptt. Bio-sludge from ETP is being used as manure after converting it to semi solid form.
10.	The IOCL shall make efforts to sell petroleum coke (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.	The Refinery gives Pet-coke to a separate IOCL 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. There are 4 nos. lined pits available for storing oily sludge.
12.	The company should adopt mounded storage for LPG. The project authorities shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP and risk analysis report.	The Mounded Bullets are in operation.
13.	Occupational Health Surveillance of the workers should done on a regular basis and records maintained as per the Factories Act.	The Refinery has a full-fledged Occupational Health Centre (OHC) in operation. The OHC carries out health surveillance of the workers

<table>
<tr><th>SN</th><th>EC Conditions</th><th>Compliance Status</th></tr>
<tr><td></td><td></td><td>on a regular basis and records are maintained.</td></tr>
<tr><td colspan="3">General conditions</td></tr>
<tr><td>1.</td><td>The project authorities must strictly adhere to the stipulations made by the Haryana State Pollution Control Board and the State Government.</td><td>Complied</td></tr>
<tr><td>2.</td><td>No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment & Forests.</td><td>Noted.</td></tr>
<tr><td>3.</td><td>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.</td><td>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.</td></tr>
<tr><td>4.</td><td>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).</td><td>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.</td></tr>
<tr><td>5.</td><td>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.</td><td>Complied.</td></tr>
<tr><td>6.</td><td>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 Waste (Management & Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collections / treatment / storage / disposal of hazardous waste.</td><td>Complied.

Authorization for Hazardous Wastes from HSPCB has been obtained which is valid up to Sep'24.</td></tr>
<tr><td>7.</td><td>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</td><td>Being Implemented.
Details of Year-wise expenditure:
<table>
<tr><th colspan="2">FY:2017-18</th><th colspan="2">FY:2018-19</th><th colspan="2">FY:2019-20</th></tr>
<tr><td colspan="6">(Rupees in laks)</td></tr>
<tr><td>Recurring</td><td>Non-recurring</td><td>Recurring</td><td>Non-recurring</td><td>Recurring</td><td>Non-recurring</td></tr>
<tr><td>151.3</td><td>640.4</td><td>394.2</td><td>1728.6</td><td>551.8</td><td>3060.3</td></tr>
</table></td></tr>
</table>

SN	EC Conditions	Compliance Status
	should not be diverted for any other purposes.	
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.	Condition	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 operation 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.	No increase in treated effluent discharge into Thirana Drain post PX-PTA capacity expansion project. 255 m^3/hr. shall continue to be discharged to the existing Thirana Drain.
(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, it will be maintained below 375 Kg/hr. Presently cumulative SO_2 emission from Panipat Refinery & PX-PTA Complex is below 1375 kg/hr.
(vi)	National Emission Standards for Organic Chemicals Manufacturing Industry issued by the Ministry vide G.S.R. 608(E) dated 21st July, 2010 and amended from time to time shall be followed.	**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	For BS-VI fuel quality up gradation project being complied. For PX-PTA capacity expansion project shall be ensured.

Sl. No.	Condition	Status
	gaseous emissions shall be dispersed through stacks of adequate height as per CPCB / SPCB guidelines.	
(viii)	Total fresh water requirement shall not exceed 354 m3/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 through guard pond.	**Being complied**
(x)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm, and solvent transfer to be done through pumps.	**Complied**
(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 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	**Complied**

Sl. No.	Condition	Status
	State Forest Department.	
(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. 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.	**Complied** **Complied**
(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.	2 nos. of additional CAAQMS under BS-VI fuel quality up-gradation project commissioned in addition to existing 7 nos. of CAAQMS.

Sl. No.	Condition	Status
(iv)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826 (E) dated 16th November, 2009 shall be followed.	**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 us 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 villages and administration.	**Complied**
(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.	**Complied**
(xii)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila	**Complied**

Sl. No.	Condition	Status
	Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal.	
(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 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**
(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

General Conditions:

SN	Description	Action By
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 16th November, 2009 shall be complied with.	Shall be complied
5.	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all source of noise generation. The ambient noise levels shall confirm to the standards prescribed under the Environment (Protection) Act, 1986 and the rules made there under.	Will be complied.
6.	The company shall harvest rain water from the rooftops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial operations inside the plant.	Will be complied.
7.	Training shall be imparted to all employees on safety and health aspects of chemical handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Will be complied
8.	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the ministry. All the recommendations made in the EIA/EMP in respect of environmental management risk mitigation measures and public hearing shall be implemented.	Will be complied.
9.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-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 purpose.	Complied
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 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.	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

General Conditions:

SN	Description	Action By
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 16th November, 2009 shall be complied with.	Shall be complied
5.	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all source of noise generation. The ambient noise levels shall confirm to the standards prescribed under the Environment (Protection) Act, 1986 and the rules made there under.	Will be complied.
6.	The company shall harvest rain water from the rooftops of the buildings and storm water drains to recharge the ground water and utilize the same for different industrial operations inside the plant.	Will be complied.
7.	Training shall be imparted to all employees on safety and health aspects of chemical handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Will be complied
8.	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the ministry. All the recommendations made in the EIA/EMP in respect of environmental management risk mitigation measures and public hearing shall be implemented.	Will be complied.
9.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CER activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-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 purpose.	Complied
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 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.	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:

SN	Description	Action By
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.	**Complied**
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.
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.	Project under execution.

	(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.	
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.	
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.	

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	Description	Action By
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 16th 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	Will be Complied

	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.	
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 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.	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 26th 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	Will be complied

	pumps.	
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 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.	Continuous, Will be 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

HARYANA TEST HOUSE

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50-C, Sector-25, Part-II, HUDA, Panipat-132 104 (HARYANA)

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Test Results of Ambient Air Monitoring **Dt: 05.08.2020**

Unit: Panipat Refinery

Month : July 2020

Location: Project Building

URL NO. TC781120100009114F

Test Results

DATE OF SAMPLING	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	CO (mg/m^3)	Benzene ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzo(a) Pyrene (ng/m^3)
Time Weighted Average	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	8 hrs	8 hrs	Annual	Annual	Annual	Annual
Standard Limit	100 max.	60 max.	80 max.	80 max.	400 max.	1 max.	100 max.	2 max.	5 max.	20 max.	6 max.	1 max.
Date of Sampling												
09.07.2020	92.29	55.42	18.19	38.72	57.33	< 0.02	27.05	< 1.14	1.25	< 1.0	< 0.5	< 0.2
13.07.2020	95.01	52.92	20.83	38.16	54.65	< 0.02	25.47	< 1.14	1.25	< 1.0	< 0.5	< 0.2
17.07.2020	93.44	51.67	22.82	38.72	57.33	< 0.02	27.05	< 1.14	1.14	< 1.0	< 0.5	< 0.2
20.07.2020	90.31	55.83	18.85	37.59	55.54	< 0.02	23.91	< 1.14	1.41	< 1.0	< 0.5	< 0.2
27.07.2020	92.15	52.92	23.49	37.59	54.65	< 0.02	24.69	< 1.14	1.36	< 1.0	< 0.5	< 0.2
31.07.2020	89.38	53.75	22.16	38.72	55.99	< 0.02	27.05	< 1.14	1.19	< 1.0	< 0.5	< 0.2
Minimum	**89.38**	**51.67**	**18.19**	**37.59**	**54.65**	**< 0.02**	**23.91**	**< 1.14**	**1.25**	**< 1.0**	**< 0.5**	**< 0.2**
Maximum	**95.01**	**55.83**	**23.49**	**38.72**	**57.33**	**< 0.02**	**27.05**	**< 1.14**	**1.25**	**< 1.0**	**< 0.5**	**< 0.2**
Average	**92.10**	**53.75**	**21.06**	**38.25**	**55.92**	**< 0.02**	**25.87**	**< 1.14**	**1.25**	**< 1.0**	**< 0.5**	**< 0.2**

Remarks: Protocol used IS: 5182

Sr. Chemist / Mgr (Lab.)

05.08.2020

Authorised Signatory

HARYANA TEST HOUSE

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Test Results of Ambient Air Monitoring

Unit: Panipat Refinery

Month : August 2020

Location: Project Building

URL NO. TC781120100010239F

Dt: 09.09.2020

Test Results

DATE OF SAMPLING	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_x (pg/m^3)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	CO (mg/m^3)	Benzene ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzo(a) Pyrene (ng/m^3)
Time Weighted Average	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	8 hrs	8 hrs	Annual	Annual	Annual	Annual
Standard Limit	100 max	60 max	80 max	80 max	400 max	1 max	100 max	2 max	5 max	20 max	6 max	1 max
Date of Sampling												
04.08.2020	72.28	54.58	17.96	35.69	60.97	< 0.02	18.02	< 1.14	1.27	< 1.0	< 0.5	< 0.2
07.08.2020	85.67	54.58	19.92	31.37	58.67	< 0.02	25.16	< 1.14	1.21	< 1.0	< 0.5	< 0.2
10.08.2020	88.26	54.58	18.53	38.32	60.97	< 0.02	20.39	< 1.14	1.21	< 1.0	< 0.5	< 0.2
13.08.2020	82.97	49.58	23.85	34.24	65.14	< 0.02	26.67	< 1.14	1.32	< 1.0	< 0.5	< 0.2
18.08.2020	93.95	56.25	22.53	35.98	56.84	< 0.02	21.26	< 1.14	1.24	< 1.0	< 0.5	< 0.2
21.08.2020	97.06	56.25	22.53	36.56	57.30	< 0.02	26.67	< 1.14	1.37	< 1.0	< 0.5	< 0.2
24.08.2020	80.43	54.00	23.84	35.69	57.30	< 0.02	25.12	< 1.14	1.20	< 1.0	< 0.5	< 0.2
28.08.2020	78.54	42.92	19.26	31.37	57.75	< 0.02	22.03	< 1.14	1.28	< 1.0	< 0.5	< 0.2
Minimum	**72.28**	**42.92**	**17.96**	**31.37**	**56.84**	**< 0.02**	**18.02**	**< 1.14**	**1.21**	**< 1.0**	**< 0.5**	**< 0.2**
Maximum	**97.06**	**56.25**	**23.85**	**38.32**	**65.14**	**< 0.02**	**26.67**	**< 1.14**	**1.27**	**< 1.0**	**< 0.5**	**< 0.2**
Average	**84.90**	**52.84**	**21.05**	**34.90**	**59.37**	**< 0.02**	**23.17**	**< 1.14**	**1.24**	**< 1.0**	**< 0.5**	**< 0.2**

Remarks: Protocol used IS 5182

Sr. Chemist / Mgr (Lab)

09.09.2020

Authorised Signatory

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& Consultancy Services

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Test Results of Ambient Air Monitoring **Dt: 03.10.2020**

Unit: Panipat Refinery

Month : Sept. 2020

Location: Project Building

URL NO. TC781120100011801F

Test Results

DATE OF SAMPLING	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	CO (mg/m^3)	Benzene ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzo(a) Pyrene (ng/m^3)
Time Weighted Average	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	8 hrs	8 hrs	Annual	Annual	Annual	Annual
Standard Limit	100 max.	60 max.	80 max.	80 max.	400 max.	1 max.	100 max.	2 max.	5 max.	20 max.	6 max.	1 max.
Date of Sampling												
01.09.2020	90.78	43.60	18.49	35.10	58.97	< 0.02	22.03	< 1.14	1.15	< 1.0	< 0.5	< 0.02
04.09.2020	81.38	44.58	21.22	35.69	57.30	< 0.02	21.26	< 1.14	1.24	< 1.0	< 0.5	< 0.02
07.09.2020	86.69	43.82	20.57	34.24	55.02	< 0.02	24.36	< 1.14	1.20	< 1.0	< 0.5	< 0.02
11.09.2020	78.38	51.25	19.92	37.15	41.63	< 0.02	24.62	< 1.14	1.32	< 1.0	< 0.5	< 0.02
14.09.2020	84.58	52.73	19.41	34.24	58.67	< 0.02	22.77	< 1.14	1.29	< 1.0	< 0.5	< 0.02
18.09.2020	82.12	43.75	18.61	34.53	52.64	< 0.02	25.86	< 1.14	1.05	< 1.0	< 0.5	< 0.02
21.09.2020	97.12	52.92	18.61	37.15	55.24	< 0.02	22.92	< 1.14	1.33	< 1.0	< 0.5	< 0.02
25.09.2020	92.27	52.08	19.92	36.56	55.24	< 0.02	21.17	< 1.14	1.02	< 1.0	< 0.5	< 0.02
28.09.2020	89.52	45.96	18.46	34.96	62.91	< 0.02	25.83	< 1.14	1.31	< 1.0	< 0.5	< 0.02
Minimum	78.38	43.60	18.46	34.24	41.63	< 0.02	21.17	< 1.14	1.02	< 1.0	< 0.5	< 0.02
Maximum	97.12	52.92	21.22	54.96	62.91	< 0.02	25.86	< 1.14	1.33	< 1.0	< 0.5	< 0.02
Average	86.98	47.85	19.47	37.74	55.29	< 0.02	23.42	< 1.14	1.21	< 1.0	< 0.5	< 0.02

Remarks: Protocol used IS: 5182

Sr. Chemist / Mgr (Lab.)

Authorised Signatory

HARYANA TEST HOUSE 3.10.2020 PANIPAT

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Test Results of Ambient Air Monitoring Dt: 02.11.2020

Unit: Panipat Refinery

Month : Oct. 2020

Location: Project Building

URL NO. TC781120100013863F

Test Results

DATE OF SAMPLING	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	CO (mg/m^3)	Benzene ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzo(a) Pyrene (ng/m^3)
Time Weighted Average	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	8 hrs	8 hrs	Annual	Annual	Annual	Annual
Standard Limit	100 max.	60 max.	80 max.	80 max.	400 max.	1 max.	100 max.	2 max.	5 max.	20 max.	6 max.	1 max.
Date of Sampling												
02.10.2020	144.46	63.75	22.95	37.38	57.32	< 0.02	23.02	< 1.14	1.32	< 2.0	< 1.0	< 0.2
05.10.2020	129.30	70.42	21.64	37.69	53.78	< 0.02	24.19	< 1.14	1.38	< 2.0	< 1.0	< 0.2
08.10.2020	138.19	66.36	20.34	36.20	59.11	< 0.02	23.56	< 1.14	1.24	< 2.0	< 1.0	< 0.2
13.10.2020	125.11	67.08	23.39	36.15	51.15	< 0.02	23.02	< 1.14	1.38	< 2.0	< 1.0	< 0.2
16.10.2020	153.92	72.95	24.84	35.14	53.84	< 0.02	24.19	< 1.14	1.26	< 2.0	< 1.0	< 0.2
19.10.2020	142.75	69.58	22.53	37.61	50.27	< 0.02	25.29	< 1.14	1.42	< 2.0	< 1.0	< 0.2
23.10.2020	152.62	69.35	25.98	39.38	65.64	< 0.02	25.08	< 1.14	1.46	< 2.0	< 1.0	< 0.2
Minimum	125.11	63.75	20.34	35.14	50.27	< 0.02	23.02	< 1.14	1.24	< 2.0	< 1.0	< 0.2
Maximum	153.92	89.35	25.98	39.38	65.84	< 0.02	25.29	< 1.14	1.46	< 2.0	< 1.0	< 0.2
Average	140.91	71.36	23.10	37.36	55.90	< 0.02	24.05	< 1.14	1.35	< 2.0	< 1.0	< 0.2

Remarks: Protocol used IS 5182

Sr. Chemist / Mgr (Lab.)

HARYANA TEST HOUSE PANIPAT

Authorised Signatory

HARYANA TEST HOUSE

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Test Results of Stack Emissions Dt: 03.10.2020

Unit: Panipat Refinery

Month: Sep 2020 (URL No. TC781120100012978F)

Sr. No.	Stack Particular	Date of Sampling	Temp. °C	Diameter of Stack (m)	Gas Velocity (m/sec.)	Flue Gas Volume at 25°C (Nm3/ Hr.)	Particulate Matter (PM) Limit: Gas: 10 mg/Nm3 Liquid: 100 mg/Nm3		Sulphur Dioxide (SO_2) Limit: Gas: 50 mg/Nm3 Liquid: 1700 mg/Nm3			Oxides of Nitrogen (NO_x) Limit: Gas: 350 mg/Nm3 Liquid: 450 mg/Nm3			Carbon Monoxide (CO) Limit:Gas:150 mg/Nm3 Liquid: 200 mg/Nm3			Nickel (Ni)		Vanadium (V)		Nickel+Vanadium Limit: (Ni + V) Liquid: 5 mg/Nm3	
							mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	Kg/hr.	mg/Nm³	kg/hr.	mg/Nm³	kg/hr.	mg/Nm³	kg/hr.
A	MCR Section																						
1	CCRU Stack -FF 101, FF 102, FF 204	21.09.2020	181	2.34	8.62	78314.63	14.53	1.14	2.00	5.24	0.41	51.00	95.93	7.51	5	9.73	0.45	< 0.022	0.0017	< 0.022	0.0017	0.04	0.0034
2	CCRU Stack- FF 201, FF 202, FF 203	21.09.2020	198	1.64	8.35	38742.91	14.03	0.54	1.00	2.62	0.10	33.00	62.07	2.40	6	8.87	0.27	< 0.022	0.0009	< 0.022	0.0009	0.04	0.0017
		Total in (Kg/ hr)						1.68			0.51			9.92			0.71		0.003		0.003		0.005
B	Diesel Hydrotreater Unit																						
3	DHDT-72 Heater 01	23.09.2020	179	1.80	8.31	46228.11	11.34	0.55	4.00	10.47	0.51	39.00	73.36	2.54	32	36.64	1.77	< 0.022	0.0011	< 0.022	0.0011	0.04	0.0021
4	DHDT-72 Heater 02	23.09.2020	192	1.30	8.63	50977.45	13.71	0.69	3.00	7.85	0.40	42.00	79.00	2.96	35	41.22	2.08	< 0.022	0.0011	< 0.022	0.0011	0.04	0.0022
		Total in (Kg/ hr)						1.24			0.90			5.52			3.84		0.002		0.002		0.004
C	PX Section																						
5	Xylene Charge Heater	23.09.2020	205	2.00	7.55	51153.07	14.58	0.75	2.00	5.24	0.27	14.00	26.33	1.35	11	12.60	0.64	< 0.022	0.0011	< 0.022	0.0011	0.04	0.0023
6	Isomer Charge Heater	23.09.2020	184	1.20	6.68	20511.39	14.38	0.29	1.00	2.62	0.05	12.00	22.57	0.46	12	13.74	0.28	< 0.022	0.0005	< 0.022	0.0005	0.04	0.0009
7	Tatoray charge Heater	23.09.2020	181	1.20	7.80	20030.60	17.50	0.35	2.00	5.24	0.10	35.00	65.84	1.32	8	9.16	0.18	< 0.022	0.0004	< 0.022	0.0004	0.04	0.0009
		Total in (Kg/ hr)						1.39			0.43			3.13			1.11		0.0020		0.0020		0.004
D	MSQ																						
8	HDS (303 Heater 201) (MSQ)	21.09.2020	189	2.22	8.19	70736.01	12.69	0.89	1.00	2.62	0.37	15.00	28.74	2.53	13	14.89	1.05	< 0.022	0.0016	< 0.022	0.0016	0.04	0.0031
9	NHT (301 H 101)	21.09.2020	185	3.05	8.36	133477.99	12.58	1.68	2.00	5.24	0.37	43.00	80.88	10.12	6	8.87	0.94	< 0.022	0.0030	< 0.022	0.0030	0.04	0.0060
		Total in (Kg/ hr)						2.58			0.75			13.65			2.00		0.005		0.005		0.009
E	TPS Section																						
10	HRSG-02	21.09.2020	203	3.00	10.81	102166.70			4.00	10.47	2.01	32.00	60.19	11.57	1	3.44	0.66	-	-	-	-	-	-

Sr. Chemist/Mgr (Lab.)

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Test Results of Stack Emissions Dt: 03.10.2020

Unit: Panipat Refinery

Month: Sep 2020 (URL No. TC781120100012978F)

Sr. No.	Stack Particular	Date of Sampling	Temp. °C	Diameter of Stack (m)	Gas Velocity (m/sec.)	Flue Gas Volume at 25°C (Nm3/ Hr.)	Particulate Matter (PM) Limit: Gas: 10 mg/Nm3 Liquid: 100 mg/Nm3		Sulphur Dioxide (SO_2) Limit: Gas: 50 mg/Nm3 Liquid: 1700 mg/Nm3			Oxides of Nitrogen (NO_x) Limit: Gas: 350 mg/Nm3 Liquid: 450 mg/Nm3			Carbon Monoxide (CO) Limit:Gas:150 mg/Nm3 Liquid: 200 mg/Nm3			Nickel (Ni)		Vanadium (V)		Nickel+Vanadium Limit: (Ni + V) Liquid: 5 mg/Nm3	
							mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	Kg/hr.	mg/Nm³	kg/hr.	mg/Nm³	kg/hr.	mg/Nm³	kg/hr.
11	HRSG-03	21.09.2020	184	3.30	10.25	197755.34	-	-	3.00	7.85	1.55	90.00	169.29	33.48	8	9.16	1.81	-	-	-	-	-	-
12	HRSG-04	21.09.2020	181	3.30	10.38	201586.79	-	-	3.00	7.85	1.59	37.00	69.60	14.03	4	4.58	0.92	-	-	-	-	-	-
13	HRSG-05	21.09.2020	183	3.30	10.67	208039.93	-	-	2.00	5.24	1.08	40.00	75.24	15.52	6	6.87	1.42	-	-	-	-	-	-
		Total in (Kg/ hr)									6.23			74.66			4.81						

Sr. Chemist/Mgr (Lab.)

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Test Results of Stack Emissions

Dt: 04.08.2020

Unit: Panipat Refinery

Month: July 2020 (URL NO. TC781120100009354F)

Stack Particular	Date of Sampling	Temp.	Diameter of Stack (m)	Gas Velocity	Flue Gas Volume at 25°C	Sulphur Dioxide (SO_2)			Oxides of Nitrogen (NO_x) Limit: Old SRU 350 mg/Nm3 Limit: New SRU 250 mg/Nm3			Carbon Monoxide (CO) Limit: Old SRU 150 mg/Nm3 Limit: New SRU 100 mg/Nm3			Hydrogen Sulphide (H_2S) Limit: Old SRU 15 mg/Nm3 Limit: New SRU 10 mg/Nm3		
		°C		(m/sec.)	(Nm^3/ Hr.)	ppm	mg/Nm^3	kg/hr.	ppm	mg/Nm^3	kg/hr.	ppm	mg/Nm^3	Kg/hr.	ppm	mg/Nm^3	Kg/hr.
SRU New Unit-25	13.07.2020	180.00	3.04	9.72	160549.11	4.00	10.47	1.68	66.00	124.16	19.93	10.00	11.45	1.84	< 0.2	< 0.28	< 0.01
SRU New (Unit 57)	13.07.2020	178.00	3.30	9.44	184550.83	3.00	7.85	1.45	62.00	116.62	21.52	7.00	8.02	1.48	< 0.2	< 0.28	< 0.01

Mgr. Lab. / Sr. Chemist

04.08.2020
Authorised Signatory
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Test Results of Stack Emissions

Unit: Panipat Refinery

Month: Aug 2020 (URL NO. TC781120100010881F)

Dt: 09.09.2020

Stack Particular	Date of Sampling	Temp. °C	Diameter of Stack (m)	Gas Velocity (m/sec.)	Flue Gas Volume at 25°C (Nm^3/ Hr.)	Sulphur Dioxide (SO_2)			Oxides of Nitrogen (NO_x) Limit: Old SRU 350 mg/Nm3 Limit: New SRU 250 mg/Nm3			Carbon Monoxide (CO) Limit: Old SRU 150 mg/Nm3 Limit: New SRU 100 mg/Nm3			Hydrogen Sulphide (H_2S) Limit: Old SRU 15 mg/Nm3 Limit: New SRU 10 mg/Nm3		
						ppm	mg/Nm^3	kg/hr.	ppm	mg/Nm^3	kg/hr.	ppm	mg/Nm^3	Kg/hr.	ppm	mg/Nm^3	Kg/hr.
SRU Old - 22	18.08.2020	182.00	3.04	16.04	165105.74	5.00	13.09	2.16	52.00	97.81	16.15	26.88	29.77	4.92	< 0.2	< 0.28	< 0.01
SRU New (Unit 26)	17.08.2020	180.00	3.30	9.49	184709.22	5.00	13.09	2.42	52.00	97.81	18.07	46.00	52.67	9.73	< 0.2	< 0.28	< 0.01
SRU New (Unit 57)	17.08.2020	182.00	3.30	9.67	191260.95	4.00	10.47	2.00	63.00	118.50	22.66	52.00	59.54	11.39	< 0.2	< 0.28	< 0.01

Mgr. Lab. / Sr. Chemist

09.09.2020

Authorised Signatory
CM/ TM/ AM

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Test Results of Stack Emissions **Dt: 02.11.2020**

Unit: Panipat Refinery

Month: Oct 2020

Sr. No.	Stack Particular	Date of Sampling	Temp. °C	Diameter of Stack (m)	Gas Velocity (m/sec.)	Flue Gas Volume at 25°C (Nm3/ Hr.)	Particulate Matter (PM) Limit: Gas: 10 mg/Nm3 Liquid: 100 mg/Nm3		Sulphur Dioxide (SO_2) Limit: Gas: 50 mg/Nm3 Liquid: 1700 mg/Nm3			Oxides of Nitrogen (NO_x) Limit: Gas: 350 mg/Nm3 Liquid: 450 mg/Nm3			Carbon Monoxide (CO) Limit Gas:150 mg/Nm3 Liquid: 200 mg/Nm3			Nickel (Ni)		Vanadium (V)		Nickel+Vanadium Limit: (Ni + V) Liquid: 5 mg/Nm3	
							mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	Kg/hr.	mg/Nm³	kg/hr.	mg/Nm³	kg/hr.	mg/Nm³	kg/hr.
15	HDU-76	13.10.2020	180	3.40	10.23	211362.51	11.31	2.39	4.00	10.47	2.21	32.00	60.19	12.72	9	16.31	2.15	< 0.022	0.0046	< 0.022	0.0046	0.04	0.0093
	Total in (Kg/ hr)							3.97			2.64			15.58			2.74		0.006		0.006		0.012
D	PX- Section																						
16	NHT Heater	14.10.2020	162	1.00	10.25	18239.12	12.96	0.24	4.00	10.47	0.19	62.00	116.62	2.13	9	16.31	0.19	< 0.022	0.0004	< 0.022	0.0004	0.04	0.0008
17	Xylene Charge Heater	14.10.2020	150	2.00	10.34	72505.63	14.69	1.06	4.00	10.47	0.75	52.00	97.81	7.07	9	16.31	0.73	< 0.022	0.0016	< 0.022	0.0016	0.04	0.0032
18	Isomer Charge Heater	14.10.2020	181	1.20	10.07	27338.83	13.64	0.43	3.00	7.85	0.21	66.00	99.53	2.37	6	9.97	0.19	< 0.022	0.0006	< 0.022	0.0006	0.04	0.0012
19	Tatoray charge Heater	14.10.2020	150	1.20	10.01	27472.66	12.62	0.35	4.00	10.47	0.29	36.00	105.34	2.89	7	8.02	0.21	< 0.022	0.0006	< 0.022	0.0006	0.04	0.0012
		Total in (Kg/ hr)						1.04			1.26			12.33			1.15		0.0028		0.0028		0.006
E	TPS Section																						
20	HRSG 03	16.10.2020	167	3.38	10.05	152632.16	11.48	2.21	0.00	10.71	3.03	26.66	48.91	9.42	5	10.31	1.59	< 0.022	0.0042	< 0.022	0.0006	0.04	0.0085
21	HRSG-02	16.10.2020	168	3.38	10.01	206746.91	14.19	2.92	7.00	16.33	3.79	22.60	41.38	8.56	5	9.97	1.43	< 0.022	0.0045	< 0.022	0.0045	0.04	0.0091
22	HRSG 04	16.10.2020	169	3.38	10.33	157141.89	12.96	2.55	4.00	10.47	2.06	32.00	60.16	11.67	7	8.02	1.50	< 0.022	0.0043	< 0.022	0.0043	0.04	0.0087
23	HRSG 05	16.10.2020	168	3.38	10.40	158908.20	15.24	3.03	4.00	10.47	2.08	35.00	67.72	12.47	8	9.16	1.82	< 0.022	0.0044	< 0.022	0.0044	0.04	0.0088
24	UBI-1	16.10.2020	152	3.84	10.77	173001.61	15.13	2.62	6.00	15.71	2.72	55.00	103.46	17.93	8	9.16	1.59	< 0.022	0.0038	< 0.022	0.0038	0.04	0.0075
25	VHF Boiler 01	16.10.2020	159	3.84	10.63	175015.85	15.64	2.44	4.00	10.47	1.83	46.00	86.53	15.14	7	8.02	1.40	< 0.022	0.0039	< 0.022	0.0039	0.04	0.0077
26	VHF Boiler 02	16.10.2020	157	3.84	10.71	174209.36	12.08	2.26	5.00	13.09	2.28	42.00	79.05	13.76	8	9.16	1.60	< 0.022	0.0038	< 0.022	0.0038	0.04	0.0077
		Total in (Kg/ hr)						15.30			17.80			90.15			11.39		0.0290		0.0290		0.058
F	DCU Section																						
27	DCU	15.10.2020	185	0.80	11.91	185114.61	12.38	0.23	5.00	13.09	0.25	42.00	79.00	1.49	8	9.16	0.17	< 0.022	0.0004	< 0.022	0.0004	0.04	0.0008
		Total in (Kg/ hr)						0.23			0.25			1.49			0.17		0.000				0.001
G	MSQ																						

Sr. Chemist/Mgr (Lab.)

02.11.2020

Authorised Signatory

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Test Results of Stack Emissions

Unit: Panipat Refinery

Month: Oct 2020

Dt: 02.11.2020

Sr. No.	Stack Particular	Date of Sampling	Temp. °C	Diameter of Stack (m)	Gas Velocity (m/sec.)	Flue Gas Volume at 25°C (Nm3/ Hr.)	Particulate Matter (PM) Limit Gas: 10 mg/Nm3 Liquid: 100 mg/Nm3		Sulphur Dioxide (SO_2) Limit Gas: 50 mg/Nm3 Liquid: 1700 mg/Nm3			Oxides of Nitrogen (NO_x) Limit Gas: 350 mg/Nm3 Liquid: 450 mg/Nm3			Carbon Monoxide (CO) Limit Gas: 150 mg/Nm3 Liquid: 200 mg/Nm3			Nickel (Ni)		Vanadium (V)		Nickel+Vanadium Limit: (Ni + V) Liquid: 5 mg/Nm3	
							mg/Nm³	kg/hr	ppm	mg/Nm³	kg/hr	ppm	mg/Nm³	kg/hr	ppm	mg/Nm³	Kg/hr	mg/Nm³	kg/hr	mg/Nm³	kg/hr	mg/Nm³	kg/hr
28	HGU (203 Heater 201) (MSQ)	13.10.2020	180	2.22	10.83	93335.34	12.56	1.17	2.00	15.71	0.58	52.00	97.81	8.13	8	3.16	0.80	<0.022	0.0021	<0.022	0.0021	0.04	0.0041
29	NHT (301 H 101)	17.10.2020	185	3.05	10.85	178425.38	11.14	2.06	3.00	13.08	0.80	46.00	86.52	15.44	7	5.02	1.43	<0.022	0.0039	<0.022	0.0039	0.04	0.0079
		Total in (Kg/ hr)						3.23			1.46			24.57			2.29		0.006		0.006		0.012
H	PTA Section																						
30	Fired Combustion Fire Heater	26.10.2020	180	2.35	10.33	99903.50	16.45	1.63	6.00	15.71	1.57	32.00	97.81	9.76	6	5.67	0.69	<0.022	0.0022	<0.022	0.0022	0.04	0.0044
31	Hot Oil Heater	20.10.2020	188	2.35	10.73	104075.40	12.70	1.32	5.00	13.08	1.36	48.00	90.29	9.40	11	12.60	1.31	<0.022	0.0023	<0.022	0.0023	0.04	0.0046
32	Thermal Oxidizer	20.10.2020	190	1.10	10.91	23066.57	12.05	0.28	4.50	10.47	0.24	49.00	86.53	2.00	9	10.31	0.34	<0.022	0.0005	<0.022	0.0005	0.04	0.0010
		Total in (Kg/ hr)						3.25			3.17			21.17			2.24		0.0050		0.0050		0.0100
I	Diesel Hydrotreater Unit																						
33	DHDT-72 Heater 01	12.10.2020	190	1.85	10.91	61613.23	10.51	0.65	2.00	5.24	0.32	95.00	178.70	11.05	7	8.02	0.56	<0.022	0.0014	<0.022	0.0014	0.04	0.0027
34	DHDT-72 Heater 02	12.10.2020	187	1.88	10.70	61632.04	12.3	0.75	2.00	7.85	0.48	88.00	169.29	10.42	8	9.15	0.56	<0.022	0.0014	<0.022	0.0014	0.04	0.0027
		Total in (Kg/ hr)						1.41			0.80			21.46			1.16		0.003		0.003		0.005

Sr. Chemist/Mgr. (Lab.)

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Test Results of Stack Emissions

Dt: 02.11.2020

Unit: Panipat Refinery

Month: Oct 2020 (URL NO. TC781120100014418F)

Stack Particular	Date of Sampling	Temp.	Diameter of Stack (m)	Gas Velocity	Flue Gas Volume at 25°C	Sulphur Dioxide (SO_2)			Oxides of Nitrogen (NO_x) Limit: Old SRU 350 mg/Nm3 Limit: New SRU 250 mg/Nm3			Carbon Monoxide (CO) Limit: Old SRU 150 mg/Nm3 Limit: New SRU 100mg/Nm3			Hydrogen Sulphide (H_2S) Limit: Old SRU 15 mg/Nm3 Limit: New SRU 10 mg/Nm3		
		°C		(m/sec.)	(Nm³/ Hr.)	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	kg/hr.	ppm	mg/Nm³	Kg/hr	ppm	mg/Nm³	Kg/hr
SRU Old - 2/	15.10.2020	125.00	3.04	9.32	151660.26	4.00	10.47	1.60	65.00	122.27	19.03	26.00	29.72	4.63	< 0.2	< 0.28	< 0.01
SRU New (Unit 2/)	15.10.2020	180.00	3.30	9.55	165877.02	5.00	13.09	2.43	55.00	103.49	19.22	18.00	20.61	3.83	< 0.2	< 0.28	< 0.01
SRU New (Unit 5/)	15.10.2020	182.00	3.30	9.39	151659.51	4.00	10.47	1.61	50.00	94.05	17.11	28.00	32.06	5.93	< 0.2	< 0.28	< 0.01

Mgr. Lab. / Sr. Chemist

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QM/ TM/ AM

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Test Results of Waste Water Sample **Dt: 04.08.2020**

Unit: Panipat Refinery

Month : July. 2020

Date of sampling : 18.07.2020

				TEST RESULTS		
				Job Order No.	HTH/CH/2007/18029	HTH/CH/2007/18030
				URL	TC781120100009351F	TC781120100009352F
Sr. No.	Parameters	Unit	Limit	Protocol Used	ETP-1 (Treated Effluent)	ETP-2 (Treated Effluent)
1	pH	--	6.0 - 8.5	IS 3025 (P-11) : 1996	7.35	7.30
2	Oil & Grease	mg/l	5	IS 3025 (P-39) : 1996	2.8	3.8
3	Chemical Oxygen Demand (COD)	mg/l	125	IS 3025 (P-58) : 2006	59.0	87.0
4	BOD for 3 days at 27°C	mg/l	15	IS 3025 (P-44) : 1993	9.6	12.0
5	Total Suspended Solids	mg/l	20	IS 3025 (P-17) : 1993	12.0	17.0
6	Phenol as C_6H_5OH	mg/l	0.35	IS 3025 (P-43) : 1992	< 0.01	< 0.01
7	Sulphide as H_2S	mg/l	0.5	IS 3025 (P-29) : 1986	< 0.05	< 0.05
8	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02	< 0.02
9	Ammonia as N	mg/l	15	IS 3025 (P-34) : 1988	< 1.0	< 1.0
10	Total Kjeldhal Nitrogen as N	mg/l	40	IS 3025 (P-34) : 1988	< 1.0	< 1.0
11	Phosphate as P	mg/l	3	IS 3025 (P-31) : 1988	1.24	1.80
12	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05	< 0.05
13	Total Chromium as Cr	mg/l	2	IS 3025 (P-2) : 2004	< 0.2	< 0.2
14	Lead as Pb	mg/l	0.1	IS 3025 (P-2) : 2004	< 0.02	< 0.02
15	Mercury as Hg	mg/l	0.01	IS 3025 (P-48) : 1994	< 0.002	< 0.002
16	Zinc as Zn	mg/l	5	IS 3025 (P-2) : 2004	< 0.2	< 0.2
17	Nickel as Ni	mg/l	1	IS 3025 (P-2) : 2004	< 0.2	< 0.2
18	Copper as Cu	mg/l	1	IS 3025 (P-2) : 2004	< 0.2	< 0.2
19	Vanadium as V	mg/l	0.2	By ICP	< 0.2	< 0.2
20	Benzene	mg/l	0.1	By GC	< 0.01	< 0.01
21	Benzo(a) Pyrene	mg/l	0.2	By GC	< 0.0004	< 0.0004

N.D: Not Detectable

Sr. Chemist / Mgr (Lab.)

04.08.2020

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[illegible]

[illegible]

Test Results of Waste Water Sample

Dt: 08.09.2020

Unit: Panipat Refinery

Month : August, 2020

Date of sampling : 19.08.2020

				TEST RESULTS		
				Job Order No.	[illegible]	[illegible]
				ULR	[illegible]	[illegible]
S. No.	Parameter	Unit	Limit	Protocol Used	[illegible] (Raw Effluent)	[illegible] (Treated Effluent)
1	pH		6.0 - 8.5	IS 3025 (P-11) 1983	7.25	8.35
2	Oil & Grease	mg/l	5	IS 3025 (P-39) 1991	4.8	4.5
3	Chemical Oxygen Demand (COD)	mg/l	[illegible]	IS 3025 (P-58) 2006	42.0	37.0
4	BOD for 3 days at 27°C	mg/l	15	IS 3025 (P-44) 1993	11.0	13.0
5	Total Suspended Solids	mg/l	20	IS 3025 (P-17) 1984	14.0	12.0
6	Phenol as C_6H_5OH	mg/l	0.35	IS 3025 (P-43) 1992	< 0.01	< 0.01
7	Sulphide as H_2S	mg/l	0.5	IS 3025 (P-29) 1986	< 0.05	< 0.05
8	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) 1986	< 0.02	< 0.02
9	Ammonia as N	mg/l	15	IS 3025 (P-34) 1988	< 1.0	< 1.0
10	Total Kjeldahl Nitrogen as N	mg/l	40	IS 3025 (P-34) 1988	< 1.0	< 1.0
11	Phosphate as P	mg/l	3	IS 3025 (P-31) 1988	0.5	2.5
12	Hexavalent Chromium as Cr^{6+}	mg/l	0.1	IS 3025 (P-52) 2003	< 0.05	< 0.05
13	Total Chromium as Cr	mg/l	2	[illegible]	< 0.2	< 0.2
14	Lead as Pb	mg/l	0.1	[illegible]	< 0.02	< 0.02
15	Mercury as Hg	mg/l	0.01	[illegible]	< 0.002	< 0.002
16	Zinc as Zn	mg/l	5	[illegible]	< 0.2	< 0.2
17	Nickel as Ni	mg/l	1	[illegible]	< 0.2	< 0.2
18	Copper as Cu	mg/l	1	[illegible]	< 0.2	< 0.2
19	Vanadium as V	mg/l	0.2	[illegible]	< 0.2	< 0.2
20	Benzene	mg/l	0.1	N.D.	< 0.01	< 0.01
21	Benzo(a)Pyrene	mg/l	0.2	N.D.	< 0.0004	< 0.0004

N.D. : Not Detectable

Sr. Chemist / Mgr (Lab.)

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Test Results of Waste Water Sample

Unit: Panipat Refinery

Month : Sept. 2020

Date of sampling : 26.09.2020

Dt: 03.10.2020

					TEST RESULTS	
				Job Order No.	HTH/CH/200926059	HTH/CH/200926060
				URL	TC761120100013433F	TC781120100013434F
Sr. No.	Parameters	Unit	Limit	Protocol Used	ETP-1 (Treated Effluent)	ETP-2 (Treated Effluent)
1	pH	-	6.0 - 8.5	IS 3025 (P-11) : 1996	6.8	7.9
2	Oil & Grease	mg/l	5	IS 3025 (P-39) : 1996	4.8	4.2
3	Chemical Oxygen Demand (COD)	mg/l	125	IS 3025 (P-58) : 2006	77.0	40.0
4	BOD for 3 days at 27°C	mg/l	15	IS 3025 (P-44) : 1993	9.8	6.2
5	Total Suspended Solids	mg/l	20	IS 3025 (P-17) : 1993	19.0	16.0
6	Phenol as C_6H_5OH	mg/l	0.35	IS 3025 (P-43) : 1992	< 0.01	< 0.01
7	Sulphide as H_2S	mg/l	0.5	IS 3025 (P-29) : 1986	< 0.5	< 0.5
8	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02	< 0.02
9	Ammonia as N	mg/l	15	IS 3025 (P-34) : 1988	3.4	< 0.1
10	Total Kjeldhal Nitrogen as N	mg/l	40	IS 3025 (P-34) : 1988	5.0	< 0.1
11	Phosphate as P	mg/l	3	IS 3025 (P-31) : 1988	1.0	0.9
12	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05	< 0.05
13	Total Chromium as Cr	mg/l	2	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.2	< 0.2
14	Lead as Pb	mg/l	0.1	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.02	< 0.02
15	Mercury as Hg	mg/l	0.01	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.002	< 0.002
16	Zinc as Zn	mg/l	5	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.2	< 0.2
17	Nickel as Ni	mg/l	1	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.2	< 0.2
18	Copper as Cu	mg/l	1	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.2	< 0.2
19	Vanadium as V	mg/l	0.2	HTH/QF/7.2/2/ICP-01 SOP-21	< 0.2	< 0.2
20	Benzene	mg/l	0.1	By GC	< 0.1	< 0.1
21	Benzo(a) Pyrene	mg/l	0.2	By GC	< 0.2	< 0.2

N.D: Not Detectable

Sr. Chemist / Mgr (Lab.)

HARYANA TEST HOUSE PANIPAT 03.10.2020

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Test Results of Waste Water Sample

Unit: Panipat Refinery

Month : Oct. 2020

Date of sampling : 20.10.2020

Dt: 02.11.2020

					TEST RESULTS	
				Job Order No.	HTH/CH/081/036007	HTH/CH/081/036008
				URL	TC781120100014757F	TC781126100014758F
Sr. No.	Parameters	Unit	Limit	Protocol Used	ETP-1 (Treated Effluent)	ETP-2 (Treated Effluent)
1	pH	-	6.0 - 9.5	IS 3025 (P-11) : 1983	6.38	6.56
2	Oil & Grease	mg/l	5	IS 3025 (P-39) : 1991	1.4	1.2
3	Chemical Oxygen Demand (COD)	mg/l	125	IS 3025 (P-58) : 2006	64.0	58.0
4	BOD for 3 days at 27°C	mg/l	15	IS 3025 (P-44) : 1993	10.2	9.6
5	Total Suspended Solids	mg/l	20	IS 3025 (P-17) : 1984	15.0	18.0
6	Phenol as C_6H_5OH	mg/l	0.35	IS 3025 (P-43) : 1992	< 0.01	< 0.01
7	Sulphide as H_2S	mg/l	0.5	IS 3025 (P-29) : 1986	< 0.5	< 0.5
8	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02	< 0.02
9	Ammonia as N	mg/l	15	IS 3025 (P-34) : 1988	< 0.1	11.8
10	Total Kjeldhal Nitrogen as N	mg/l	40	IS 3025 (P-34) : 1988	< 0.1	24.3
11	Phosphate as P	mg/l	3	IS 3025 (P-31) : 1988	0.6	0.6
12	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05	< 0.05
13	Total Chromium as Cr	mg/l	2	HTH/QP/T-2/28/CP-01 SOP-21	< 0.2	< 0.2
14	Lead as Pb	mg/l	0.1	HTH/QP/T-2/28/CP-01 SOP-21	< 0.02	< 0.02
15	Mercury as Hg	mg/l	0.01	HTH/QP/T-2/28/CP-01 SOP-21	< 0.002	< 0.002
16	Zinc as Zn	mg/l	5	HTH/QP/T-2/28/CP-01 SOP-21	< 0.2	< 0.2
17	Nickel as Ni	mg/l	1	HTH/QP/T-2/28/CP-01 SOP-21	< 0.2	< 0.2
18	Copper as Cu	mg/l	1	HTH/QP/T-2/28/CP-01 SOP-21	< 0.2	< 0.2
19	Vanadium as V	mg/l	0.2	HTH/QP/T-2/28/CP-01 SOP-21	< 0.2	< 0.2
20	Benzene	mg/l	0.1	By GC	< 0.1	< 0.1
21	Benzo(a) Pyrene	mg/l	0.2	By GC	< 0.2	< 0.2

N.D: Not Detectable

Sr. Chemist / Mgr (Lab.)

02.11.2020

Authorised Signatory

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Test Results of Waste Water Sample Dt: 04.08.2020
Unit: Panipat Refinery
Month : July. 2020
Date of sampling : 18.07.2020

TEST RESULTS					
				Job Order No.	HTH/CH/2007180.28
				URL	TC7811201000093150F
Sr. No.	Parameters	Unit	Limit	Protocol Used	PTA-ETP (Treated Effluent)
1	pH	-	6.5 - 8.5	IS 3025 (P-11) : 1996	8.42
2	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	103.0
3	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	16.0
4	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	28.0
5	Phenol as C_6H_5OH	mg/l	5.0	IS 3025 (P-43) : 1992	< 0.01
6	Sulphide as H_2S	mg/l	2.0	IS 3025 (P-29) : 1986	< 1.0
7	Cyanide as CN	mg/l	2.0	IS 3025 (P-27) : 1986	< 0.02
8	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
9	Total Chromium as Cr	mg/l	2.0	IS 3025 (P-2) : 2004	< 0.2
10	Fluoride as F	mg/l	15	APHA (SPADANS)	1.6

Sr. Chemist / Mgr (Lab.)

04.08.2020
Authorised Signatory

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Test Results of Waste Water Sample Dt: 09.09.2020

Unit: Panipat Refinery

Month : August. 2020

Date of sampling : 19.08.2020

		TEST RESULTS			
				Job Order No	HTH/CH/200819020
				URL	TC781120100011023F
Sr. No.	Parameters	Unit	Limit	Protocol Used	PTA-ETP (Treated Effluent)
1	pH	–	6.5 - 8.5	IS 3025 (P-11) : 1996	8.47
2	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	86.0
3	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	15.0
4	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	46.0
5	Phenol as C_6H_5OH	mg/l	5.0	IS 3025 (P-43) : 1992	< 0.01
6	Sulphide as H_2S	mg/l	2.0	IS 3025 (P-29) : 1986	< 1.0
7	Cyanide as CN	mg/l	2.0	IS 3025 (P-27) : 1986	< 0.02
8	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
9	Total Chromium as Cr	mg/l	2.0	IS 3025 (P-2) : 2004	< 0.2
10	Fluoride as F	mg/l	15	APHA (SPADNS)	1.64

09.09.2020

Sr. Chemist / Mgr (Lab.)

Authorised Signatory

Haryana Test House

& Consultancy Services

50-C, Sector-25, Part-II, HUDA, Panipat-132 104 (HARYANA)

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Test Results of Waste Water Sample

Unit: Panipat Refinery

Month : Sept. 2020

Date of sampling : 26.09.2020

Dt: 03.10.2020

TEST RESULTS					
				Job Order No.	HTH/CHI200926062
				URL	TC7811201009134 36F
Sr. No.	Parameters	Unit	Limit	Protocol Used	PTA-ETP (Treated Effluent)
1	pH	-	6.5 - 8.5	IS 3025 (P-11) : 1996	8.0
2	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	97.0
3	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	11.0
4	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	12.0
5	Phenol as C_6H_5OH	mg/l	5.0	IS 3025 (P-43) : 1992	< 0.01
6	Sulphide as H_2S	mg/l	2.0	IS 3025 (P-29) : 1986	< 1.0
7	Cyanide as CN	mg/l	2.0	IS 3025 (P-27) : 1986	< 0.02
8	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
9	Total Chromium as Cr	mg/l	2.0	IS 3025 (P-2) : 2004	< 0.2
10	Fluoride as F	mg/l	15	APHA (SPADANS)	1.42

Sr. Chemist / Mgr (Lab.)

HARYANA TEST HOUSE 03.10.20 PANIPAT

Authorised Signatory

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Test Results of Waste Water Sample Dt: 02.11.2020

Unit: Panipat Refinery

Month : Oct. 2020

Date of sampling : 20.10.2020

		TEST RESULTS			
				Job Order No.	HTHICH/201020509
				URL	TC7811201000147599
Sr. No.	Parameters	Unit	Limit	Protocol Used	PTA-ETP (Treated Effluent)
1	pH	-	5.5 - 8.5	IS 3025 (P-11) : 1996	7.18
2	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	67.0
3	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	12.0
4	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1992	40.0
5	Phenol as C_6H_5OH	mg/l	5.0	IS 3025 (P-43) : 1992	< 0.01
6	Sulphide as H_2S	mg/l	2.0	IS 3025 (P-29) : 1986	< 1.0
7	Cyanide as CN	mg/l	2.0	IS 3025 (P-27) : 1986	< 0.02
8	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
9	Total Chromium as Cr	mg/l	2.0	IS 3025 (P-52) : 2003	< 0.2
10	Fluoride as F	mg/l	15	APHA (SPADNS)	1.42

Sr. Chemist / Mgr (Lab.)

02.11.2020

Authorised Signatory

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& Consultancy Services

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Test Results of Waste Water Sample (STP- Outlet) **Dt: 04.08.2020**

Unit: Panipat Refinery

Month : July. 2020

Date of Sampling: 18.07.2020

TEST RESULTS					
				Job Order No.	HTH/CH/200716031
				URL	TC781120100809353F
S No.	Parameters	Unit	Limit	Protocol Used	STP- Water Outlet
1	pH	-	6.0 - 8.5	IS 3025 (P-11) : 1996	7.52
2	Colour, Hazen	-	-	IS 3025 (P-4) : 1983	Yellowish
3	Odour	-	-	IS 3025 (P-5) : 1983	Odourless
4	Oil & Grease	mg/l	10	IS 3025 (P-39) : 1996	1.0
5	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	80.0
6	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	8.2
7	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	20.0
8	Residual Free Chlorine	mg/l	1.0	IS 3025 (P-26) : 1986	< 0.05
9	Phenol as C_6H_5OH	mg/l	1.0	IS 3025 (P-43) : 1992	< 0.01
10	Sulphide as H_2S	mg/l	0.05	IS 3025 (P-29) : 1986	< 1.0
11	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02
12	Free Ammonia as NH_3	mg/l	5.0	APHA-4500 NH_3C	< 0.5
13	Fluoride as F	mg/l	2.0	IS 3025 (P-60) : 2008	0.60
14	Ammonia as N	mg/l	50	IS 3025 (P-34) : 1988	19.00
15	Total Kjeldhal Nitrogen as N	mg/l	100.0	IS 3025 (P-34) : 1988	32.40
16	Phosphate as P	mg/l	5.0	IS 3025 (P-31) : 1988	1.40
17	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
18	Total Chromium as Cr	mg/l	0.05	IS 3025 (P-2) : 2004	< 0.2
19	Lead as Pb	mg/l	0.1	IS 3025 (P-2) : 1994	< 0.02
20	Mercury as Hg	mg/l	0.01	IS 3025 (P-48) : 1994	< 0.002
21	Zinc as Zn	mg/l	5.0	IS 3025 (P-2) : 1994	< 0.2
22	Nickel as Ni	mg/l	3.0	IS 3025 (P-2) : 2004	< 0.2
23	Copper as Cu	mg/l	3.0	IS 3025 (P-2) : 1992	< 0.2
24	Vanadium as V	mg/l	0.2	By ICP	< 0.2
25	Arsenic as As	mg/l	0.2	IS 3025 (P-2) : 1988	< 0.2
26	Cadmium as Cd	mg/l	2.0	IS 3025 (P-2) : 1992	< 0.2
27	Manganese as Mn	mg/l	-	IS 3025 (P-2) : 2006	< 0.2
28	Iron as Fe	mg/l	3.0	IS 3025 (P-2) : 2003	0.45
29	Nitrate Nitrogen as No_3	mg/l	10.0	IS 3025 (P-34) : 1988	5.40

HARYANA TEST HOUSE
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Test Results of Waste Water Sample (STP- Outlet) Dt: 09.09.2020

Unit: Panipat Refinery

Month : August. 2020

Date of Sampling: 19.08.2020

TEST RESULTS					
				Job Order No.	HTH/CH/200819023
				URL	TC781120100011026F
Sr. No.	Parameters	Unit	Limit	Protocol Used	STP- Water Outlet
1	pH	–	6.0 - 8.5	IS 3025 (P-11) : 1996	7.67
2	Colour, Hazen	–	–	IS 3025 (P-4) : 1983	Yellowish
3	Odour	–	–	IS 3025 (P-5) : 1983	Odourless
4	Oil & Grease	mg/l	10	IS 3025 (P-39) : 1996	4.4
5	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	49.0
6	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	8.6
7	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	23.0
8	Residual Free Chlorine	mg/l	1.0	IS 3025 (P-26) : 1986	< 0.05
9	Phenol as C_6H_5OH	mg/l	1.0	IS 3025 (P-43) : 1992	< 0.01
10	Sulphide as H_2S	mg/l	0.05	IS 3025 (P-29) : 1986	< 1.0
11	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02
12	Free Ammonia as NH_3	mg/l	5.0	APHA-4500 NH_3C	< 0.5
13	Fluoride as F	mg/l	2.0	IS 3025 (P-60) : 2008	0.98
14	Ammonia as N	mg/l	50	IS 3025 (P-34) : 1988	11.2
15	Total Kjeldhal Nitrogen as N	mg/l	100.0	IS 3025 (P-34) : 1988	19.6
16	Phosphate as P	mg/l	5.0	IS 3025 (P-31) : 1999	2.0
17	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
18	Total Chromium as Cr	mg/l	0.05	IS 3026 (P-2) : 2004	< 0.2
19	Lead as Pb	mg/l	0.1	IS 3025 (P-2) : 1994	< 0.02
20	Mercury as Hg	mg/l	0.01	IS 3025 (P-48) : 1994	< 0.002
21	Zinc as Zn	mg/l	5.0	IS 3025 (P-2) : 1994	< 0.2
22	Nickel as Ni	mg/l	3.0	IS 3025 (P-2) : 2004	< 0.2
23	Copper as Cu	mg/l	3.0	IS 3025 (P-2) : 1992	< 0.2
24	Vanadium as V	mg/l	0.2	By ICP	< 0.2
25	Arsenic as As	mg/l	0.2	IS 3025 (P-2) : 1988	< 0.2
26	Cadmium as Cd	mg/l	2.0	IS 3025 (P-2) : 1992	< 0.2
27	Manganese as Mn	mg/l	–	IS 3025 (P-2) : 2006	< 0.2
28	Iron as Fe	mg/l	3.0	IS 3025 (P-2) : 2003	0.21
29	Nitrate Nitrogen as No_3	mg/l	10.0	IS 3025 (P-34) : 1988	4.8

09.09.2020

Sr Chemist / Mgr (Lab.)

Authorised Signatory

Haryana Test House

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Test Results of Waste Water Sample (STP- Outlet) **Dt: 03.10.2020**

Unit: Panipat Refinery

Month : Sept. 2020

Date of Sampling: 26.09.2020

TEST RESULTS					
				Job Order No.	HTH/CH/200926065
				URL	TC781120100013439F
Sr. No.	Parameters	Unit	Limit	Protocol Used	STP- Water Outlet
1	pH	–	6.0 - 8.5	IS 3025 (P-11) : 1996	7.24
2	Colour, Hazen	–	–	IS 3025 (P-4) : 1983	Yellowish
3	Odour	–	–	IS 3025 (P-5) : 1983	Odourless
4	Oil & Grease	mg/l	10	IS 3025 (P-39) : 1996	1.4
5	Chemical Oxygen Demand (COD)	mg/l	250	IS 3025 (P-58) : 2006	108.0
6	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	14.0
7	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	10.0
8	Residual Free Chlorine	mg/l	1.0	IS 3025 (P-26) : 1986	< 0.05
9	Phenol as C_6H_5OH	mg/l	1.0	IS 3025 (P-43) : 1992	< 0.01
10	Sulphide as H_2S	mg/l	0.05	IS 3025 (P-29) : 1986	< 1.0
11	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02
12	Free Ammonia as NH_3	mg/l	5.0	APHA-4500 NH_3C	< 0.5
13	Fluoride as F	mg/l	2.0	IS 3025 (P-60) : 2008	1.24
14	Ammonia as N	mg/l	50	IS 3025 (P-34) : 1988	14.6
15	Total Kjeldhal Nitrogen as N	mg/l	100.0	IS 3025 (P-34) : 1988	31.4
16	Phosphate as P	mg/l	5.0	IS 3025 (P-31) : 1999	4.2
17	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
18	Total Chromium as Cr	mg/l	0.05	IS 3025 (P-2) : 2004	< 0.2
19	Lead as Pb	mg/l	0.1	IS 3025 (P-2) : 1994	< 0.02
20	Mercury as Hg	mg/l	0.01	IS 3025 (P-48) : 1994	< 0.002
21	Zinc as Zn	mg/l	5.0	IS 3025 (P-2) : 1994	< 0.2
22	Nickel as Ni	mg/l	3.0	IS 3025 (P-2) : 2004	< 0.2
23	Copper as Cu	mg/l	3.0	IS 3025 (P-2) : 1992	< 0.2
24	Vanadium as V	mg/l	0.2	By ICP	< 0.2
25	Arsenic as As	mg/l	0.2	IS 3025 (P-2) : 1988	< 0.2
26	Cadmium as Cd	mg/l	2.0	IS 3025 (P-2) : 1992	< 0.2
27	Manganese as Mn	mg/l	–	IS 3025 (P-2) : 2006	< 0.2
28	Iron as Fe	mg/l	3.0	IS 3025 (P-2) : 2003	0.68
29	Nitrate Nitrogen as No_3	mg/l	10.0	IS 3025 (P-34) : 1988	1.2

Sr Chemist / Mgr (Lab.)

HARYANA TEST HOUSE PANIPAT 03/10/2020

Authorised Signatory

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Test Results of Waste Water Sample (STP- Outlet) **Dt: 02.11.2020**

Unit: Panipat Refinery

Month : Oct. 2020

Date of Sampling: 23.10.2020

TEST RESULTS					
				Job Order No.	HTH/CH/201026007
				URL	TC781120100015147F
Sr. No.	Parameters	Unit	Limit	Protocol Used	STP- Water Outlet
1	pH	–	6.0 - 8.5	IS 3025 (P-11) : 1996	7.12
2	Colour, Hazen	–	–	IS 3025 (P-4) : 1983	Yellowish
3	Odour	–	–	IS 3025 (P-5) : 1983	Odourless
4	Oil & Grease	mg/l	10	IS 3025 (P-39) : 1996	5.2
5	Chemical Oxygen Demand (CCD)	mg/l	250	IS 3025 (P-58) : 2006	41.0
6	BOD for 3 days at 27°C	mg/l	30	IS 3025 (P-44) : 1993	7.8
7	Total Suspended Solids	mg/l	100	IS 3025 (P-17) : 1993	30.0
8	Residual Free Chlorine	mg/l	1.0	IS 3025 (P-26) : 1986	< 0.05
9	Phenol as C_6H_5OH	mg/l	1.0	IS 3025 (P-43) : 1992	< 0.01
10	Sulphide as H_2S	mg/l	0.05	IS 3025 (P-29) : 1986	< 0.05
11	Cyanide as CN	mg/l	0.2	IS 3025 (P-27) : 1986	< 0.02
12	Free Ammonia as NH_3	mg/l	5.0	APHA-4500 NH_3C	< 0.5
13	Fluoride as F	mg/l	2.0	IS 3025 (P-60) : 2008	1.22
14	Ammonical Nitrogen as N	mg/l	50	IS 3025 (P-34) : 1988	18.5
15	Total Kjeldhal Nitrogen as N	mg/l	100.0	IS 3025 (P-34) : 1988	32.9
16	Phosphate as P	mg/l	5.0	IS 3025 (P-31) : 1999	2.1
17	Hexavalent Chromium as Cr^{+6}	mg/l	0.1	IS 3025 (P-52) : 2003	< 0.05
18	Total Chromium as Cr	mg/l	0.05	IS 3025 (P-2) : 2004	< 0.05
19	Lead as Pb	mg/l	0.1	IS 3025 (P-2) : 1994	< 0.02
20	Mercury as Hg	mg/l	0.01	IS 3025 (P-48) : 1994	< 0.002
21	Zinc as Zn	mg/l	5.0	IS 3025 (P-2) : 1994	< 0.2
22	Nickel as Ni	mg/l	3.0	IS 3025 (P-2) : 2004	< 0.2
23	Copper as Cu	mg/l	3.0	IS 3025 (P-2) : 1992	< 0.2
24	Vanadium as V	mg/l	0.2	By ICP	< 0.2
25	Arsenic as As	mg/l	0.2	IS 3025 (P-2) : 1988	< 0.2
26	Cadmium as Cd	mg/l	2.0	IS 3025 (P-2) : 1992	< 0.2
27	Manganese as Mn	mg/l	–	IS 3025 (P-2) : 2006	< 0.2
28	Iron as Fe	mg/l	3.0	IS 3025 (P-2) : 2003	< 0.2
29	Nitrate Nitrogen as No_3	mg/l	10.0	IS 3025 (P-34) : 1988	0.1

02.11.2020

Sr Chemist / Mgr (Lab.)

Authorised Signatory

LDAR (BENZENE) Monitoring Report

for

Month of October,2020

at

IndianOil

IOCL, Panipat Refinery

Prepared by

NETEL (INDIA) LIMITED

W-408, MIDC Rabale,

TTC Industrial Area, Navi Mumbai – 400 701

Phone : 022 27606016

Email : ems@netel-india.com

LDAR Benzene Monitoring Report for IOCL , Panipat

Name of client	M/s Indian Oli Corporation Limited P.O. Panipat Refinery Panipat-132 140 HARYANA
Name of Contractor	NETEL (INDIA) LIMITED Environment Management Services W-408, Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400 701
Nature of job	LDAR Monitoring Report for IOCL , Panipat
Report Period	October,2020

For NETEL (INDIA) LIMITED

Jayant Meshram
Sr.Manager-EMS Operation

LEAK DETECTION AND REPAIR (LDAR) PROGRAM

BENZENE QUARTERLY REPORT : OCTOBER,2020.

PLANTWISE SUMMARY

	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
	CCRU	06/10/2020	230	1 to 7	0	0.035
	MSQ	08/10/2020	32	7 to 8	0	0.007
Kg/day						0.042
MT/Annum						0.015

Verified by

Surekha Jamdar
Technical Manager

NETEL (INDIA) LIMITED

Checked by

Shraddha Kere
Technical Manager

LDAR Monitoring Report for IOCL, Panipat

Name of client	M/s Indian Oil Corporation Limited P.O. Panipat Refinery Panipat-132 140 HARYANA
Name of Contractor	NETEL (INDIA) LIMITED Environment Management Services W-408, Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400 701
Nature of job	LDAR Monitoring Report for IOCL, Panipat
Report Period	Month of October,2020

For NETEL (INDIA) LIMITED

NETEL (INDIA) LIMITED RABALE NAVI MUMBAI - 400 701

JAYANT MESHRAM
SR.MANAGER - EMS OPREATION

LEAK DETECTION AND REPAIR (LDAR) PROGRAM

VOC REPORT MONTH OF OCTOBER,2020.

PLANTWISE SUMMARY

Sr No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	AVU-I	05/10/2020	438	1 to 14	6	4.303
2	DHDS	06/10/2020	269	14 to 23	1	0.732
3	CCRU	06/10/2020	191	23 to 29	7	4.971
4	HGU (PR)	06/10/2020	124	29 to 33	2	0.618
5	OHCU	06/10/2020	287	33 to 42	5	3.235
6	VBU	06/10/2020	89	42 to 44	0	0.059
7	RFCC	07/10/2020	251	45 to 52	9	6.278
8	AVU-II	07/10/2020	300	52 to 62	7	3.973
9	HGU(76&77)	07/10/2020	245	62 to 69	2	1.435
10	HCU	07/10/2020	394	70 to 82	4	2.318
11	DHDT	08/10/2020	263	82 to 90	2	1.137
12	MSQ	08/10/2020	225	90 to 97	3	2.010
13	DCU	08/10/2020	333	97 to 108	4	1.541
14	SRU-NEW	08/10/2020	58	108 to 109	0	0.009
15	ETP-1	09/10/2020	57	109 to 111	0	0.078
16	ETP-2	09/10/2020	58	111 to 113	0	0.055
17	OM&S	09/10/2020	477	113 to 128	11	7.108
18	SRU-OLD	10/10/2020	46	128 to 129	0	0.008
Total in Kg/day			**4105**		**63**	**39.87**
Total in MT/Annum						**14.552**

Verified by

Surekha Jamdar
Dy. Technical Manager

NETEL (INDIA) LIMITED

Checked by

Shraddha Kere
Technical Manager

LDAR (VOC) Monitoring Report

for

Month of October,2020

at

IndianOil

IOCL, Panipat Refinery

(PX-PTA)

Prepared by

NETEL (INDIA) LIMITED

W-408, MIDC Rabale,

TTC Industrial Area, Navi Mumbai – 400 701

***Phone** :022 27606016*

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LDAR Monitoring Report for IOCL PX-PTA, Panipat

Name of client	M/s Indian Oli Corporation Limited P.O. Panipat Refinery Panipat-132 140 HARYANA
Name of Contractor	NETEL (INDIA) LIMITED Environment Management Services W-408, Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400 701
Nature of job	LDAR Monitoring Report for IOCL PX-PTA, Panipat
Report Period	Month of October,2020.

For NETEL (INDIA) LIMITED

NETEL (INDIA) LIMITED RABALE NAVI MUMBAI

Jayant Meshram
Sr.Manager - EMS Operation

LEAK DETECTION AND REPAIR (LDAR) PROGRAM

VOC QUARTERLY REPORT : OCTOBER,2020

PLANTWISE SUMMARY

No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	PX-I	09/10/2020	260	1 to 9	5	3.345
2	PX-II	09/10/2020	257	9 to 17	3	1.403
3	PTA	10/10/2020	200	17 to 23	0	0.168
4	PTA-ETP	10/10/2020	45	23 to 24	0	0.048
tal in Kg/day			762		8	4.964
tl in MT/Annum						1.812

Verified by

Surekha Jamdar
Technical Manager

NETEL (INDIA) LIMITED
NETEL
RABALE

Checked by

Shraddha Kere
Technical Manager

LDAR Benzene Monitoring Report for IOCL PX-PTA, Panipat

Name of client	M/s Indian Oli Corporation Limited P.O. Panipat Refinery Panipat-132 140 HARYANA
Name of Contractor	NETEL (INDIA) LIMITED Environment Management Services W-408,Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400 701
Nature of job	LDAR Monitoring Report for IOCL PX-PTA, Panipat
Report Period	Month of October,2020.

For NETEL (INDIA) LIMITED

NETEL (INDIA) LIMITED RABALE NAVI MUMBAI

Jayant Meshram
Sr.Manager - EMS Operation

LEAK DETECTION AND REPAIR (LDAR) PROGRAM

BENZENE QUARTERLY REPORT : OCTOBER,2020

PLANTWISE SUMMARY

Sr.No.	Name of the Unit	Date of Monitoring	Total No of Points Monitored	Page No.	No. of Points Where leaks found beyond standard limits	Total Leak (kg/day)
1	PX-1	09/10/2020	198	1 to 6	0	0.029
2	PX-2	09/10/2020	80	6 to 8	0	0.009
3	PTA	10/10/2020	64	8 to 10	0	0.010
Total in Kg/day						0.048
Total in MT/Annum						0.018

Verified by

Surekha Jamdar
Dy.Technical Manager

NETEL (INDIA) LIMITED
RABALE
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Checked by

Shraddha Kere
Technical Manager

)-GDN-166,First Edition, July,1997)

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

METER MODEL NO. :- RT-5001

SR. NO.:- 111102404

EYTHON TECHNOLOGY

ATION ON:- 10.12.2020

E OF CLIBRATION:-09.12.2021

t units of PR & PREP December-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE
1	MSQ	301-PM-206-B	PUMP	78.3	29.12.2020
2	MSQ	301-PM-215-A	PUMP	83.4	29.12.2020
3	MSQ	301-PM-203-A	PUMP	83.7	29.12.2020
4	MSQ	301-PM-212-A	PUMP	89.2	29.12.2020
5	MSQ	301-PM-214-A	PUMP	89.9	29.12.2020
6	MSQ	301-PM-213-A	PUMP	86.8	29.12.2020
7	MSQ	301-PM-211-A	PUMP	86.3	29.12.2020
8	MSQ	301-PM-210-A	PUMP	86.4	29.12.2020
9	MSQ	303-PM-101-A	PUMP	87.4	29.12.2020
10	MSQ	303-PM-201-A	PUMP	85.6	29.12.2020
11	MSQ	303-PM-204-B	PUMP	85.5	29.12.2020
12	MSQ	303-PM-202-A	PUMP	81.7	29.12.2020
13	MSQ	303-PM-206-A	PUMP	78.9	29.12.2020
14	MSQ	301-PM-102	PUMP	82.6	29.12.2020
15	MSQ	303-PM-101-A	PUMP	86.6	29.12.2020
16	MSQ	301-PM-103-B	PUMP	81	29.12.2020
17	MSQ	301-KM-101-B	COMPRESSOR	80.9	29.12.2020
18	MSQ	301-KM-201-A	COMPRESSOR	78.4	29.12.2020
19	MSQ	301-PM-201-A	PUMP	86.7	29.12.2020
1	DHDT	72-K-04-A	FD FAN	82	30.12.2020
2	DHDT	72-PM-005-A	PUMP	87.3	30.12.2020
3	DHDT	72-PM-004-A	PUMP	86.6	30.12.2020
4	DHDT	72-PM-001-A	PUMP	88.3	30.12.2020
5	DHDT	NEAR 72-KM-002-A	COMPRESSOR	83.1	30.12.2020
6	DHDT	72-KM-002-A	COMPRESSOR	86.4	30.12.2020
7	DHDT	72-KM-002-C	COMPRESSOR	85.8	30.12.2020
8	DHDT	UNDER COMPRESSOR	COMPRESSOR	82.4	30.12.2020
9	DHDT	72-PM-003-A	PUMP	91.3	30.12.2020
1	HGU-II	76-P-401-B	PUMP	84.8	30.12.2020
2	HGU-II	76-P-402-A	PUMP	83.6	30.12.2020
3	HGU-II	76-P-301-A	PUMP	86.2	30.12.2020
4	HGU-II	UNDER COMPRESSOR	COMPRESSOR	80.8	30.12.2020
5	HGU-II	76-KM-103-A	COMPRESSOR	84.8	30.12.2020
6	HGU-II	76-KM-103-B	COMPRESSOR	83.7	30.12.2020

7	HGU-II	76-K-01-B	COMPRESSOR	82.5	30.12.2020
8	HGU-II	76-K-105	COMPRESSOR	89.8	30.12.2020
9	HGU-II	77-P-203-A	PUMP	86.7	30.12.2020
10	HGU-II	NEAR 77-K-205	COMPRESSOR	84.6	30.12.2020

OH Physician Ind. Hyginest

-GDN-166,First Edition, July,1997)

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

ETER MODEL NO. :- RT-5001
SR. NO.:- 111102404
:YTHON TECHNOLOGY
,TION ON:- 06.12.2019
OF CLIBRATION:-05.12.2020
t units of PR & PREP November-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE
1	AVU-I	03-PM-CF-103-C	PUMP	84.5	20.11.2020
2	AVU-I	03-P-103-B	PUMP	84.6	20.11.2020
3	AVU-I	03-P-22-B	PUMP	85.7	20.11.2020
4	AVU-I	03-PM-CF-21-A	PUMP	91.5	20.11.2020
5	AVU-I	03-P-102-C	PUMP	87.1	20.11.2020
6	AVU-I	03-PM-CF-61-B	PUMP	89.9	20.11.2020
7	AVU-I	03-PM-CF-16-B	PUMP	91.4	20.11.2020
8	AVU-I	03-PM-CF-15-B	PUMP	91.8	20.11.2020
9	AVU-I	03-PM-CF-5-A	PUMP	96.1	20.11.2020
10	AVU-I	03-PM-CF-04-A	PUMP	95.7	20.11.2020
11	AVU-I	03-P-13-B	PUMP	92.3	20.11.2020
12	AVU-I	04-P-4-A	PUMP	94.1	20.11.2020
13	AVU-I	03-PM-CF-07-B	PUMP	93	20.11.2020
14	AVU-I	03-PM-CF-7-A	PUMP	93.3	20.11.2020
15	AVU-I	04-P-02-B	PUMP	92.7	20.11.2020
16	AVU-I	04-PM-CF-3-D	PUMP	88.3	20.11.2020
17	AVU-I	03-PM-CF-52-B	PUMP	89.8	20.11.2020
18	AVU-I	04-FF-FN-04	FD FAN	87	21.11.2020
19	AVU-I	03-P-9-C	PUMP	91.5	21.11.2020
20	AVU-I	03-PM-CF-14-A	PUMP	92.7	21.11.2020
21	AVU-I	03-PM-CF-14-D	PUMP	89.3	21.11.2020
22	AVU-I	03-PM-CF-8-A	PUMP	90.9	21.11.2020
23	AVU-I	03-PM-CF-8-C	PUMP	92.4	21.11.2020
24	AVU-I	03-PM-CF-6-A	PUMP	92.5	21.11.2020
25	AVU-I	03-PM-CF-17-B	PUMP	91.9	21.11.2020
26	AVU-I	03-PM-CF-35-B	PUMP	90.7	21.11.2020
27	AVU-I	03-PM-CF-36-A	PUMP	90.2	21.11.2020

28	AVU-I	03-PM-CF-11-A	PUMP	89.5	21.11.2020
29	AVU-I	03-PM-CF-01-B	PUMP	91.5	21.11.2020
30	AVU-I	03-PM-CF-01-C	PUMP	91.6	21.11.2020
1	CCRU	KA-RP-301-A	COMPRESSOR	86.6	20.11.2020
2	CCRU	08-PM-CF-201-A	PUMP	87.5	20.11.2020
3	CCRU	08-PM-CF-105-A	PUMP	87.9	20.11.2020
4	CCRU	08-PM-CF-203-B	PUMP	89.7	20.11.2020
5	CCRU	PA-CF-102-A	PUMP	86	20.11.2020
6	CCRU	08-PM-CF-202-C	PUMP	85.1	20.11.2020
7	CCRU	UNDER COMPRESSOR	COMPRESSOR	84.7	20.11.2020
8	CCRU	06-LC-KM-01-D	COMPRESSOR	86.6	20.11.2020
1	Fccu	07-PM-CF-302-B	PUMP	87.5	23.11.2020
2	Fccu	07-PM-CF-212-A	PUMP	84.1	23.11.2020
3	Fccu	07-P-202-A	PUMP	91.2	23.11.2020
4	Fccu	07-P-207-A	PUMP	88.5	23.11.2020
5	Fccu	07-P-202-B	PUMP	89.4	23.11.2020
6	Fccu	07-P-303-A	PUMP	86.5	23.11.2020
7	Fccu	07-P-204-A	PUMP	86.8	23.11.2020
8	Fccu	07-P-205-B	PUMP	88.8	23.11.2020
9	Fccu	07-P-304-A	PUMP	85.9	23.11.2020
10	Fccu	07-P-203-A	PUMP	89.7	23.11.2020
11	Fccu	07-P-311-A	PUMP	86.4	23.11.2020
12	Fccu	07-P-305-A	PUMP	86.3	23.11.2020
13	Fccu	07-P-210-B	PUMP	92.1	23.11.2020
14	Fccu	07-P-210-C	PUMP	83.6	23.11.2020

OH Physician

Ind. Hyginest

-GDN-166,First Edition, July,1997)

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

ETER MODEL NO. :- RT-5001
SR. NO.:- 111102404
:YTHON TECHNOLOGY
.TION ON:- 06.12.2019
OF CLIBRATION:-05.12.2020
rget units of PR & PREP Nov-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE
1	CPP/TPS	nside old control roon	STG Generator	63.7	09.11.2020
2	CPP/TPS	Inner side STG Cabin	STG Generator	60.9	09.11.2020
3	CPP/TPS	Outer side STG Cabin	STG Generator	83.9	09.11.2020

4	CPP/TPS	ear 39-TG-102 Generat	STG Generator	91.9	09.11.2020
5	CPP/TPS	39-TG-102	STG Generator	94.2	09.11.2020
6	CPP/TPS	rrounding STG Genera	STG Generator	89.8	09.11.2020
7	CPP/TPS	New Control Room	STG Generator	63.2	09.11.2020
8	CPP/TPS	Inside VHP Cabin	E.A. Cabin	69.1	09.11.2020
9	CPP/TPS	Outside VHP Cabin	E.A. Cabin	49.5	09.11.2020
10	CPP/TPS	Old Pump House Cabir	U.B. Cabin	57.1	09.11.2020
11	CPP/TPS	lear Pump House Cabi	U.B. Cabin	78.3	09.11.2020
12	CPP/TPS	le New Pump House C	U.B. Cabin	62.3	09.11.2020
13	CPP/TPS	lear Pump House Cabi	U.B. Cabin	78.2	09.11.2020
14	CPP/TPS	Near HRSG/BOP Cabin	HRSG/BOP Cabir	75.5	09.11.2020
15	CPP/TPS	nside HRSG/BOP Cabi	HRSG/BOP Cabir	57.5	09.11.2020

OH Physician

Ind. Hyginest

-GDN-166,First Edition, July,1997)

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

ETER MODEL NO. :- RT-5001

SR. NO.:- 111102404

:YTHON TECHNOLOGY

.TION ON:- 06.12.2019

: OF CLIBRATION:-05.12.2020

et units of PR & PREP October-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE
1	DHDS	52-PA-MT-109	PUMP	84.3	20.10.2020
2	DHDS	52-PA-CF-101-B	PUMP	92.2	20.10.2020
3	DHDS	52-PM-CF-107-B	PUMP	79.4	20.10.2020
4	DHDS	52-PA-CF-104-A	PUMP	87.5	20.10.2020
5	DHDS	52-PA-CF-103-B	PUMP	82.3	20.10.2020
6	DHDS	52-PA-CD-02-B	SURFACECONDENSON	84.9	20.10.2020
7	DHDS	52-KM-RP-101-A	COMPRESSOR	88.3	20.10.2020
1	HGU-I	06-KA-202	ID FAN	85	21.10.2020
2	HGU-I	06-P-202-A	PUMP	91.9	21.10.2020
3	HGU-I	06-P-203-A	PUMP	89	21.10.2020
4	HGU-I	06-P-203-B	PUMP	89.5	21.10.2020
5	HGU-I	06-KA-203-B	COMPRESSOR	81.9	21.10.2020
1	OHCU	05-PM-RC-007-C	PUMP	88.9	21.10.2020
2	OHCU	05-PM-LM-004-A	PUMP	86.1	21.10.2021
3	OHCU	05-PM-CF-503-A	PUMP	89.8	21.10.2022
4	OHCU	05-PM-CF-513-B	PUMP	89.4	21.10.2023

5	OHCU	05-PM-CF-511-B	PUMP	95/95	22.10.2020
6	OHCU	05-PM-CF-301-A	PUMP	95.4/94.3	22.10.2020
7	OHCU	05-PM-CF-501-B	PUMP	93.7/92.9	22.10.2020
8	OHCU	05-PM-CF-504-B	PUMP	91.3	22.10.2020
9	OHCU	05-PM-CF-505-B	PUMP	90.5	22.10.2020
10	OHCU	05-PM-CF-508-A	PUMP	90.3	22.10.2020
11	OHCU	05-PM-CF-502-C	PUMP	89.9	22.10.2020
12	OHCU	05-PM-CF-506-B	PUMP	88.9	22.10.2020
13	OHCU	05-PA-CF-502-A	PUMP	88.6	22.10.2020
14	OHCU	05-PM-CF-510-A	PUMP	88.8	22.10.2020
15	OHCU	FF-FN-505	ID FAN	83.9	22.10.2020
16	OHCU	FF-FN-504-B	FD FAN	84	22.10.2020
17	OHCU	FF-FN-504-B	FD FAN	82.7	22.10.2020
18	OHCU	05-PM-CF-516-B	PUMP	85.8	22.10.2020
19	OHCU	05-KM-RP-001-A	COMPRESSOR	84.7	22.10.2020
20	OHCU	05-KM-RP-001-C	COMPRESSOR	85.2	22.10.2020
21	OHCU	05-KM-RP-001-D	COMPRESSOR	88.4	22.10.2020

OH Physician

Ind. Hyginest

-GDN-166,First Edition, July,1997)

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

ETER MODEL NO. :- RT-5001

SR. NO.:- 111102404

:YTHON TECHNOLOGY

TION ON:- 06.12.2019

OF CLIBRATION:-05.12.2020

: units of PR & PREP September-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE
1	CPP/TPS	89-PM-CF-9906-A	PUMP	83	21.09.2020
2	CPP/TPS	89-PA-CF-9901-C	PUMP	88	21.09.2020
3	CPP/TPS	39-PM-CF-457-B	TURBINE+STEAM	82.1	21.09.2020
4	CPP/TPS	AIR BLOWER	BLOWER	86.7	21.09.2020
5	CPP/TPS	89-BM-CF-613-A	PUMP+BOILER	90	21.09.2020
6	CPP/TPS	39-FD-FM-301-A	FD FAN	82.3	21.09.2020
7	CPP/TPS	39-FD-FM-301-B	FD FAN	83.4	21.09.2020
8	CPP/TPS	39-ID-FM-201-B	ID FAN	81.7	21.09.2020
9	CPP/TPS	39-ID-FM-201-A	ID FAN	86.4	21.09.2020
10	CPP/TPS	89-PM-CF-1203-A	FD FAN	88	21.09.2020
11	CPP/TPS	89-PM-CF-1203-B	FD FAN	88.7	21.09.2020
12	CPP/TPS	39-ID-FM-101-A	ID FAN	85.3	22.09.2020

13	CPP/TPS	39-ID-FM-101-B	ID FAN	84.2	22.09.2020
14	CPP/TPS	GT-5	GENERATOR	91.6	22.09.2020
15	CPP/TPS	GT-2	GENERATOR	91.2	22.09.2020
16	CPP/TPS	GT-4	GENERATOR	90	22.09.2020
17	CPP/TPS	HRSG-BOP-EA CABIN	CABIN	68	22.09.2020
18	CT TPS	29-PM-CF-201-F	CT PUMP	81.2	22.09.2020
19	CT TPS	29-PM-CF-201-C	CT PUMP	81.7	22.09.2020
20	CT TPS	29-PM-CF-201-A	CT PUMP	85	22.09.2020
21	CT TPS	29-PM-CF-201-B	CT PUMP	88.1	22.09.2020
1	SRU-I	17-PM-CF-03-A	PUMP	88.6	29.09.2020
2	SRU-I	17-PM-CF-002-A	PUMP	84.9	29.09.2020
3	SRU-I	17-PM-CF-001-B	PUMP	92.3	29.09.2020
4	SRU-I	17-PM-CF-008-A	PUMP	86.9	29.09.2020
5	SRU-I	18-PM-CF-009-A	PUMP	88.3	29.09.2020
6	SRU-I	18-PM-CF-005-B	PUMP	89.5	29.09.2020
7	SRU-I	18-PM-CF-006-A	PUMP	90.1	29.09.2020
8	SRU-I	21-PM-CF-002-B	PUMP	88.7	29.09.2020
9	SRU-I	21-PM-001-C	PUMP	90.7	29.09.2020
10	SRU-I	21-PM-CF-003-B	PUMP	94.1	29.09.2020
11	SRU-I	21-PM-CF-003-A	PUMP	94.2	29.09.2020
12	SRU-I	21-PM-CF-007-B	PUMP	90.6	29.09.2020
13	SRU-I	21-PM-CF-003-C	PUMP	92	29.09.2020
1	SRU-II	51-PM-104-B	PUMP	89.4	30.09.2020
2	SRU-II	51-PM-109-B	PUMP	89.9	30.09.2020
3	SRU-II	53-PM-103-A	PUMP	88.6	30.09.2020
4	SRU-II	53-PM-102-B	PUMP	90.5	30.09.2020
5	SRU-II	57-PM-102-B	PUMP	96.8/90.8	30.09.2020
6	SRU-II	57-PM-103-B	PUMP	94.4/89	30.09.2020
7	SRU-II	26-K-101-A	Incinerator Fan	89.3	30.09.2020
8	SRU-II	20-PM-102-B	PUMP	89.6	30.09.2020
9	SRU-II	20-PM-101-B	PUMP	83.8	30.09.2020
10	SRU-II	26-PM-101-B	PUMP	88.3	30.09.2020
11	SRU-II	26-PM-103-A	PUMP	90.3	30.09.2020
12	SRU-II	26-PM-102-B	PUMP	91.1	30.09.2020
13	SRU-II	25-K-101	AIR BLOWER	95.3/91.3	30.09.2020
14	SRU-II	57-PM-101-B	PUMP	86	30.09.2020
15	SRU-II	54-PM-102-B	PUMP	84.6	30.09.2020
16	SRU-II	53-PM-101-B	PUMP	85.7	30.09.2020

OH Physician

Ind. Hyginest

-GDN-166,First Edition, July,1997)	
ure Time (In hours)	TLV (in dB)
8	90
4	95

2	100
1	105
1/2 hrs.	110

ETER MODEL NO. :- RT-5001
SR. NO.:- 111102404
:YTHON TECHNOLOGY
.TION ON:- 06.12.2019
OF CLIBRATION:-05.12.2020
et units of PR & PREP August-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE
1	PX-I	203-P-2-A	PUMP	84.2	20.08.2020
2	PX-I	202-PM-06-A	PUMP	85.5	20.08.2020
3	PX-I	201-P-02-B	PUMP	85.9	20.08.2020
4	PX-I	201-PM-08-A	PUMP	86.6	20.08.2020
5	PX-I	201-PM-01-A	PUMP	89.4	20.08.2020
6	PX-I	202-PM-03-A	PUMP	89.9	20.08.2020
7	PX-I	202-P-01-A	PUMP	85.8	20.08.2020
8	PX-I	202-P-02-A	PUMP	85	20.08.2020
9	PX-I	202-P-010-A	PUMP	82.5	20.08.2020
10	PX-I	201-P-10-B	PUMP	90.8	20.08.2020
11	PX-I	201-K-1-A	COMPRESSOR	89.2	20.08.2020
12	PX-I	202-KM-4	COMPRESSOR	84.4	20.08.2020
13	PX-I	202-KM-2-B	COMPRESSOR	85.7	20.08.2020
1	PX-II	209-P-05-B	PUMP	83.1	21.08.2020
2	PX-II	209-PM-06-B	PUMP	87.4	21.08.2020
3	PX-II	204-P-06-B	PUMP	83.8	21.08.2020
4	PX-II	204-P-07-A	PUMP	88	21.08.2020
5	PX-II	204-P-10-A	PUMP	80.1	21.08.2020
6	PX-II	206-FM-03	ID FAN	84.8	21.08.2020
7	PX-II	206-FM-01	FD FAN	84.9	21.08.2020
8	PX-II	206-FM-02	FD FAN	86.3	21.08.2020
9	PX-II	206-PM-02-A	PUMP	88.1	21.08.2020
10	PX-II	206-PM-04-A	PUMP	90	21.08.2020
11	PX-II	206-PM-04-C	PUMP	91.7	21.08.2020
12	PX-II	206-PM-06-A	PUMP	88.2	21.08.2020
13	PX-II	205-PM-05-B	PUMP	88.1	21.08.2020
14	PX-II	205-PM-06-B	PUMP	87.5	21.08.2020
15	PX-II	206-PM-07-A	PUMP	88.1	21.08.2020
16	PX-II	205-P-08-B	PUMP	86.1	21.08.2020
17	PX-II	205-PM-101-A	PUMP	89.3	21.08.2020
18	PX-II	206-P-013-B	PUMP	85.6	21.08.2020
19	PX-II	205-PM-02-A	PUMP	90.3	21.08.2020
20	PX-II	205-PM-02-B	PUMP	87.8	21.08.2020
21	PX-II	205-P-04-B	PUMP	85.7	21.08.2020
22	PX-II	207-PM-01-A	PUMP	92.2	21.08.2020
23	PX-II	205-P-03-A	PUMP	90.9	21.08.2020
24	PX-II	207-PM-03-A	PUMP	86.5	21.08.2020
25	PX-II	207-PM-04-B	PUMP	90.1	21.08.2020
26	PX-II	207-PM-02-B	PUMP	86.5	21.08.2020

27	PX-II	208-P-03-A	PUMP	87.1	21.08.2020
28	PX-II	208-PM-02-A	PUMP	86.6	21.08.2020
29	PX-II	208-P-01-A	PUMP	89.8	21.08.2020
1	PTA	P-125-A	PUMP	82.5	27.08.2020
2	PTA	21-K1-133	COMPRESSOR	85.4	27.08.2020
3	PTA	21-K1-830-A	COMPRESSOR	86.9	27.08.2020
4	PTA	21-P-1-1606-B	PUMP	91.7	27.08.2020
5	PTA	21-P1-615-B	PUMP	87.7	27.08.2020
6	PTA	21-P1-606-A	PUMP	91.4	27.08.2020
7	PTA	21-P1-607-B	PUMP	94.9	27.08.2020
8	PTA	P1-507-A	PUMP	87.3	27.08.2020
9	PTA	21-P1-702-B	PUMP	88.7	27.08.2020
10	PTA	21-P1-2203-A	PUMP	90	27.08.2020
11	PTA	21-P1-2202-A	PUMP	86.9	27.08.2020
12	PTA	21-P1-2210-A	PUMP	92.2	27.08.2020
13	PTA	P1-1410-B	PUMP	85.7	27.08.2020
14	PTA	P1-1816-B	PUMP	84.2	27.08.2020
15	PTA	21-P1-1420-B	PUMP	86.5	27.08.2020
16	PTA	P1-855-B	PUMP	81.3	27.08.2020
17	PTA	21-P1-1251-A	PUMP	88.5	27.08.2020
18	PTA	21-P1-1251-C	PUMP	89.5	27.08.2020
19	PTA	K1-1260	COMPRESSOR	87.8	27.08.2020
20	PTA	P1-1209-C	PUMP	89.1	27.08.2020
21	PTA	P1-1209-B	PUMP	92.1	27.08.2020
22	PTA	P1-1209-A	PUMP	91.5	27.08.2020
23	PTA	P1-1207-A	PUMP	92.3	27.08.2020
24	PTA	FN-1259-A	FD FAN	83.1	27.08.2020
25	PTA	FN-1259-B	FD FAN	84.6	27.08.2020
26	PTA	FN-104-A	FD FAN	84.3	27.08.2020
27	PTA	FN-164-B	FD FAN	85.8	27.08.2020
28	PTA	COMPRESSOR AREA	UNDERCOMPRESSOR	Above 100	27.08.2020

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-GDN-166,First Edition, July,1997)

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

ETER MODEL NO. :- RT-5001

SR. NO.:- 111102404

:YTHON TECHNOLOGY

.TION ON:- 06.12.2019

: OF CLIBRATION:-05.12.2020

rget units of PR & PREP July-2020

S.NO	Plant/Unit	Area	Source	Sound Level(dB)	DATE

1	DCU	78-PM-135-A	PUMP	88.9	20.07.2020
2	DCU	78-PM-148-B	PUMP	89	20.07.2020
3	DCU	78-PM-131-B	PUMP	86.8	20.07.2020
4	DCU	78-PM-112-B	PUMP	95.6	20.07.2020
5	DCU	78-PM-105-B	PUMP	89.5	20.07.2020
6	DCU	78-PM-113-A	PUMP	95.5	20.07.2020
7	DCU	78-PM-124-B	PUMP	89.7	20.07.2020
8	DCU	78-PM-111-A	PUMP	97.2	20.07.2020
9	DCU	78-PM-161-B	PUMP	89.1	20.07.2020
10	DCU	78-PM-103-B	PUMP	94	20.07.2020
11	DCU	78-PM-125-A	PUMP	90.5	20.07.2020
12	DCU	78-PM-104-A	PUMP	88.2	20.07.2020
13	DCU	78-PM-116-A	PUMP	88.8	20.07.2020
14	DCU	78-PM-122-B	PUMP	92.8	20.07.2020
15	DCU	78-PM-109-B	PUMP	89.3	20.07.2020
16	DCU	78-PM-108-B	PUMP	91.3	20.07.2020
17	DCU	78-PM-107-A	PUMP	92.5	20.07.2020
18	DCU	78-PM-110-A	PUMP	94.6	20.07.2020
19	DCU	78-FD-101-B	FD FAN	82	20.07.2020
20	DCU	78-FD-101-A	FD FAN	82.8	20.07.2020
21	DCU	78-FD-102-B	FD FAN	79.6	20.07.2020
22	DCU	78-FD-102-A	ID FAN	81.3	20.07.2020
23	DCU	78-ID-102	ID FAN	82.5	20.07.2020
24	DCU	78-ID-101	ID FAN	83	20.07.2020
1	AVU-II	73-PM-024-A	PUMP	85.8	22.07.2020
2	AVU-II	73-PM-025	PUMP	86.3	22.07.2020
3	AVU-II	73-PM-032-B	PUMP	90.2	22.07.2020
4	AVU-II	73-PM-03-B	PUMP	85.9	22.07.2020
5	AVU-II	73-PM-02-B	PUMP	86.6	22.07.2020
6	AVU-II	73-PM-02-C	PUMP	87.6	22.07.2020
7	AVU-II	73-PM-02-D	PUMP	87.3	22.07.2020
8	AVU-II	73-P-14-A	PUMP	88.2	22.07.2020
9	AVU-II	73-PM-09-B	PUMP	86.8	22.07.2020
10	AVU-II	73-PM-13-A	PUMP	89.4	22.07.2020
11	AVU-II	73-PM-13-C	PUMP	88.2	22.07.2020
12	AVU-II	74-PM-02-B	PUMP	87.8	23.07.2020
13	AVU-II	74-PM-01-A	PUMP	86.7	23.07.2020
14	AVU-II	74-PM-03-B	PUMP	85.8	23.07.2020
15	AVU-II	74-PM-03-A	PUMP	84.3	23.07.2020
16	AVU-II	74-PM-07-A	PUMP	85.9	23.07.2020
17	AVU-II	74-PM-010-A	PUMP	88.5	23.07.2020
18	AVU-II	73-PM-07-B	PUMP	89.1	23.07.2020
19	AVU-II	73-PM-036-B	PUMP	87.7	23.07.2020
20	AVU-II	73-PM-036-A	PUMP	89.8	23.07.2020
21	AVU-II	73-PM-06-B	PUMP	89.1	23.07.2020
22	AVU-II	73-PM-12-A	PUMP	84.9	23.07.2020
23	AVU-II	73-PM-015-B	PUMP	92.2	23.07.2020
24	AVU-II	73-PM-015-A	PUMP	89.4	23.07.2020
25	AVU-II	73-PM-04-B	PUMP	87.1	23.07.2020

26	AVU-II	73-PM-01-D	PUMP	89.9	23.07.2020
27	AVU-II	73-PM-01-C	PUMP	90	23.07.2020
28	AVU-II	73-PM-10-B	PUMP	91.6	23.07.2020
29	AVU-II	73-PM-10-C	PUMP	90.2	23.07.2020
30	AVU-II	73-FN-001-A	FD FAN	83.7	23.07.2020
31	AVU-II	73-FN-001-B	FD FAN	91.8	23.07.2020
1	HCU	75-PM-106-B	PUMP	80.5	27.07.2020
2	HCU	75-PM-101	PUMP	83	27.07.2020
3	HCU	75-PM-106-B	PUMP	89.6	27.07.2020
4	HCU	75-PM-107-B	PUMP	91.9	27.07.2020
5	HCU	75-PM-111-B	PUMP	94.4	27.07.2020
6	HCU	75-PM-104-B	PUMP	95.5	27.07.2020
7	HCU	75-PM-103-B	PUMP	92.2	27.07.2020
8	HCU	75-PM-113-B	PUMP	90.7	27.07.2020
9	HCU	75-PM-114-B	PUMP	94.6	27.07.2020
10	HCU	75-PM-112-B	PUMP	90.8	27.07.2020
11	HCU	75-PM-116-B	PUMP	90.6	27.07.2020
12	HCU	75-PM-115-B	PUMP	88.5	27.07.2020
13	HCU	75-PM-201-B	PUMP	92.3	27.07.2020
14	HCU	75-K-002-A	COMPRESOR	91.8	27.07.2020
15	HCU	75-K-002-C	COMPRESOR	91.2	27.07.2020

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