



# हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड

(भारत सरकार संस्थान) रजिस्टर्ड आफिस 17 जमशेदजी टाटा रोड, मुंबई - 400 020

## HINDUSTAN PETROLEUM CORPORATION LIMITED

(A GOVERNMENT OF INDIA ENTERPRISE) REGISTERED OFFICE: 17 JAMSHEDJI TATA ROAD, MUMBAI-400 020  
CIN : L23201MH1952GOI008858



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Ref: Project-Process/21/VRMP/003

6<sup>th</sup> November, 2021

To,  
Ministry of Environment, Forest and Climate Change,  
Regional Office (SEZ),  
1<sup>st</sup>/2<sup>nd</sup> floor, Handloom Export Promotion Council,  
34, Cathedral Garden Road, Nungambakkam,  
Chennai- 600034

Dear sir,

**Subject:** Expansion of **Visakh Refinery** (from 8.33 MMTPA to 15 MMTPA) at Village Malkapuram, District Visakhapatnam, Andhra Pradesh by M/s HPCL- Environmental Clearance F.No. J-11011/63/2013-IA II (I) dated 11<sup>th</sup> February 2016-Reg.

As per subject Environmental Clearance, HPCL is supposed to send six monthly compliance report for the ongoing project activities.

Please find attached herewith six monthly compliance report of subject Environmental Clearance for the period 1<sup>st</sup> April, 2021 to 30<sup>th</sup> September, 2021 for the Visakh Refinery Modernization Project (VRMP).

Very Truly Yours,

*Baljeet Singh*  
06/11/21  
Baljeet Singh  
DGM- Projects

CC: Zonal office-CPCB, Bangalore

Zonal office- APPCB, Visakhapatnam

**Compliance of Environmental Clearance conditions for the period 1<sup>st</sup> April 2021 to 30<sup>th</sup> September 2021.**

**Project: Expansion of Visakh Refinery from 8.33 to 15.0 MMTPA at Village Malkapuram, Tehsil Visakhapatnam (Urban), District Visakhapatnam, Andhra Pradesh by M/s HPCL**

Reference No.: F. No. J-11011/63/2013-IA-II(I) dated Feb 11, 2016 by Ministry of Environment, Forests and Climate Change, GOI

**A. SPECIFIC CONDIITONS**

S.No.	Particulars	Compliance Status
i.	Compliance to all the environmental conditions stipulated in the environmental clearance letter no. J-11011/22/94-1A 11(1) dated 30 <sup>th</sup> May, 1995, F. No. J-11011/88/96- IA 11 (1) dated 10 <sup>th</sup> April, 1997, J11013/55/2003- IA 11 (I) dated 3 <sup>rd</sup> February, 2004 and J-11011/66/2007-IA 11 (I) dated 7 <sup>th</sup> March, 2008 and J-11011/408/2009-IA 11 (1) dated 2 <sup>nd</sup> September, 2009 shall be satisfactorily implemented and compliance reports submitted to the Ministry's Regional Office at Chennai.	All conditions stipulated in various ECs mentioned are being complied.  The compliance status reports are attached as Anneuxure-1
ii.	M/s HPCL shall comply with new standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186(E) dated 18 <sup>th</sup> March, 2008	HPCL-Visakh Refinery is complying with the new standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186(E) dated 18.03.2008.
iii.	Continuous on-line stack monitoring for SO <sub>2</sub> , NO <sub>x</sub> and CO of all the stacks shall be carried out. Low NO <sub>x</sub> burners shall be installed.	Being complied.  On-line stack monitoring facilities considered to all new VRMP stacks and Low Nox burners are being installed in Furnaces ETC: March 22
iv.	The process emissions [SO <sub>2</sub> , NO <sub>x</sub> , HC (Methane & Non-methane)], VOCs and Benzene from various units shall conform to the standards prescribed under the Environment (Protection) Act. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency of the pollution control device has been achieved.	Being complied with.  The only process emissions from units are through stacks of furnaces and boilers for which online stack analyzers are installed for continuous monitoring. Further, stack emission samples are analyzed for the stipulated parameters by MoEF recognized third party laboratory on

		<p>monthly basis. The values are within the stipulated limits.</p> <p>Copies of MoEF recognized third party laboratory analysis reports of stack emissions for the period of April-2021 to Sept-2021 are attached herewith as Annexure-2.</p>
v.	<p>Leak Detection and Repair programme shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seats of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to. Fugitive emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations.</p>	<p>Being complied with.</p> <p>LDAR Program implemented in existing refinery shall be extended to New facilities under VRMP. HC detectors are considered during detail engineering lay out finalization at strategic locations and are being implemented. ETC : March 22</p>
vi.	<p>SO<sub>2</sub> emissions after expansion from the plant shall not exceed 11.5 TPD and further efforts shall be made for reduction of SO<sub>2</sub> load through use of low sulphur fuel. Sulphur recovery unit with tail gas treating facilities having 99.9 % efficiency shall be provided.</p>	<p>Currently being complied with for the existing refinery by ensuring use of low sulphur fuels (LSHS, desulphurized fuel gas and naphtha), operation of TGTUs in SRUs and Flue Gas Desulphurization (FGD) units in FCCUs.</p> <p>The average SO<sub>2</sub> emissions for the period of April-2021 to September-2021 are 6.78 TPD and are within the stipulated limit of 11.5 TPD.</p> <p>Post expansion also the SO<sub>2</sub> emission limit will be complied.</p> <p>Low Sulphur fuel has been considered for process heating and steam generation.</p> <p>New SRU with 99.9 % efficiency is being implemented. ETC: March 22</p>
vii.	<p>As proposed, record of sulphur balance shall be maintained at the Refinery as part of the environmental data on regular basis. The basic component of sulphur balance include sulphur input through feed (sulphur content in crude oil), sulphur output from Refinery through products, byproduct (elemental sulphur), atmospheric emissions etc.</p>	<p>Being complied .Sulphur balance record in line with existing practice will be complied after expansion also.</p>

viii.	Ambient air quality monitoring stations, [PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , H <sub>2</sub> S, mercaptan, non-methane-HC and Benzene] shall be set up in the complex in consultation with Andhra Pradesh Pollution Control Board, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs and trend analysis w.r.t past monitoring results shall also be carried out. Adequate measures based on the trend analysis shall be taken to improve the ambient air quality in the project area.	The Main VRMP units are being located in the Existing refinery boundary which already has ambient monitoring stations. The requirement is being complied with.
ix.	The gaseous emissions from DG set shall be dispersed through adequate stack height as per CPCB standards. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution. Besides, acoustic enclosure /silencer shall be installed wherever noise levels exceed the limit.	Being complied with. As per DHT EC, the DG sets installed under the project are provided with adequate stack height and acoustic enclosures.
x.	Fresh water requirement from Greater Visakha Municipal Corporation shall not exceed 873 m <sup>3</sup> /hr after expansion and prior permission shall be obtained from the competent authority. Industrial effluent generation will be 902 m <sup>3</sup> /hr and treated in the new state-of-the-art Integrated Effluent Treatment Plant (IETP). Treated effluent shall be fully reused/recycled as make-up water for raw water cooling towers. Domestic sewage shall be treated in sewage treatment plant (STP).	The stipulated condition for fresh water is being complied, as additional water from GVMC is STP water. New State of the art IETP is being installed. ETC: March 22
xi.	Comprehensive water audit to be conducted on annual basis and report to the concerned Regional Office of MEF&CC. Outcome from the report to be implemented for conservation scheme.	Being complied with
xii.	Automatic/online monitoring system (24x7 monitoring devices) for flow measurement and relevant pollutants in the treatment system to be installed. The data to be made available to the respective SPCB, Regional Office of MoEF&CC and in the Company's website.	Being complied with
xiii.	Oil catchers/oil traps shall be provided at all possible locations in rain/ storm water drainage system inside the factory premises.	Being complied with.Oil Catchers are being planned to construct under VRMP are as follows:  1.) Oil Catcher at West side of Syphon area in 23 acres. 2.) Oil Catcher at East side of Syphon area in 23 acres. 3.) Oil Catcher at East of RUF area. 4.) Oil Catcher at South West corner of ATP area.

		Oil Separator at South East corner of Old BOT area
xiv.	Oily sludge shall be disposed off into Coker. Annual Oily sludge generation and disposal data shall be submitted to the Ministry's Regional Office and CPCB.	Coker Unit is not considered in expansion and also not available in existing refinery. Oily sludge is being disposed off as per PCB guidelines
xv.	The Company should strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in October, 1994 and January, 2000. Hazardous waste should be disposed of as per Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 and amended time to time.	Being complied with.
xvi.	The membership of common TSDF should be obtained for the disposal of hazardous waste. Copy of authorization or membership of TSDF should be submitted to Ministry's Regional Office at Bhopal. Chemical/inorganic sludge shall be sent to treatment storage disposal facility (TSDF) for hazardous waste. Spent catalyst shall be sent to authorized recyclers/re-processors.	Being complied with.. Membership of common TSDF is available for the existing refinery. The hazardous waste is being sent to CPCB authorized TSDF site namely Coastal Waste Management Project located at Parwada, Vishakhapatnam. Spent catalysts are being disposed to authorized recyclers/re-processors or TSDF.
xvii.	Proper oil spillage prevention management plan shall be prepared to avoid spillage/leakage of oil/petroleum products and ensure regular monitoring.	Being complied with.
xviii.	Acoustic enclosure / silencer shall be installed wherever it is possible.	Being complied with.
xix.	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Being complied with. Regular health checkups of all the employees in the refinery are being carried out and the records are maintained by Occupational health services department.
xx.	The company should make the arrangement for protection of possible fire and explosion hazards during construction and operation phase. To prevent fire and explosion at oil and gas facility, potential ignition sources shall be kept to a minimum and adequate separation distance between potential ignition sources and flammable materials shall be in place.	Being complied with. Proper Barricading of the project sites is being done from operating process units during construction phase. Hydrocarbon detectors are provided along the barricading to detect any hydrocarbon in vicinity of construction area. Blast proof control rooms arrangements being followed post expansion also.
xxi.	The company shall strictly follow all the recommendation mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	Being complied with.

xxii.	All issues raised during public hearing/consultation shall be satisfactorily implemented and adequate budget provision should be made accordingly.	Budget Provisions made and are being implemented.
xxiii.	Thick greenbelt with suitable plant species shall be developed around unit. Selection of plant species shall be as per the CPCB guidelines.	Being complied with.
xxiv.	All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented	Being complied with.
xxv.	As proposed, Rs. 60 Crore shall be earmarked towards the Enterprise social responsibility based on Public Hearing issues and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Chennai. Implementation of such program shall be ensured accordingly in a time bound manner.	<p>Being complied with. The ESR amount committed so far is Rs. 43.58 Cr for the following activities</p> <ul style="list-style-type: none"> <li>• Construction of Malkapuram Drain, Visakhapatnam.</li> <li>• Purchase of 10 Nos 108 Ambulance Vehicles for saving lives of Citizens.</li> <li>• Construction of conference/Meeting/Audition Hall at MHRM Department Ground Floor, Andhra University, Visakhapatnam.</li> <li>• Providing 3 Nos container Toilet Blocks and one unit of Toilet block i.e. Four Urinals and Two Toilet blocks to GVMC, Visakhapatnam is 0.24 Cr</li> <li>• Providing Modernization of Garbage Transfer Solution at Mudasarlova Visakhapatnam under VRMP to GVMC.</li> <li>• Arranging Road Stoppers and No Parking Boards to Police Dept. for placing them from Scindhia to Sriharipuram.</li> <li>• Release of funds to district Collector (For purchase of critical care equipment, drugs etc for saving lives of citizens during this COVID-19 period).</li> <li>• Release of funds to GVMC commissioner (For distribution of 13,250 nos. food provision kits to migrant and poor comm. costing Rs.750/- each to poor people in the vicinity of Visakh refinery.</li> <li>• Provision of 4 Nos. Mahindra Bolero Vehicles, 2 Nos Mahindra Supro LED Mobile Vans, 2 Nos. Video Walls, One Two Wheeler and One UV Water Plant to the Police Commissionerate, Visakhapatnam</li> <li>• Procurement of Push Carts, House Hold Dustbins 10lts (Small), Pet Bottles Crushing Machines and Try Bins (Wet, Dry Hazardous Waste) being carried out by Greater Visakhapatnam Municipal Corporation (GVMC) under " Swachh Bharat Mission – 2020" and also during COVID-19 period</li> <li>• Financial support for construction of Mandal Praja Parishad Building at Bheemili Constituency area viz. Bheemunipatnam in Visakhapatnam District, Andhra Pradesh.</li> <li>• Financial assistance for Renovation of existing Infrastructure of</li> </ul>

		<p>Visakha Vimala Vidyalayam, BC Road, Pedagantyada and providing 10 Nos. Smart Class Rooms to 2 Nos. Schools viz. Visakha Vimala Vidyalayam, BC Road, Pedagantyada and Visakha Vimala Vidyalayam, Ukkunagaram (5 Smart Class rooms to each school) located in Visakhapatnam.</p> <p>The amount spent for the above activities so far is 34.75 Cr.</p>
xxvi.	<p>Provision shall be made for the housing of construction labor within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, Safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.</p>	<p>Project site is within an operating refinery. Sanitary and medical facilities are made available within the Refinery site. Construction labor are from nearby locations.</p>
<b>B. GENERAL CONDITIONS:</b>		
i.	<p>The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.</p>	<p>Being complied with.</p>
ii.	<p>No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment &amp; Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.</p>	<p>Being complied with.</p>
iii.	<p>The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.</p>	<p>Being complied with.</p>
iv.	<p>The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).</p>	<p>Being complied with in the existing refinery and post expansion.</p> <p>Noise levels monitored by MoEF recognized third party laboratory around the plant area are within the stipulated limits in the refinery. Measures like usage of earmuffs, display of signage boards, restricting the duration of exposure etc., are followed in few plant areas where noise levels are higher than the stipulated limits.</p>
v.	<p>A separate Environmental Management Cell equipped with full-fledged</p>	<p>In existing refinery, a separate Environment management cell is already</p>

	laboratory facilities must be set up to carry out the environmental management and monitoring functions.	available and they are part of Technical Services Department looks after the environmental monitoring functions. The same division will look after VRMP Project facilities also after commissioning.
vi.	Adequate funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures and shall be used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	Fund provision has been envisaged for capital /recurring cost towards environment pollution control measures.
vii.	The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Being complied with.
viii.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	Being complied with.
ix.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM <sub>10</sub> , PM <sub>25</sub> , SO <sub>2</sub> , NO <sub>x</sub> , HC (Methane & Non-methane), VOCs (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Being complied with.
x.	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry   CPCB / SPCB shall monitor the stipulated conditions.	Being complied with.
xi.	The environmental statement for each financial year ending 31' March in Form-V as is mandated to be submitted by the project proponent to the	Being complied with. The latest Environmental Statement of existing refinery for 2020-21 was

	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 conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	submitted to APPCB vide letter dated 16.09.2021.
xii.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.	Complied. Advertisement regarding grant of Environmental Clearance was published on Feb 17, 2016 (i.e. within seven days from the date of issue of the clearance letter Feb 11, 2016) in "Eenadu" and "The Hindu". Copy of the same forwarded to the MoEFCC Regional office, Chennai vide letter dated May 26 , 2016
xiii.	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 commencing the land development work.	Project approved vide HPCL board Meeting held on July 20, 2016. The Land development of Project unit site started in July 2016.

## Compliance to VREP EC J-11011/22/94-IA II (I) dated 30.05.1995

Annexure-1

S.No	EC Conditions	Compliance by HPCL-VR
1	The project authority must strictly adhere to the stipulations made by the A.P. Pollution Control board and the State Government.	Refinery is complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO /2021 dated 09.03.2021 valid till 31.12.2025.
2	Any expansion of the plant, either with the existing product mix or new product(s) or storage facilities etc. /can be taken up only with the prior proposal of this Ministry.	Noted and is complied.
3	The total emission of SO <sub>2</sub> from the entire refinery should be brought down from 9 TPD to 7.5 TPD in a phased manner and action plan for the same should be submitted to the Ministry. Until the SO <sub>2</sub> of 7.5 TPD is achieved in the near future, the total emission of SO <sub>2</sub> would not exceed the earlier prescribed limit of 9 TPD.	Subsequent to industry expansion, the SO <sub>2</sub> emission limit was revised to 11.5 TPD vide EC J11011/88/96-IA-II (I) dated 10.04.97. The same limit is stipulated in the latest EC dated 11.02.2016.  The average SO <sub>2</sub> emissions for the period of April-2021 to September-2021 is 6.78 TPD and are within the stipulated limit of 11.5 TPD.
4	The gaseous emissions from various process units should conform to the standards prescribed by the concerned authorities/from time to time. At no time, the emission level should go beyond the stipulated standards. In the event of failure of any pollution control system(s) adopted by the unit, the respective unit should be shut down immediately and should not be restarted until the control measures are rectified to achieve the desired efficiency.	Process emissions are through stack flue gases only and within the prescribed standards. Online connectivity of stack emission analyzers established with CPCB an APPCB servers. Analysis of stack flue gases is being carried out by MoEF recognized third party laboratory on monthly basis and being submitted to APPCB as per the requirement.
5	Sulphur recovery units with more than 99% efficiency for sulphur recovery should be provided.	Sulphur Recovery Units (SRU) with >99% Sulphur recovery efficiency are installed in the refinery.
6	Low NO <sub>x</sub> burners to avoid excessive formulation of NO <sub>x</sub> should be provided.	All major furnaces are provided with low NO <sub>x</sub> burners.

## Compliance to VREP EC J-11011/22/94-IA II (I) dated 30.05.1995

S.No	EC Conditions	Compliance by HPCL-VR
7	Adequate ambient air quality monitoring stations should be set up in the refinery area in the down wind direction as well as where maximum ground level concentrations of SO <sub>2</sub> , NO <sub>x</sub> , HC and SPM are anticipated. The monitoring network should be decided based on the modelling exercise to represent the short term GLCs. A mobile van with adequate facilities to monitor ambient air quality outside the refinery premises should also be planned.	Based on predominant wind direction, , three CAAM stations are installed in the refinery to monitor ambient air quality parameters w.r.t SO <sub>2</sub> , NO <sub>x</sub> , PM10, PM2.5, CO, Benzene, Ammonia and Ozone. HPCL-Visakh Refinery is regularly carrying out Ambient air quality monitoring outside the refinery (Malkapuram) thru a MOEF recognized third party Laboratory once in a month.
8	Fugitive emissions of HC from storage tanks, crude oil tanks etc., should be minimised by adopting necessary measures.	Crude and light hydrocarbon products are stored in floating roof tanks with secondary seals to minimize vapor space and hence hydrocarbon emissions from storage tanks are minimized. Hydrocarbon detectors are provided in the plant and storage tank areas.
9	Adequate facilities for monitoring the fugitive emissions should be planned.	Leak Detection and Repair (LDAR) survey is being carried out regularly by MoEF recognized third party laboratory for monitoring fugitive emissions.
10	The stacks should be of appropriate design and height and should be attached to pollution control systems wherever necessary. Height of stacks attached to crude oil furnace and waste heat boiler should be increased to the maximum height as permitted by the Civil Aviation Department. Continuous on-line stack monitoring equipment for measurement of SO <sub>2</sub> & NO <sub>x</sub> should be installed. The monitored data should be submitted to SPCB every 3 months and every 6 months to the Ministry of Env.& Forest for review.	Process furnaces, boilers and gas turbines are provided with tall stacks (about 60 m) for better dispersion of flue gases. Online connectivity of stack emission analyzers established with CPCB an APPCB servers. Analysis of stack flue gases is being carried out by MoEF recognized third party laboratory on monthly basis and being submitted to APPCB as per the requirement.

## Compliance to VREP EC J-11011/22/94-IA II (I) dated 30.05.1995

S.No	EC Conditions	Compliance by HPCL-VR												
11	The existing waste water treatment facilities should be suitably augmented so as to meet the MINAS standards.	<p>There are three Effluent Treatment Plants as mentioned below to treat the effluents in the refinery complex:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Plant Name</th> <th style="text-align: center;">Design Capacity</th> <th style="text-align: center;">Final disposal</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">ETP -1</td> <td style="text-align: center;">135 m<sup>3</sup>/hr</td> <td style="text-align: center;">To sea through open channel</td> </tr> <tr> <td style="text-align: center;">ETP-II</td> <td style="text-align: center;">325 m<sup>3</sup>/hr</td> <td style="text-align: center;">To ETP IV</td> </tr> <tr> <td style="text-align: center;">ETP-IV</td> <td style="text-align: center;">180 m<sup>3</sup>/hr</td> <td style="text-align: center;">To sea through open channel</td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal	ETP -1	135 m <sup>3</sup> /hr	To sea through open channel	ETP-II	325 m <sup>3</sup> /hr	To ETP IV	ETP-IV	180 m <sup>3</sup> /hr	To sea through open channel
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ETP -1	135 m <sup>3</sup> /hr	To sea through open channel												
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ETP-IV	180 m <sup>3</sup> /hr	To sea through open channel												
12	Recycling/Reuse of the treated effluent to the maximum extent possible should be planned.	Post implementation of current expansion project (VRMP), the treated water will be recycled 100% through Integrated Effluent Treatment Plant (IETP).												
13	Adequate number of influent and effluents quality monitoring stations have to be planned with adequate facilities especially for the parameters like phenols, sulphides / oil and grease, suspended solids BOD, COD, PH and flow.	<p>Online connectivity of liquid effluent analyzers established with APPCB and CPCB servers.</p> <p>The daily monitoring of the influent and effluent parameters like phenols, sulphides, O&amp;G, suspended solids, BOD, COD, pH is being carried out in the Quality Control laboratory of Refinery.</p> <p>Flow meters are provided on influent and treated effluent lines.</p> <p>Further, the treated effluent quality is being monitored by MoE&amp;F recognized Third Party laboratory on monthly basis.</p>												

## Compliance to VREP EC J-11011/22/94-IA II (I) dated 30.05.1995

S.No	EC Conditions	Compliance by HPCL-VR
14	System to recover oil from the oily sludge and incinerator producing the residues should be provided.	Oily sludge in the refinery is being processed for recovery of oil. The recovered oil is reprocessed. The residual oily sludge is bio-remediated by Oil zapper bacteria of M/s OTBL and not incinerated. Hence, incinerator is not required.
15	Hazardous substances and solid wastes should be handled stored and disposed off as per the Hazardous Wastes (Management and Handling) Rules, 1989 of the EPA 1986.	Hazardous wastes are being handled, stored and disposed of in accordance with the Hazardous & Other Waste Management Rules, 2016.
16	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing acoustic hoods, silencers etc. on all the sources of noise generation.	Noise monitoring is carried out on monthly basis at various locations in the refinery. The noise levels are within the standards for most of the locations. Measures like usage of earmuffs, display of signage boards, restricting the duration of exposure etc., are followed for high noise level areas.
17	The density of green belt within the Plant premises should be increased using native plant species in consultation with the local DFO.	<p>Existing green belt area is 40 acres. As further development of green belt in process plant area is not recommended due to safety issues, HPCL-VR has taken up plantation of saplings in various locations of Visakhapatnam in 4 phases under Green Visakha program initiated by the Parliamentary Standing Committee on Science &amp; Technology, Environment &amp; Forests and completed the target plantation of 6,50,000 saplings in December 2016.</p> <p>In addition to this, HPCL-VR has taken up plantation of saplings under Vanam Manam program initiated by Andhra Pradesh State Government and completed the target plantation of 10,000 saplings in Jan 2019.</p>

## Compliance to VREP EC J-11011/22/94-IA II (I) dated 30.05.1995

S.No	EC Conditions	Compliance by HPCL-VR
18	Various socio-economic schemes should be initiated by HPCL, so to improve the socio economic environment in the region.	Various developmental activities are taken up in schools & hospitals in the region under Corporate Social Responsibility (CSR) program.
19	Recommendation made by NEERI in the EMP should be implemented and action plan for implementation of the same should be submitted to the Ministry for review.	NEERIs recommendations and action plans were submitted to MoEF&CC. Among the NEERI recommendations, one recommendation couldn't be complied.  Effluent discharge through a single outlet was recommended by NEERI. However, 2 outlets are provided as the refinery is in a low-lying area with respect to MSL. The 2 outlets are joined together outside the boundary of the refinery into a single channel outlet outside the Refinery
20	Necessary approvals from the Chief Explosives directorate, inspector of factories, Fire Safety Inspector etc. should be obtained and copies of approval letters, be made available to this Ministry for the storages and facilities curtaining to highly inflammable materials.	Necessary approvals are in place.
21	The project authority should 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.	Refinery has a dedicated quality control laboratory for analysis of environmental parameters under the supervision of competent technical personnel.

## Compliance to VREP EC J-11011/22/94-IA II (I) dated 30.05.1995

S.No	EC Conditions	Compliance by HPCL-VR
22	An Environmental Management Cell should be established with suitably qualified People to carry out various functions and should be set up under the control or senior executive who will report directly to the head of the organization.	<p>Under Technical Services Department, Process Safety &amp; Environment (PS&amp;E) is a separate division, which looks after the Environmental and Process safety functions.</p> <p>This division reports to Head – Technical who in turn reports to Executive Director of the refinery.</p>
23	Medical surveillance of workers should be done regularly to avoid possibility of contracting occupational diseases against the workers engaged in the various plants and record maintained.	Regular health check-ups of all the employees in the refinery are being carried out and the records are maintained in the Occupational Health Centre.
24	The project authorities should carry out a water balance study at the proposed site and submit the report within 12 months.	Water balance study was carried out and the report was submitted to the Ministry.
25	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.	Noted and complied.

**Compliance to EC No.J-11011/88/96-IA-II (I) dated 10.04.1997**

S.No	EC Conditions	Compliance by HPCL-VR												
1	The project authority must-strictly adhere to the stipulations laid down by the Andhra Pradesh State Pollution Control Board and the State Govt	Refinery is complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO /2021 dated 09.03.2021 valid till 31.12.2025.												
2	No expansion or modernization of the plant should be carried out without prior approval of the Ministry of Environment and Forests	Noted and is complied.												
3	The total SO <sub>2</sub> emission from Visakh Refinery including DHDS project should not exceed the norm of 11.5 TPD.	The average SO <sub>2</sub> emissions for the period of April-2021 to September-2021 is 6.78 TPD and are within the stipulated limit of 11.5 TPD.												
4	The existing ETP should be adequately augmented (if required) to accommodate the additional effluent from the DHDS project before commissioning project so as ensure the treated effluent meets the MINAS	<p>There are three Effluent Treatment Plants as mentioned below to treat the effluents in the refinery complex:</p> <table border="1"> <thead> <tr> <th>Plant Name</th> <th>Design Capacity</th> <th>Final disposal</th> </tr> </thead> <tbody> <tr> <td>ETP -1</td> <td>135 m<sup>3</sup>/hr</td> <td>To sea through open channel</td> </tr> <tr> <td>ETP-II</td> <td>325 m<sup>3</sup>/hr</td> <td>To ETP IV</td> </tr> <tr> <td>ETP-IV</td> <td>180 m<sup>3</sup>/hr</td> <td>To sea through open channel</td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal	ETP -1	135 m <sup>3</sup> /hr	To sea through open channel	ETP-II	325 m <sup>3</sup> /hr	To ETP IV	ETP-IV	180 m <sup>3</sup> /hr	To sea through open channel
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5	Time bound Action Plan for disposal of Oil Sludge/recovery of oil and design details of the solid waste disposal pit should be furnished to the Ministry within a period of 3 months	Oily sludge in the refinery is being processed for recovery of oil. The recovered oil is reprocessed. The residual oily sludge is bio-remediated by Oil zapper bacteria of M/s OTBL.												
6	SRU having an efficiency of more than 99% should be installed	Sulphur Recovery Units (SRU) with >99% Sulphur recovery efficiency are installed in the refinery.												

S.No	EC Conditions	Compliance by HPCL-VR
7	The ground water quality should be regularly monitored and report submitted to the Ministry every six months.	Ground water quality monitoring is being carried out by MoEF recognized third party laboratory once in every six months and the reports are provided to statutory authorities during inspection.
8	Time Bound Action Plan to implement the conditions stipulated by the Ministry while according environmental clearance for the refinery complex should be submitted to the Ministry within 3 months along with details of funds allocated for implementing the above.	Complied

**EC Compliance for No.J-11012/55/2003-IA-(I) dated 03.02.2004**

S.No	EC Conditions	Compliance by HPCL-VR										
1	The company shall comply with all the conditions stipulated by this Ministry vide its letter no. J-11011/88/96-IA-11 (I) dated 10th April, 1997.	Complied.										
2	Specific limits stipulated for SO <sub>2</sub> (11.5 TPD), HC (2.5 TPD), SPM (1.1 TPD) and NO <sub>x</sub> (6.5 TPD) at para 2 should be strictly complied.	<p>Complied.</p> <p>Average emission loads for the period April'21 to Sept'21 are provided below:</p> <table border="0" data-bbox="1150 592 1381 797"> <tr> <td>Emissions</td> <td>TPD</td> </tr> <tr> <td>SO<sub>2</sub></td> <td>6.78</td> </tr> <tr> <td>SPM</td> <td>0.74</td> </tr> <tr> <td>HC</td> <td>0.65</td> </tr> <tr> <td>NO<sub>x</sub></td> <td>2.98</td> </tr> </table>	Emissions	TPD	SO <sub>2</sub>	6.78	SPM	0.74	HC	0.65	NO <sub>x</sub>	2.98
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NO <sub>x</sub>	2.98											
3	The fresh water consumption should be pegged at 523 m <sup>3</sup> /hr after the proposed modernization. The additional water required, if any, should be met through recycling/reuse of treated effluent.	<p>Fresh water consumption is within the stipulated limit of 812 m<sup>3</sup>/hr as per the latest CFO dated 09.03.2021.</p> <p>Post implementation of current expansion project (VRMP), the treated water will be recycled 100% through Integrated Effluent Treatment Plant (IETP).</p>										
4	The industry shall implement all the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) regarding air pollution, waste water and solid waste management and oil spill response facilities at Coastal refineries.	Complied with.										
5	All the recommendations made in the Risk Analysis Report should be complied with during design, construction and operation stages to contain the risk within the plant boundary.	Complied with.										
6	No further modernization of the project should be carried out without prior permission of the Ministry.	Noted.										

<b>S.No</b>	<b>EC Conditions</b>	<b>Compliance by HPCL-VR</b>
7	Implementation of the project vis-à-vis Environmental management / risk mitigation measures should be reported to the Ministry / Regional Office / State Pollution Control Board regularly on a six-monthly basis.	Being Complied With

## EC Compliance for LPG Mounded Storage dated 07.03.2008

CoS. No	EC Conditions	Compliance by HPCL-VR
1.	All the safety and security systems provided in Risk Analysis Report for the Project shall be implemented. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the Environmental Management Plan and Risk Analysis Report submitted to the Ministry vide letter no. CEE/07/MLVR/056 dated 19th October 2007.	Complied. The status of compliance to the recommendations made in the Risk Analysis Report as provided by the PP is enclosed as Annexure.
2.	There shall be no solid waste or release of pollutants.	There is no solid waste generation from the LPG / Propylene Mounded Storage facility.
3.	Regular Ambient Air Quality Monitoring shall be carried out for VOC, HC and LPG, besides other parameters in the Work Zone Area and ambient air in and around the Plant. The location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required.  It will be ensured that at least one monitoring station is set up in up-wind & in down-wind direction along with those in other directions. Data shall be submitted to MoEF, CPCB and TNPCB.	Based on predominant wind direction,, three CAAM stations are installed in the refinery to monitor ambient air quality parameters w.r.t SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , CO, Benzene, Ammonia and Ozone. Online connectivity of these ambient air quality parameters is established with CPCB and APPCB.  Further, manual monitoring of ambient air quality is being carried out by MoEF recognized third party laboratory on monthly basis at the CAAMS locations.
4.	Fugitive emissions in the work zone environment of storage area shall be regularly monitored. The emissions shall conform to the limits imposed by the State Pollution control Boards/Central Pollution Control Board.	Hydrocarbon detectors have been provided in the plant and storage tank areas. Leak Detection And Repair (LDAR) program is in place for the existing refinery where in LPG mounded bullets are also covered.
5.	There shall be no increase in the pollution load for any parameter from the expansion project.	Complied. There is no increase in pollution due to Mounded storage Project.
6.	There shall be no additional water requirement for the process except service water of 5,000 KL for commissioning and testing provisions for appropriate storage and treatment for firefighting water shall be provided.	There is no additional water consumption due to Mounted storage Project and adequate firefighting facilities are in place.

## EC Compliance for LPG Mounded Storage dated 07.03.2008

CoS. No	EC Conditions	Compliance by HPCL-VR
7.	Noise level will be within the approved limits of 80 dB (A).The practice of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hr time weighted average of 90 db (A).	Noise monitoring is carried out on monthly basis at various locations in the refinery. The noise levels are within the standards for most of the locations. Measures like usage of earmuffs, display of signage boards, restricting the duration of exposure etc., are followed for high noise level areas.
8.	Green belt shall be provided to mitigate the effects of fugitive emissions all around the plant in a minimum of 33% of the plant area in consultation with DFO as per CPCB guidelines.	Existing green belt area is 40 acres. As further development of green belt in process plant area is not recommended due to safety issues, HPCL-VR has taken up plantation of saplings in various locations of Visakhapatnam in 4 phases under Green Visakha program initiated by the Parliamentary Standing Committee on Science & Technology, Environment & Forests and completed the target plantation of 6,50,000 saplings in December 2016.  In addition to this, HPCL-VR has taken up plantation of saplings under Vanam Manam program initiated by Andhra Pradesh State Government and completed the target plantation of 10,000 saplings in Jan 2019.
9.	The Company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	Rainwater harvesting facility provided for the Mounded storage facility.

## EC Compliance for LPG Mounded Storage dated 07.03.2008

CoS. No	EC Conditions	Compliance by HPCL-VR
10	The project authorities shall strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989, as amended in 2000 and the Public Liability Insurance Act for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commissioning of the expansion project. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	The approval from Chief Controller of Explosives obtained for the Mounded storage facility. Updated Emergency Response and Disaster Management Plan (ERDMP) is in place to meet any emergency situation. Corporation has a comprehensive valid PLI policy No. 111700/48/2022/9 dated 31.03.2021. Visakh Refinery is also included in the policy.
	<b>General Conditions:</b>	
1.	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Refinery is complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO/2021 dated 09.03.2021 valid till 31.12.2025.
2.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Noted and is complied.
3.	The project authorities shall strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and as amended from time to time. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. shall be obtained. All Transportation of Hazardous Chemicals shall be as per the MVA, 1989.	Necessary approvals from Chief Inspector of Factories and Chief Controller of Explosives etc are in place and complying with the MSIHC Rules,1989 and Motor Vehicle rules.
4.	On-site and Off-site emergency preparedness plans shall be prepared. Approval from the nodal agency shall be obtained before commissioning the project.	ERDMP (Emergency Response and Disaster Management Plan) which is certified by PNGRB (Petroleum and Natural Gas Regulatory Board) approved third party is in place.
5.	The overall noise levels in and around the plant area shall be limited within the prescribed standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to	Noise monitoring is carried out on monthly basis at various locations in the refinery. The noise levels are within the standards for most of the locations. Measures like usage of

## EC Compliance for LPG Mounded Storage dated 07.03.2008

CoS. No	EC Conditions	Compliance by HPCL-VR
	the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	earmuffs, display of signage boards, restricting the duration of exposure etc., are followed for high noise level areas.
6.	Proper House Keeping and adequate occupational health programs shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for at least 10 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	Housekeeping in the Refinery is ensured on continuous basis. Regular health check-ups of all the employees in the refinery are being carried out and the records are maintained in the Occupational Health Centre. Leak Detection And Repair (LDAR) program is a continuous activity, which is taken up for identification of the sources of fugitive emissions and control of the leaks through inspection, repair and maintenance schedules.
7.	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 on safe handling of hazardous chemicals is imparted to refinery employees as part of Emergency Preparedness training program. Regular health check-ups of all the employees in the refinery are being carried out and the records are maintained in the Occupational Health Centre.
8.	Usage of PPEs by all employees / workers shall be ensured.	Usage of PPE is mandatory for all employees / workers in operating areas.
9.	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	Under Technical Services Department, Process Safety & Environment (PS&E) is a separate division, which looks after the Environmental and Process safety functions.  This division reports to Head – Technical who in turn reports to Executive Director of the refinery.  Refinery has a dedicated quality control laboratory for analysis of environmental parameters.

## EC Compliance for LPG Mounded Storage dated 07.03.2008

CoS. No	EC Conditions	Compliance by HPCL-VR
10	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Complied.
11	The project proponent shall have a scheme for social upliftment in the surrounding villages with reference to contribution in road construction, education of health centers, sanitation facilities, drinking water supply, community awareness and employment to local people whenever and wherever possible both for technical and non-technical jobs. CSR activities will be undertaken by involving local villages and administration.	Various developmental activities are taken up in schools & hospitals in the region under Corporate Social Responsibility (CSR) program.
12	The implementation of the project vis-a-vis environmental action plans shall be monitored by concerned Regional Office of the Ministry/States Pollution Control Boards/Central Pollution Control Board. A six monthly compliance status report shall be submitted to monitoring agencies and displayed on the Website of the Company.	Complied.
13	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry.	Complied
14	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land	Complied

## EC Compliance for LPG Mounded Storage dated 07.03.2008

CoS. No	EC Conditions	Compliance by HPCL-VR
	development work as well as the commissioning of the project will be informed to the Ministry and its Regional Office.	
15	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	Noted
16	The Ministry reserves the right to stipulate additional conditions if found necessary. The company will implement these conditions in a time bound manner.	Noted
17	The above conditions will be enforced inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act 1974 , the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act 1986, Public Liability Insurance Act 1991, Hazardous Waste (Management & Handling) Rules, 1989/2003 and Manufacture , Storage and Import of Hazardous Chemicals 1989/2000 along with their amendments and rules.	Noted

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
	<b>A. Special Conditions:</b>	
1	M/s HPCL shall comply with the stipulations made in the environmental clearance accorded vide Ministry's vide letter No. J-11013/55/2003-IA II (I), dated February 03, 2004 for Clean Fuels Project and expansion from 7.5 to 10.0 MMTPA	Complied.
2	M/s HPCL shall comply with new standards/ norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186(E) dated 18 <sup>th</sup> March 2008.	Being complied with.
3	The project authorities shall submit a feasible plan which will be followed to ensure that SO <sub>2</sub> emission from the refinery does not exceed the stipulated figure of 11.5 TPD at any time	<p>Being complied with.</p> <p>The measures adopted to contain the SO<sub>2</sub> emissions are as below:</p> <ul style="list-style-type: none"> <li>• A sulphur recovery unit of 300 TPD capacity along with the tail Gas treatment unit designed to achieve &gt;99.5% sulphur recovery.</li> <li>• Installation of additional FG ATU to sweeten the fuel gas for firing in the process furnaces and boilers.</li> <li>• Usage of treated Naptha in CPP.</li> <li>• Installation of FGD unit.</li> </ul> <p>The average SO<sub>2</sub> emissions for the period of April-2021 to September-2021 is 6.78 TPD and are within the stipulated limit of 11.5 TPD.</p>
4	The company shall undertake .measures for control of dust emission during construction and traffic congestion	Necessary measures for controlling the traffic congestion are being taken. Various dust mitigation measures like water sprinkling, higher barricades around project sites, usage of RMC material etc., were taken up to control dust emissions.
5	Efforts shall be made to use gas as a fuel in the furnaces to the maximum extent possible	Fuel gas distribution system has been designed to achieve this objective and also strict operational

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
		instructions are in place to maximize fuel gas consumption.
6	The process emissions (SO <sub>2</sub> , NO <sub>x</sub> , HC, VOCs and Benzene) from various units shall conform to the standards prescribed by the AP State Pollution Control Board from time to time. At no time, the emission levels should go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved	Process emissions are only through stack flue gases. Online connectivity of stack emission analyzers established with CPCB an APPCB servers. Analysis of stack flue gases is being carried out by MoEF recognized third party laboratory on monthly basis and being submitted to APPCB as per the requirement.
7	Ambient air quality monitoring stations, (SPM, SO <sub>2</sub> , NON, H <sub>2</sub> S, Mercaptan, NMHC and Benzene) should be set up in the Refinery complex in consultation with SPCB, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs. Continuous on-line stack monitoring equipment should be installed for measurement of SO <sub>2</sub> , NO, CO and CO <sub>2</sub> . Low NO <sub>x</sub> burners should be installed with online analyzers	<p>Based on predominant wind direction, three CAAM stations are installed in the refinery to monitor ambient air quality parameters w.r.t SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, Benzene, Ammonia and Ozone. Online connectivity of these ambient air quality parameters is established with CPCB and APPCB. H<sub>2</sub>S, Hydrocarbon and Mercaptan analyzers are also available in three CAAM stations.</p> <p>Further, manual monitoring of ambient air quality is being carried out by MoEF recognized third party laboratory on monthly basis at the CAAMS locations.</p> <p>Online connectivity of stack emission analyzers established with CPCB an APPCB servers. Low NO<sub>x</sub> burners are installed for all the major furnaces.</p>
8	The proponent shall upload the status of compliance of the stipulated EC conditions, including monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria	Shall be complied.

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR												
	pollutant namely; SPM, RSPM, SO <sub>2</sub> , NO <sub>x</sub> (Ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at the convenient location near the main gate of the Company in the public domain													
9	Monitoring of fugitive emissions should be carried out as per the guidelines of CPCB by fugitive emission detectors and reports should be submitted to the Ministry's Regional Office at Bangalore. For control of fugitive emission all unsaturated hydrocarbon will be routed to the flare system and the flare system should be designed for smoke less burning	Leak Detection and Repair (LDAR) survey is being carried out regularly by MoEF recognized third party laboratory for monitoring fugitive emissions. The existing hydrocarbon flare system is designed for smokeless flaring.												
10	Fugitive emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage should also be provided at strategic locations. The company should use low sulphur fuel to minimize SO <sub>2</sub> emission. Sulphur recovery units should have efficiency of 99.5 %. Leak Detection and Repair programme should be implemented to control HC/VOC emissions. Work zone monitoring should be carried out near the storage tanks besides monitoring of HCs/VOCs in the work zone	Hydro carbon detectors are provided in the plant and storage tank areas. Leak Detection And Repair (LDAR) program is in place for the existing refinery. Crude and light hydrocarbon products are stored in floating roof tanks with secondary seals to minimize vapor space and hence hydrocarbon emissions. Sulphur Recovery Units (SRU) with >99% Sulphur recovery efficiency are installed in the refinery.												
11	The waste water should be treated in the waste water treatment plant and the treated effluent should meet the prescribed standards. Efforts should be made to recycle the treated effluent to achieve zero discharge	There are three Effluent Treatment Plants as mentioned below to treat the effluents in the refinery complex: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Plant Name</th> <th style="text-align: center;">Design Capacity</th> <th style="text-align: center;">Final disposal</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">ETP -1</td> <td style="text-align: center;">135 m<sup>3</sup>/hr</td> <td style="text-align: center;">To sea through open channel</td> </tr> <tr> <td style="text-align: center;">ETP-II</td> <td style="text-align: center;">325 m<sup>3</sup>/hr</td> <td style="text-align: center;">To ETP IV</td> </tr> <tr> <td style="text-align: center;">ETP-IV</td> <td style="text-align: center;">180 m<sup>3</sup>/hr</td> <td style="text-align: center;">To sea through open channel</td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal	ETP -1	135 m <sup>3</sup> /hr	To sea through open channel	ETP-II	325 m <sup>3</sup> /hr	To ETP IV	ETP-IV	180 m <sup>3</sup> /hr	To sea through open channel
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## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
		Stripped sour water from process units is recycled to the maximum possible extent for use as wash water. In order to maximize recycle, a new system is being implemented under current expansion project (Visakh Refinery Modernization Project). Post implementation of current modernization project, the water will be recycled 100% through IETP.
12	The project authorities must strictly comply with the rules and regulation with regard to handling and disposal of Hazardous Wastes (Management, Handling and Trans Boundary Movement) Rules, 1989/ 2003/ 2008 wherever applicable. Authorization from the State Pollution Control Board must be obtained for collections/ treatment/ storage/ disposal of hazardous wastes	Hazardous wastes are being handled, stored and disposed off in accordance with the Hazardous & Other Waste Management Rules, 2016.
13	The company should strictly follow all the recommendation mentioned in the charter on Corporate Responsibility for Environmental Protection (CREP) for the oil refineries	Complied.
14	The Company should take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. At place of ground flaring, the overhead flaring stack with knockout drums should be installed to minimize gaseous emissions during flaring	<p>The measures adopted by the PP to prevent fire hazards are as below:-</p> <ul style="list-style-type: none"> <li>• Hydrocarbon detectors are provided.</li> <li>• Elaborative fire water network &amp; other equipment exist inside refinery to handle fire hazards.</li> <li>• Overhead flare stack with KO drums is provided.</li> </ul> <p>The following systems are in place :</p> <ul style="list-style-type: none"> <li>• Oil Spill response plan (inside refinery) along with necessary equipment is in place.</li> <li>• Operational control procedures / Departmental standing Instructions (DSIs) / Plant Daily Instructions (PDIs)</li> </ul>

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
15	To prevent fire and explosion at Oil and Gas facility, potential ignition sources should be kept to a minimum and adequate separation distance between potential ignition sources and flammable material should be in place	Oil Industry Safety Directorate guide lines (OISD-STD-118) are being followed for unit installations and inter distance between equipment.
16	Onsite and offsite DMP shall be updated to cover the additional facilities and the updated plans shall be implemented	ERDMP (Emergency Response and Disaster Management Plan) which is certified by PNGRB (Petroleum and Natural Gas Regulatory Board) approved third party is in place.
17	Occupational health surveillance of worker should be done on a regular basis and records maintained as per the Factory Act	Regular health check-ups of all the employees in the refinery are being carried out and the records are maintained in the Occupational Health Centre.
18	Greenbelt should be developed to mitigate the effect of fugitive emission all around the plant in a minimum 33% plant area in consultation with DFO as per CPCB guidelines	Existing green belt area is 40 acres. As further development of green belt in process plant area is not recommended due to safety issues, HPCL-VR has taken up plantation of saplings in various locations of Visakhapatnam in 4 phases under Green Visakha program initiated by the Parliamentary Standing Committee on Science & Technology, Environment & Forests and completed the target plantation of 6,50,000 saplings in December 2016.  In addition to this, HPCL-VR has taken up plantation of saplings under Vanam Manam program initiated by Andhra Pradesh State Government and completed the target plantation of 10,000 saplings in Jan 2019.
19	The Company should undertake measures for rain water harvesting to recharge the ground water and minimize fresh water consumption	Rain water harvesting facilities for the Administrative buildings (Blocks-A and C) and for control room & sub stations of DHT project are in place.
20	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, Safe drinking	Not applicable since the construction labor does not reside in the project site. However, necessary facilities

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR												
	water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	like mobile toilets, first aid room, ambulance, drinking water etc., were provided at site.												
	<b>B. GENERAL CONDITIONS</b>													
1	The project authorities must-strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government and any other statutory body	Refinery is complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO/2021 dated 09.03.2021 valid till 31.12.2025.												
2	No further expansion or modification in the project shall be carried without prior approval of the Ministry of Environment and Forests. In case of deviations or alternations in the project proposal from those submitted to the Ministry for clearance, a fresh reference shall be made to the Ministry	Noted and is complied.												
3	At no time, the emissions shall go beyond the prescribed standards. In the event of failure of any pollution control system, the respective facilities should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved. Provision of adequate height of stack attached to DG sets & flare is to be done	<p>Process emissions are through stack flue gases only. Online connectivity of stack emission analyzers established with CPCB an APPCB servers. Analysis of stack flue gases is being carried out by MoEF recognized third party laboratory on monthly basis and being submitted to APPCB as per the requirement.</p> <p>Process furnaces, boilers and gas turbines are provided with tall stacks (about 60 m) for better dispersion of flue gases.</p>												
4	Waste water shall be properly collected and treated so as to conform to the standards prescribed under EP Act & Rules and mentioned in the Consents provided by the relevant SPCB	<p>There are three Effluent Treatment Plants as mentioned below to treat the effluents in the refinery complex:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 25%;">Plant Name</th> <th style="width: 25%;">Design Capacity</th> <th style="width: 50%;">Final disposal</th> </tr> </thead> <tbody> <tr> <td>ETP -1</td> <td>135 m<sup>3</sup>/hr</td> <td>To sea through open channel</td> </tr> <tr> <td>ETP-II</td> <td>325 m<sup>3</sup>/hr</td> <td>To ETP IV</td> </tr> <tr> <td>ETP-IV</td> <td>180 m<sup>3</sup>/hr</td> <td>To sea through open channel</td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal	ETP -1	135 m <sup>3</sup> /hr	To sea through open channel	ETP-II	325 m <sup>3</sup> /hr	To ETP IV	ETP-IV	180 m <sup>3</sup> /hr	To sea through open channel
Plant Name	Design Capacity	Final disposal												
ETP -1	135 m <sup>3</sup> /hr	To sea through open channel												
ETP-II	325 m <sup>3</sup> /hr	To ETP IV												
ETP-IV	180 m <sup>3</sup> /hr	To sea through open channel												

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
5	The overall noise levels in and around the premises shall be limited within the prescribed standards (75 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time)	Noise monitoring is carried out on monthly basis at various locations in the refinery. The noise levels are within the standards for most of the locations. Measures like usage of earmuffs, display of signage boards, restricting the duration of exposure etc., are followed for high noise level areas.
6	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project, if required. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented	Necessary approvals from Chief Inspector of Factories and Chief Controller of Explosives etc are in place and complying with the MSIHC Rules, 1989. ERDMP (Emergency Response and Disaster Management Plan) which is certified by PNGRB (Petroleum and Natural Gas Regulatory Board) approved third party is in place.
7	The project authorities will provide adequate funds as non-recurring and recurring expenditure to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes	Complied.
8	The company shall develop rain water harvesting structures to harvest the run off water for recharge of ground water	Rain water harvesting facilities for the Administrative buildings (Blocks-A and C) and for control room & sub stations of DHT project are in place.
9	The stipulated conditions will be monitored by the concerned Regional Office of this Ministry / Central Pollution Control Board! State Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly. It will also be displayed on the Website of the Company	Complied

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
10	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both on hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB	Being complied for the current expansion project.
11	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations if any, were received while processing the proposal. The clearance letter shall also put up on the website of the Company by the proponent	The copy of clearance letter has been sent to the concerned Panchayat, Zilla Parishad / Municipal Corporation, Urban Local Body and the Local NGO. Clearance letter of the DHT project is uploaded on HPCL website.
12	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board! Committee and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry	The advertisement was published in the newspapers; The Hindu, Deccan Chronicle and Sakshi on 18.09.2009 and copies were submitted to the RO, MoEF&CC.
13	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986 as amended subsequently, shall also be put on the website of the Company alongwith the status of compliance of EC conditions and shall also be sent to the respective regional Office of the MoEF by e-mail	Complied. The latest Environmental statement for 2019-20 was submitted to APPCB vide letter dated 31.08.2020.

## Compliance to DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
14	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive	Under Technical Services Department, Process Safety & Environment (PS&E) is a separate division, which looks after the Environmental and Process safety functions.  This division reports to Head – Technical who in turn reports to Executive Director of the refinery.
15	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
16	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory	Noted
17	The Ministry reserves the right to stipulate additional conditions if found necessary. The company will implement these conditions in a time bound manner	Noted
18	Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, Second Floor, Trikoot-I, Bhikaji Cama Place, New Delhi-110066, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Authority Act, 1997	Noted
19	The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 1989/ 2003/ 2008 and Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 along with their amendments and rules	Noted.



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Plot No.B15 & 16, Industrial Estate, Behind Pollution Control Board, Opp. Dena Bank,  
Sanath Nagar, Hyderabad – 500 018, Tele Fax : 040-23717213  
E-mail:info@pragathilabs.com Website: www.pragathilabs.com

## TEST REPORT

Industry Name	Hindustan Petroleum Corporation Limited		
Address	Visakh Refinery, Malkapuram, Visakhapatnam-530 011		
Phone No.	0891-2894825/4818	Kind attention to: Sri Gudala Bhagavan	
Fax No.	0891-2759861	DGM – Technical	
Date of Reporting	05 <sup>th</sup> May, 2021	Nature of the Sample	Flue Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-26) April-21	No. of Samples	26
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO <sub>2</sub> , NO <sub>x</sub> , HC, CO, H <sub>2</sub> S, Ni & V		

### STACK GAS EMISSION ANALYSIS

S. No.	Unit	Stack type	Date of Monitoring	Stack details					Stack emissions								
				Height m	Dia. m	Area m <sup>2</sup>	Temp. °C	Velocity m/s	PM	SO <sub>2</sub>	NO <sub>x</sub>	CO	H <sub>2</sub> S	HC	Ni	V	
1	CDU-I	2-F-1	01-04-2021	60	1.40	1.539	185	5.5	39.5	340	104	28	--	30	BDL	BDL	
2	CDU-I	2-F-2	01-04-2021	60	1.00	0.785	206	4.7	38.6	275	92	26	--	25	BDL	BDL	
3	CDU-I	2-F-4	01-04-2021	60	1.60	2.01	210	3.9	34.8	280	94	25	--	26	BDL	BDL	
4	CDU-II	11-F-01	06-04-2021	60	2.55	5.104	210	5.3	31.4	265	110	27	--	24	BDL	BDL	
5	CDU-II	12-F-01	06-04-2021	60	1.60	2.01	235	4.5	32.2	258	108	32	--	27	BDL	BDL	
6	CDU-III	42-F-01	08-04-2021	60	2.74	5.896	352	4.2	35.3	265	116	30	--	25	BDL	BDL	
7	CDU-III	42-F-02	08-04-2021	60	1.59	1.986	240	3.8	32.9	252	108	24	--	32	BDL	BDL	
8	FCCU-II	14-F-01	27-04-2021	60	1.35	1.431	276	4.3	23.8	174	85	32	--	23	BDL	BDL	
9	DHT	90-F-01/2	15-04-2021	60	3.05	7.309	190	3.8	21.6	258	90	26	--	22	BDL	BDL	
10	DHT- HGU	91-F-20	15-04-2021	60	2.15	3.63	165	4.6	8.9	39	98	17	--	21	BDL	BDL	
11	DHDS	60-F-01	27-04-2021	60	1.34	1.410	220	3.4	34.2	140	112	20	--	16	BDL	BDL	
12	DHDS	61-F-11	27-04-2021	60	1.60	2.011	156	5.5	36.6	118	120	21	--	17	BDL	BDL	
13	NHT	72-F-01/02	28-04-2021	60	1.50	1.767	170	2.7	8.7	36	90	19	--	20	BDL	BDL	
14	CCR	74-F-1/2/3/4	28-04-2021	60	3.37	8.923	152	3.4	9.3	42	83	18	--	15	BDL	BDL	
15	CPP	HRSG-III	21-04-2021	60	3.00	7.065	156	13.3	17.5	68	96	21	--	14	BDL	BDL	
16	CPP	HRSG-IV	21-04-2021	60	3.00	7.065	152	13.2	19.4	60	102	22	--	16	BDL	BDL	
17	CPP	HRSG-V	21-04-2021	60	3.00	7.065	145	13.1	19.8	63	110	21	--	17	BDL	BDL	
18	CPP	HRSG-VI	21-04-2021	60	3.00	7.065	135	13.0	18.6	62	103	20	--	16	BDL	BDL	
19	PP-1	IBH	29-04-2021	60	2.40	4.525	148	3.7	30.2	112	98	23	--	14	BDL	BDL	
20	DHT- HGU	91-F-01	15-04-2021	60	1.30	1.327	320	0.6	9.2	32	80	18	--	21	--	--	
21	FCC	75-F-01	28-04-2021	60	1.01	0.801	260	2.7	8.8	34	107	23	--	22	--	--	
22	FCC	75-F-51	28-04-2021	60	1.35	1.430	165	3.4	8.6	35	70	21	--	23	BDL	BDL	
23	FCCU-II	FGD-II	27-04-2021	60	2.00	3.142	66	3.2	32.6	82	76	22	--	22	BDL	BDL	
24	DHDSSRU	65-X-001	29-04-2021	60	1.21	1.150	224	2.7	20.8	104	68	18	7.8	15	--	--	
25	DHDSSRU	79-X-310	29-04-2021	60	1.01	0.801	230	3.2	21.4	86	64	16	8.1	16	--	--	
26	DHT-SRU	92-M-22	15-04-2021	60	1.50	1.767	252	5.6	9.3	95	67	20	8.3	17	--	--	

#### Stack emissions Revised Norm (mg/Nm<sup>3</sup>)

	Fuel Type	SO <sub>2</sub>	NO <sub>x</sub>	PM	CO	Ni & V	H <sub>2</sub> S
Furnaces & CPP	Gas	50	350	10	150		
	Liquid	1700	450	100	200	5	---
FCC Regenerators	---	1700	450	100	400	5	---
SRU'S (65-X-01 & 79-X-310)	---	---	350	---	150	---	15

#### Methodology for testing of pollutants

Pollutant	Method	IS: 11255	(Part I)	1985
PM	Methods for measurement of emissions from stationary sources	IS: 11255	(Part I)	1985
SO <sub>2</sub>	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO <sub>x</sub>	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method	-	-	-

*P. Pradeep Reddy*  
Analyst Signatory  
(P. Pradeep Reddy)

*M. Ravi Kiran*  
Authorized Signatory  
(M. Ravi Kiran)



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## TEST REPORT

Industry Name	Hindustan Petroleum Corporation Limited		
Address	Visakh Refinery, Malkapuram, Visakhapatnam-530 011		
Phone No.	0891-2894825/4818	Kind attention to: Sri Gudala Bhagavan	
Fax No.	0891-2759861	DGM – Technical	
Date of Reporting	07 <sup>th</sup> June, 2021	Nature of the Sample	Flue Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-27) May-21	No. of Samples	27
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO <sub>2</sub> , NO <sub>x</sub> , HC, CO, H <sub>2</sub> S, Ni & V		

### STACK GAS EMISSION ANALYSIS

S. No.	Unit	Stack type	Date of Monitoring	Stack details					Stack emissions							
				Height	Dia.	Area	Temp.	Velocity	PM	SO <sub>2</sub>	NO <sub>x</sub>	CO	H <sub>2</sub> S	HC	Ni	V
				m	m	m <sup>2</sup>	°C	m/s	mg/Nm <sup>3</sup>							
1	CDU-I	2-F-1	03-05-2021	60	1.40	1.539	192	5.4	36.2	332	98	31	--	29	BDL	BDL
2	CDU-I	2-F-2	03-05-2021	60	1.00	0.785	220	4.8	35.3	286	86	28	--	27	BDL	BDL
3	CDU-I	2-F-4	03-05-2021	60	1.60	2.01	250	4.1	32.4	295	90	27	--	28	BDL	BDL
4	CDU-II	11-F-01	04-05-2021	60	2.55	5.104	218	5.5	33.7	274	103	29	--	26	BDL	BDL
5	CDU-II	12-F-01	04-05-2021	60	1.60	2.01	246	4.6	30.6	265	101	34	--	25	BDL	BDL
6	CDU-III	42-F-01	05-05-2021	60	2.74	5.896	335	4.3	33.7	250	108	32	--	26	BDL	BDL
7	CDU-III	42-F-02	05-05-2021	60	1.59	1.986	226	3.9	31.5	268	102	26	--	30	BDL	BDL
8	FCCU-I	4-F-51	20-05-2021	60	2.18	3.733	218	2.4	20.4	165	80	35	--	26	BDL	BDL
9	FCCU-II	14-F-01	11-05-2021	60	1.35	1.431	260	4.5	21.2	182	81	34	--	25	BDL	BDL
10	DHT	90-F-01/2	18-05-2021	60	3.05	7.309	182	3.9	23.3	245	83	29	--	24	BDL	BDL
11	DHT- HGU	91-F-20	19-05-2021	60	2.15	3.63	156	4.5	9.2	43	90	20	--	23	BDL	BDL
12	DHDS	60-F-01	06-05-2021	60	1.34	1.410	205	3.2	33.6	132	105	24	--	19	BDL	BDL
13	DHDS	61-F-11	06-05-2021	60	1.60	2.011	164	5.3	35.3	107	112	25	--	18	BDL	BDL
14	NHT	72-F-01/02	25-05-2021	60	1.50	1.767	178	2.8	9.1	39	82	22	--	22	BDL	BDL
15	CCR	74-F-1/2/3/4	25-05-2021	60	3.37	8.923	160	3.6	9.8	36	76	20	--	17	BDL	BDL
16	CPP	HRSG-III	12-05-2021	60	3.00	7.065	148	13.1	18.3	75	88	24	--	16	BDL	BDL
17	CPP	HRSG-IV	12-05-2021	60	3.00	7.065	146	13.4	18.8	67	95	25	--	18	BDL	BDL
18	CPP	HRSG-V	14-05-2021	60	3.00	7.065	151	13.2	19.2	72	104	23	--	15	BDL	BDL
19	CPP	HRSG-VI	14-05-2021	60	3.00	7.065	142	13.1	19.4	70	97	22	--	19	BDL	BDL
20	DHT- HGU	91-F-01	19-05-2021	60	1.30	1.327	245	0.6	9.7	41	74	20	--	23	--	--
21	FCC	75-F-01	24-05-2021	60	1.01	0.801	270	2.8	9.4	42	98	26	--	20	--	--
22	FCC	75-F-51	24-05-2021	60	1.35	1.430	200	3.1	9.2	32	78	24	--	25	BDL	BDL
23	FCCU-I	FGD-I	20-05-2021	60	1.76	2.433	68	4.0	24.2	78	83	23	--	26	BDL	BDL
24	FCCU-II	FGD-II	11-05-2021	60	2.00	3.142	66	3.4	34.3	76	84	25	--	24	BDL	BDL
25	DHDSSRU	65-X-001	13-05-2021	60	1.21	1.150	210	2.8	21.4	95	75	20	8.1	16	--	--
26	DHDSSRU	79-X-310	13-05-2021	60	1.01	0.801	240	3.4	22.7	78	70	19	8.5	18	--	--
27	DHT-SRU	92-M-22	18-05-2021	60	1.50	1.767	264	5.5	9.8	88	74	23	8.8	19	--	--

### Stack emissions Revised Norm (mg/Nm<sup>3</sup>)

	Fuel Type	SO <sub>2</sub>	NO <sub>x</sub>	PM	CO	Ni & V	H <sub>2</sub> S
Furnaces & CPP	Gas	50	350	10	150		
	Liquid	1700	450	100	200	5	---
FCC Regenerators	---	1700	450	100	400	5	---
SRU'S (65-X-01 & 79-X-310)	---	---	350	---	150	---	15

### Methodology for testing of pollutants

Pollutant	Method	IS: 11255	(Part I)	1985
PM	Methods for measurement of emissions from stationary sources	IS: 11255	(Part I)	1985
SO <sub>2</sub>	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO <sub>x</sub>	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method	-	-	-

*P. Pradeep Reddy*  
Analyst Signatory  
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## TEST REPORT

Industry Name	Hindustan Petroleum Corporation Limited		
Address	Visakh Refinery, Malkapuram, Visakhapatnam-530 011		
Phone No.	0891-2894825/4818	Kind attention to: Sri Gudala Bhagavan	
Fax No.	0891-2759861	DGM – Technical	
Date of Reporting	03 <sup>rd</sup> September,, 2021	Nature of the Sample	Fuel Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-23) August, 2021	No. of Samples	23
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO <sub>2</sub> , NO <sub>x</sub> , HC, CO, H <sub>2</sub> S, Ni & V		

### STACK GAS EMISSION ANALYSIS

S. No.	Unit	Stack type	Date of Monitoring	Stack details					Stack emissions								
				Height	Dia.	Area	Temp	Velocity	PM	SO <sub>2</sub>	NO <sub>x</sub>	CO	H <sub>2</sub> S	HC	Ni	V	
				m	m	m <sup>2</sup>	°C	m/s	mg/Nm <sup>3</sup>								
1	CDU-I	2-F-1	03-08-2021	60	1.40	1.539	185	5.4	31.8	290	76	22	--	21	BDL	BDL	
2	CDU-I	2-F-2	03-08-2021	60	1.00	0.785	232	4.6	33.6	270	70	24	--	19	BDL	BDL	
3	CDU-I	2-F-4	03-08-2021	60	1.60	2.01	172	4.4	34.5	252	72	23	--	20	BDL	BDL	
4	CDU-II	11-F-01	12-08-2021	60	2.55	5.104	204	5.3	35.2	260	82	21	--	22	BDL	BDL	
5	CDU-II	12-F-01	12-08-2021	60	1.60	2.01	225	4.8	32.8	215	78	27	--	23	BDL	BDL	
6	FCCU-I	4-F-51	24-08-2021	60	2.18	3.733	206	2.4	21.7	180	62	30	--	24	BDL	BDL	
7	DHT	90-F-01/2	31-08-2021	60	3.05	7.309	148	3.7	23.6	365	75	26	--	19	BDL	BDL	
8	DHT- HGU	91-F-20	31-08-2021	60	2.15	3.63	110	5.4	9.2	70	76	17	--	14	BDL	BDL	
9	DHDS	60-F-01	26-08-2021	60	1.34	1.410	234	3.6	36.4	108	81	26	--	21	BDL	BDL	
10	DHDS	61-F-11	26-08-2021	60	1.60	2.011	162	5.2	30.5	90	86	28	--	20	BDL	BDL	
11	NHT	72-F-01/02	04-08-2021	60	1.50	1.767	184	3.1	3.7	40	62	25	--	18	BDL	BDL	
12	CCR	74-F-1/2/3/4	04-08-2021	60	3.37	8.923	165	3.0	4.0	30	57	22	--	17	BDL	BDL	
13	CPP	HRSG-III	05-08-2021	60	3.00	7.065	154	13.1	18.2	54	69	24	--	16	BDL	BDL	
14	CPP	HRSG-V	05-08-2021	60	3.00	7.065	158	13.4	19.6	52	82	23	--	18	BDL	BDL	
15	CPP	HRSG-VI	05-08-2021	60	3.00	7.065	163	13.2	18.7	55	83	22	--	19	BDL	BDL	
16	PP-1	IBH	24-08-2021	60	2.40	4.525	165	3.5	35.5	104	95	34	--	17	BDL	BDL	
17	DHT- HGU	91-F-01	31-08-2021	60	1.30	1.327	262	0.4	9.2	36	72	29	--	13	--	--	
18	FCC NHT	75-F-01	11-08-2021	60	1.01	0.801	268	2.7	3.9	41	78	32	--	23	--	--	
19	FCC NHT	75-F-51	11-08-2021	60	1.35	1.430	208	1.3	3.8	33	70	31	--	24	--	--	
20	FCCU-I	FGD-I	24-08-2021	60	1.76	2.433	66	12.4	28.6	60	76	30	--	20	BDL	BDL	
21	DHDSSRU	65-X-001	25-08-2021	60	1.21	1.150	212	2.8	19.1	86	69	22	8.2	16	--	--	
22	DHDSSRU	79-X-310	25-08-2021	60	1.01	0.801	228	3.6	25.4	58	65	25	8.4	18	--	--	
23	DHT-SRU	92-M-22	18-08-2021	60	1.50	1.767	252	5.1	8.6	116	62	20	8.5	14	--	--	

### Stack emissions Revised Norm (mg/Nm<sup>3</sup>)

	Fuel Type	SO <sub>2</sub>	NO <sub>x</sub>	PM	CO	Ni & V	H <sub>2</sub> S
Furnaces & CPP	Gas	50	350	10	150		
	Liquid	1700	450	100	200	5	---
FCC Regenerators	---	1700	450	100	400	5	---
SRU'S (65-X-01 & 79-X-310)	---	---	350	---	150	---	15

### Methodology for testing of pollutants

PM	Methods for measurement of emissions from stationary sources	IS: 11255	(Part I)	1985
SO <sub>2</sub>	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO <sub>x</sub>	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method	-	-	-

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