



हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड

(भारत सरकार संस्थान) रजिस्टर्ड ऑफिस 17 जमशेदजी टाटा रोड, मुम्बई - 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/22/VRMP/TS/002

Oct 19, 2022

To,
The Regional Officer
Integrated Regional Office (IRO), Vijayawada,
Ministry of Environment, Forest and Climate Change,
Green House Complex, Gopalareddy Road,
Vijayawada-520010, Andhra Pradesh

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 11th 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 1st April, 2022 to 30th September, 2022 for the Visakh Refinery Modernization Project (VRMP).

Very Truly Yours,

Baljeet Singh

Baljeet Singh
DGM- Projects

Encl:

- 1) Six monthly VRMP-EC compliance report
- 2) Earlier Projects EC compliance reports (Annexure-1)
- 3) Stack Gas Emission Analysis reports (Annexure-2)
- 4) Ambient Air quality reports (Annexure-3)
- 5) Ground water analysis reports (Annexure-4)
- 6) Noise level reports (Annexure-5)
- 7) Tri-partite agreement for SSP water supply by Gvine/Guccil (Annexure-6)

बलजीत सिंह
BALJEET SINGH
उप महा प्रबंधक-वी आर एम पी-परियोजना (प्रक्रिया)
Dy. General Manager VRMP-Project (Process)
H.P.C.L., - Visakh Refinery
VISAKHAPATNAM-530 011

Compliance of Environmental Clearance conditions for the period 1st April 2022 to 30th September 2022.

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 th May, 1995, F. No. J-11011/88/96- IA 11 (1) dated 10 th April, 1997, J11013/55/2003- IA 11 (I) dated 3 rd February, 2004 and J-11011/66/2007-IA 11 (I) dated 7 th March, 2008 and J-11011/408/2009-IA 11 (1) dated 2 nd 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 and the compliance status of earlier ECs is being submitted to MoEF & CC on six monthly basis. The compliance status reports are attached as Annexure -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 th 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 ₂ , NO _x and CO of all the stacks shall be carried out. Low NO _x burners shall be installed.	Being complied. On-line stack monitoring facilities considered for all new VRMP stacks and Low Nox burners are being installed in Furnaces ETC: December, 2022 (except RUF unit)
iv.	The process emissions [SO ₂ , NO _x , 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	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 monthly basis. The

	immediately put out of operation and shall not be restarted until the desired efficiency of the pollution control device has been achieved.	values are within the stipulated limits. Copies of MoEF recognized third party laboratory analysis reports of stack emissions for the period of Apr-22 to Sep-22 are attached herewith as Annexure-2
v.	Leak Detection and Repair program shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical 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.	Being complied with. 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 : December 2022 (except RUF unit)
vi.	SO ₂ emissions after expansion from the plant shall not exceed 11.5 TPD and further efforts shall be made for reduction of SO ₂ load through use of low sulphur fuel. Sulphur recovery unit with tail gas treating facilities having 99.9 % efficiency shall be provided.	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. Post expansion also the SO ₂ emission limit will be complied. Low Sulphur fuel has been considered for process heating and steam generation. New SRU with 99.9 % efficiency is being implemented. ETC: December 22
vii.	As proposed, record of sulphur balance shall be maintained at the Refinery as part of the environmental data on regular basis. The basic component of sulphur balance include sulphur input through feed (sulphur content in crude oil), sulphur output from Refinery through products, byproduct (elemental sulphur), atmospheric emissions etc.	Being complied .Sulphur balance record in line with existing practice will be complied after expansion also.

viii.	Ambient air quality monitoring stations, [PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , H ₂ 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 ³ /hr after expansion and prior permission shall be obtained from the competent authority. Industrial effluent generation will be 902 m ³ /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. The Tripartite agreement entered among M/s GVMC, M/s GVSSCL and HPCL for consuming treated domestic sewage water for industrial use & the same is attached as Annexure 3. New State of the art IETP is being installed and the treated effluent will be used to produce DM water in RODM plant being installed under VRMP. ETC: December 2022.
xi.	Comprehensive water audit to be conducted on annual basis and report to the concerned Regional Office of MoEF&CC. Outcome from the report to be implemented for conservation scheme.	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 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

		<p>3) Oil catcher at east of RUF area</p> <p>4) Oil catcher at South west corner of ATP area</p> <p>5) Oil separator at South East corner of Old BOT area</p> <p>ETC: March 2023</p>
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.	<p>Coker Unit is not considered in expansion and also not available in existing refinery.</p> <p>Oily sludge is being disposed off as per PCB guidelines.</p>
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.	<p>Being complied with.</p> <p>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 recyclers/re-processors or TSDF.</p>
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 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	<p>Being complied with.</p> <p>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.</p>

	potential ignition sources and flammable materials shall be in place.	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, 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 44.33 Cr ₹ for the following activities</p> <ul style="list-style-type: none"> • Financial assistance for Renovation of existing Infrastructure of 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 for total value of 37,30,000 INR. • Financial support for educating & Empoweing Children Through after school guidance at St. Ann's College for women, Malkapuram for total value of 37,60,000 INR. • 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 for total value of 50,30,000 INR. • Providing 3 Nos container Toilet Blocks and one unit of Toilet block i.e. Four Urinals and Two Toilet blocks to GVMC, visakhapanam

		<ul style="list-style-type: none"> • Providing Modernization of Garbage Transfer Solution at Mudasarlova Visakhapatnam under VRMP to GVMC • Construction of Conference/Meeting/Audition Hall at MHRM Department Ground Floor, Andhra University, Visakhapatnam • 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 • financial support for construction of Mandal Praja Parishad Building at Bheemili Constituency area viz. Bheemunipatnam in Visakhapatnam District, Andhra Pradesh. <p>The amount spent for the above activities so far is 35.51 Cr ₹.</p>
xxvi.	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.	Project site is within an operating refinery. Sanitary and medical facilities are made available within the Refinery site. Construction labor are from nearby locations.
B. GENERAL CONDITIONS:		
i.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.	Being complied with.
ii.	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or 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.	Being complied with.
iii.	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of	Being complied with.

	Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.	
iv.	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	Being complied with in the existing refinery and post expansion. 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.
v.	A separate Environmental Management Cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	In existing refinery, a separate Environment management cell is already available 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 ₁₀ , PM ₂₅ , SO ₂ , NO _x , HC (Methane & Non-methane), VOCs (ambient	Being complied with.

	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.	
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 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.	Being complied with. The latest Environmental Statement of existing refinery for 2021-22 was submitted to APPCB vide letter dated 14.09.2022.
xii.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.	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 DHT EC J-11011/408/2009-IA II (I) dated 02.09.2009

S.No	EC Conditions	Compliance by HPCL-VR
	A. Special Conditions:	
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	Status of compliance to the conditions stipulated in all the ECs is being submitted to MoEF Office. The same has been uploaded on HPCL's corporate website.
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 th 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. The compliance is complete as of date and ongoing.
3	The project authorities shall submit a feasible plan which will be followed to ensure that SO ₂ 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 SO₂ emissions are as below:</p> <ul style="list-style-type: none"> • A sulphur recovery unit of 300 TPD capacity along with the tail Gas treatment unit designed to achieve >99.5% sulphur recovery. • Installation of additional FG ATU to sweeten the fuel gas for firing in the process furnaces and boilers. • Usage of treated Naptha in CPP. • Installation of FGD unit. <p>The average SO₂ emissions for the period of Apr-2022 to Sept-2022 is 7.0 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	Various mitigation measures like water sprinkling on the roads at project sites, higher barricades around project sites, regulating the traffic near civil works of project activities, usage of RMC (Ready Mix Concrete) material etc. were taken

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

S.No	EC Conditions	Compliance by HPCL-VR
		up regularly to control dust emissions. The project civil jobs are nearing completion.
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 instructions are in place to maximize fuel gas consumption.
6	The process emissions (SO ₂ , NO _x , 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	<p>Monitoring of SO₂, NO_x, CO, PM, HC, VOCs and Benzene is being done regularly in refinery premises. Online connectivity of stack emissions analyzers is established with CPCB and APPCB servers. Further, stack emission monitoring is being carried out by MoEF recognized laboratory on monthly basis.</p> <p>VOCs and Benzene within refinery premises are being monitored periodically and controlled as part of LDAR survey carried out by MoEF recognized third party.</p>
7	Ambient air quality monitoring stations, (SPM, SO ₂ , NON, H ₂ 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 ₂ , NO, CO and CO ₂ . Low NO _x 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 SO₂, NO_x, PM₁₀, PM_{2.5}, CO, Benzene, Ammonia and Ozone. Online connectivity of these ambient air quality parameters is established with CPCB and APPCB.</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_x burners are installed for all the major furnaces.</p>

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

S.No	EC Conditions	Compliance by HPCL-VR						
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 pollutant namely; SPM, RSPM, SO ₂ , NO _x (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	Status of compliance to the conditions stipulated in all the ECs is being submitted to MoEF Office. The same has been uploaded on HPCL's corporate website.						
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 ₂ 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	<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: 33%;">Plant Name</th> <th style="width: 33%;">Design Capacity</th> <th style="width: 33%;">Final disposal</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal			
Plant Name	Design Capacity	Final disposal						

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

S.No	EC Conditions	Compliance by HPCL-VR									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">ETP -1</td> <td style="width: 20%;">135 m³/hr</td> <td style="width: 60%;">To sea through open channel</td> </tr> <tr> <td>ETP-II</td> <td>325 m³/hr</td> <td>To ETP IV</td> </tr> <tr> <td>ETP-IV</td> <td>180 m³/hr</td> <td>To sea through open channel</td> </tr> </table> <p>Stripped sour water from process units is being recycled to the maximum possible extent with the available systems for use as wash water.</p> <p>A new Integrated Effluent Treatment Plant (IETP) is being implemented under current refinery expansion project (VRMP). Post implementation of this IETP, the treated water will be recycled/reused fully.</p>	ETP -1	135 m ³ /hr	To sea through open channel	ETP-II	325 m ³ /hr	To ETP IV	ETP-IV	180 m ³ /hr	To sea through open channel
ETP -1	135 m ³ /hr	To sea through open channel									
ETP-II	325 m ³ /hr	To ETP IV									
ETP-IV	180 m ³ /hr	To sea through open channel									
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"> • Hydrocarbon detectors are provided. • Elaborative fire water network & other equipment exist inside refinery to handle fire hazards. 									

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

S.No	EC Conditions	Compliance by HPCL-VR
		<ul style="list-style-type: none"> • Overhead flare stack with KO drums is provided. <p>The following systems are in place :</p> <ul style="list-style-type: none"> •Oil Spill response plan (inside refinery) along with necessary equipment is in place. •Operational control procedures / Departmental standing Instructions (DSIs) / Plant Daily Instructions (PDIs)
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	All the facilities are designed in line with OISD (Oil Industry Safety Directorate) standards. Necessary infrastructure is in place to effectively handle any emergency.
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. tree plantation on a massive scale has been carried out in various locations of Visakhapatnam under “Green Visakha” program. The Green Visakha and Vanam Manam programs were taken up by Respondent’s Visakh Refinery as per the directives of APPCB”.

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

S.No	EC Conditions	Compliance by HPCL-VR
		<p>HPCL-VR has planted 6,50,000 plantations covering an area of approximately 700 acers of Plantation, and is complying with the CFE condition. Approximately Rs.26 crores were incurred for green belt development during 2011-2021 by HPCL-VR.</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>
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 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.	Various developmental activities such as construction of toilet blocks, supply of furniture, supply of computers, scholarships to students, health camps, supply of diagnostic machines etc., are taken up in schools & hospitals in the region under Corporate Social Responsibility (CSR) program.
	B. GENERAL CONDITIONS	
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	The Refinery is currently complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO/2021 dated 09.03.2021 and task force directives which were identified by APPCB vide letter no.702/APPCB/UH-II/TF/VSP/2020 dated 19.03.2020.
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.

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

S.No	EC Conditions	Compliance by HPCL-VR												
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;"> <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 m³/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 m³/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 m³/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 ³ /hr	To sea through open channel	ETP-II	325 m ³ /hr	To ETP IV	ETP-IV	180 m ³ /hr	To sea through open channel
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ETP-II	325 m ³ /hr	To ETP IV												
ETP-IV	180 m ³ /hr	To sea through open channel												
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	<p>Necessary approvals from Chief Inspector of Factories and Chief Controller of Explosives etc are in place and complying with the MSIHC Rules,1989.</p> <p>ERDMP (Emergency Response and Disaster Management Plan) which is certified by PNGRB</p>												

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

S.No	EC Conditions	Compliance by HPCL-VR
	the expansion project, if required. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented	(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
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.

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

S.No	EC Conditions	Compliance by HPCL-VR
12	<p>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 concerned Regional office of this Ministry</p>	<p>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.</p>
13	<p>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</p>	<p>Complied. The latest Environmental statement for 2021-22 was submitted to APPCB vide letter dated 14.09.2022.</p>
14	<p>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</p>	<p>Under Technical Services Department, Process Safety & Environment (PS&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> <p>Refinery has a dedicated quality control laboratory for analysis of environmental parameters under the supervision of competent technical personnel.</p>

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

S.No	EC Conditions	Compliance by HPCL-VR
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, Trikot-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.

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 ₂ (11.5 TPD), HC (2.5 TPD), SPM (1.1 TPD) and NO _x (6.5 TPD) at para 2 should be strictly complied.	<p>Complied.</p> <p>Average emission loads for the period Apr'22 to Sept'22 are provided below:</p> <table border="0" data-bbox="1227 564 1478 783"> <thead> <tr> <th>Emissions</th> <th>TPD</th> </tr> </thead> <tbody> <tr> <td>SO₂</td> <td>7.00</td> </tr> <tr> <td>SPM</td> <td>0.83</td> </tr> <tr> <td>HC</td> <td>0.75</td> </tr> <tr> <td>NO_x</td> <td>2.84</td> </tr> </tbody> </table>	Emissions	TPD	SO ₂	7.00	SPM	0.83	HC	0.75	NO _x	2.84
Emissions	TPD											
SO ₂	7.00											
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3	The fresh water consumption should be pegged at 523 m ³ /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 m³/hr as per the latest CFO dated 09.03.2021.</p> <p>A new Integrated Effluent Treatment Plant (IETP) is being implemented under current refinery expansion project (VRMP). Post implementation of this IETP, the treated water will be recycled/reused fully.</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.	Noted and is complied.										
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.	The Risk Analysis Report relates to a specific project and the same has been implemented as required										

S.No	EC Conditions	Compliance by HPCL-VR
6	No further modernization of the project should be carried out without prior permission of the Ministry.	Noted and is complied.
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.	Noted and is complied.

EC Compliance for LPG Mounded Storage dated 07.03.2008

S.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.	The Risk Analysis Report relates to a specific project and the same has been implemented as required
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 ₂ , NO _x , PM ₁₀ , PM _{2.5} , 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

S.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.	<p>Existing green belt area is 40 acres. tree plantation on a massive scale has been carried out in various locations of Visakhapatnam under “Green Visakha” program. The Green Visakha and Vanam Manam programs were taken up by Respondent’s Visakh Refinery as per the directives of APPCB”.</p> <p>HPCL-VR has planted 6,50,000 plantations covering an area of approximately 700 acers of Plantation, and is complying with the CFE condition. Approximately Rs.26 crores were incurred for green belt development during 2011-2021 by HPCL-VR.</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>
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

S.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.
	General Conditions:	
1.	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	The Refinery is currently complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO/2021 dated 09.03.2021 and task force directives which were identified by APPCB vide letter no.702/APPCB/UH-II/TF/VSP/2020 dated 19.03.2020.
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

S.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

S.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 such as construction of toilet blocks, supply of furniture, supply of computers, scholarships to students, health camps, supply of diagnostic machines, etc., 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 http://www.envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter at lease 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 development work as well as the commissioning of the project will be informed to the Ministry and its Regional Office.	Complied

EC Compliance for LPG Mounded Storage dated 07.03.2008

S.No	EC Conditions	Compliance by HPCL-VR
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 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	The Refinery is currently complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO/2021 dated 09.03.2021 and task force directives which were identified by APPCB vide letter no.702/APPCB/UH-II/TF/VSP/2020 dated 19.03.2020.												
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 ₂ emission from Visakh Refinery including DHDS project should not exceed the norm of 11.5 TPD.	The average SO ₂ emissions for the period of Apr-2022 to Sept-2022 is 7.0 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 m³/hr</td> <td>To sea through open channel</td> </tr> <tr> <td>ETP-II</td> <td>325 m³/hr</td> <td>To ETP IV</td> </tr> <tr> <td>ETP-IV</td> <td>180 m³/hr</td> <td>To sea through open channel</td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal	ETP -1	135 m ³ /hr	To sea through open channel	ETP-II	325 m ³ /hr	To ETP IV	ETP-IV	180 m ³ /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

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

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.	The Refinery is currently complying with the conditions stipulated in CFO No:APPCB/VSP/VSP/72/CFO/HO/2021 dated 09.03.2021 and task force directives which were identified by APPCB vide letter no.702/APPCB/UH-II/TF/VSP/2020 dated 19.03.2020.
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 ₂ 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 ₂ of 7.5 TPD is achieved in the near future, the total emission of SO ₂ would not exceed the earlier prescribed limit of 9 TPD.	Subsequent to industry expansion, the SO ₂ 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 ₂ emissions for the period of Apr-2022 to Spet-2022 is 7.0 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.	Monitoring of SO ₂ , NO _x , CO, PM, HC, VOCs and Benzene is being done regularly in refinery premises. Online connectivity of stack emissions analyzers is established with CPCB and APPCB servers. Further, stack emission monitoring is being carried out by MoEF recognized laboratory on monthly basis. VOCs and Benzene within refinery premises are being monitored periodically and controlled as part of LDAR survey carried out by MoEF recognized third party
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.

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

S.No	EC Conditions	Compliance by HPCL-VR
6	Low NO _x burners to avoid excessive formulation of NO _x should be provided.	All major furnaces are provided with low NO _x burners.
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 ₂ , NO _x , 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 ₂ , NO _x , PM ₁₀ , PM _{2.5} , 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.

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

S.No	EC Conditions	Compliance by HPCL-VR												
10	<p>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 SO₂ & NO_x 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.</p>	<p>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.</p>												
11	<p>The existing waste water treatment facilities should be suitably augmented so as to meet the MINAS standards.</p>	<p>There are three Effluent Treatment Plants as mentioned below to treat the effluents in the refinery complex:</p> <table border="1" data-bbox="1108 800 1808 1062"> <thead> <tr> <th data-bbox="1108 800 1262 873">Plant Name</th> <th data-bbox="1262 800 1451 873">Design Capacity</th> <th data-bbox="1451 800 1808 873">Final disposal</th> </tr> </thead> <tbody> <tr> <td data-bbox="1108 873 1262 946">ETP -1</td> <td data-bbox="1262 873 1451 946">135 m³/hr</td> <td data-bbox="1451 873 1808 946">To sea through open channel</td> </tr> <tr> <td data-bbox="1108 946 1262 987">ETP-II</td> <td data-bbox="1262 946 1451 987">325 m³/hr</td> <td data-bbox="1451 946 1808 987">To ETP IV</td> </tr> <tr> <td data-bbox="1108 987 1262 1062">ETP-IV</td> <td data-bbox="1262 987 1451 1062">180 m³/hr</td> <td data-bbox="1451 987 1808 1062">To sea through open channel</td> </tr> </tbody> </table>	Plant Name	Design Capacity	Final disposal	ETP -1	135 m ³ /hr	To sea through open channel	ETP-II	325 m ³ /hr	To ETP IV	ETP-IV	180 m ³ /hr	To sea through open channel
Plant Name	Design Capacity	Final disposal												
ETP -1	135 m ³ /hr	To sea through open channel												
ETP-II	325 m ³ /hr	To ETP IV												
ETP-IV	180 m ³ /hr	To sea through open channel												
12	<p>Recycling/Reuse of the treated effluent to the maximum extent possible should be planned.</p>	<p>Stripped sour water from process units is being recycled to the maximum possible extent with the available systems for use as wash water.</p> <p>In addition, a new Integrated Effluent Treatment Plant (IETP) is being implemented under current refinery expansion project (VRMP). Post implementation of this IETP, the treated water will be recycled/reused fully.</p>												

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

S.No	EC Conditions	Compliance by HPCL-VR
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 liquid effluent monitoring facilities are available for pH, TSS, BOD and COD in line with CPCB guidelines and connectivity of these analyzers established with APPCB and CPCB servers.</p> <p>Flowmeters are available on sea cooling water supply headers.</p> <p>Further, the treated effluent quality is being monitored by MoEF recognized Third Party laboratory on monthly basis.</p>
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.

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

S.No	EC Conditions	Compliance by HPCL-VR
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. tree plantation on a massive scale has been carried out in various locations of Visakhapatnam under “Green Visakha” program. The Green Visakha and Vanam Manam programs were taken up by Respondent’s Visakh Refinery as per the directives of APPCB”.</p> <p>HPCL-VR has planted 6,50,000 plantations covering an area of approximately 700 acers of Plantation, and is complying with the CFE condition. Approximately Rs.26 crores were incurred for green belt development during 2011-2021 by HPCL-VR.</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>
18	Various socio-economic schemes should he initiated by HPCL, so to improve the socio economic environment in the region.	Various developmental activities such as construction of toilet blocks, supply of furniture, supply of computers, scholarships to students, health camps, supply of diagnostic machines etc., are taken up in schools & hospitals in the region under Corporate Social Responsibility (CSR) program.

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

S.No	EC Conditions	Compliance by HPCL-VR
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.	<p>NEERIs recommendations and action plans were submitted to MoEF&CC. Among the NEERI recommendations, one recommendation couldn't be complied.</p> <p>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</p>
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.
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 & Environment (PS&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>

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

S.No	EC Conditions	Compliance by HPCL-VR
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.	The funds earmarked for environmental protection measures are being used for the same purpose only and there is no diversion of the funds. The expenditure incurred towards environmental pollution control measures is being provided in Environment Statement (Form-V) every year.



PRAGATHI LABS & CONSULTANTS PVT.LTD.

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(ISO 9001:2015, OHSMS ISO 45001:2018)

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 GudalaBhagavan	
Fax No.	0891-2759861	DGM – Technical	
Date of Reporting	04 th May, 2022	Nature of the Sample	Fuel Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-28) April, 2022	No. of Samples	28
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO ₂ , NO _x , HC, CO, H ₂ 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 ₂	NO _x	CO	H ₂ S	HC	Ni	V	
				m	m	m ²	°C	m/s	mg/Nm ³								
1	CDU-I	2-F-1	12-04-2022	60	1.40	1.539	185	7.4	45.2	440	87	22	--	22	BDL	BDL	
2	CDU-I	2-F-2	12-04-2022	60	1.00	0.785	220	6.3	51.8	380	95	25	--	21	BDL	BDL	
3	CDU-I	2-F-4	12-04-2022	60	1.60	2.01	151	4.6	43.3	375	90	20	--	24	BDL	BDL	
4	CDU-II	11-F-01	06-04-2022	60	2.55	5.104	202	6.5	45.7	365	86	21	--	25	BDL	BDL	
5	CDU-II	12-F-01	06-04-2022	60	1.60	2.01	225	4.2	47.2	340	95	15	--	23	BDL	BDL	
6	CDU-III	42-F-01	07-04-2022	60	2.74	5.896	210	4.3	42.8	320	130	19	--	24	BDL	BDL	
7	CDU-III	42-F-02	07-04-2022	60	1.59	1.986	295	3.5	38.6	295	140	22	--	22	BDL	BDL	
8	FCCU-I	4-F-51	27-04-2022	60	2.18	3.733	196	2.2	18.5	185	85	17	--	23	BDL	BDL	
9	FCCU-II	14-F-01	28-04-2022	60	1.35	1.431	225	4.3	17.3	142	175	24	--	21	BDL	BDL	
10	DHT	90-F-01/2	21-04-2022	60	3.05	7.309	152	3.5	16.5	330	105	22	--	16	BDL	BDL	
11	DHT- HGU	91-F-20	21-04-2022	60	2.15	3.63	140	7.2	7.2	68	82	26	--	15	BDL	BDL	
12	DHDS	60-F-01	19-04-2022	60	1.34	1.410	226	3.8	47.7	70	86	23	--	20	BDL	BDL	
13	DHDS	61-F-11	19-04-2022	60	1.60	2.011	165	6.4	34.8	52	72	20	--	23	BDL	BDL	
14	NHT	72- F-01/02	22-04-2022	60	1.50	1.767	184	3.7	3.8	49	66	23	--	20	BDL	BDL	
15	CCR	74-F-1/2/3/4	22-04-2022	60	3.37	8.923	162	3.4	3.5	46	62	24	--	24	BDL	BDL	
16	CPP	HRSG-III	05-04-2022	60	3.00	7.065	170	12.6	18.2	40	70	20	--	23	BDL	BDL	
17	CPP	HRSG-IV	05-04-2022	60	3.00	7.065	142	13.2	17.6	38	65	21	--	16	BDL	BDL	
18	CPP	HRSG-V	05-04-2022	60	3.00	7.065	144	13.1	19.3	35	56	22	--	17	BDL	BDL	
19	CPP	HRSG-VI	05-04-2022	60	3.00	7.065	164	12.8	18.6	47	62	24	--	22	BDL	BDL	
20	PP-1	IBH	08-04-2022	60	2.40	4.525	175	3.6	41.6	53	65	25	--	18	BDL	BDL	
21	DHT- HGU	91-F-01	21-04-2022	60	1.30	1.327	311	0.6	7.8	38	55	26	--	19	--	--	
22	FCC NHT	75-F-01	13-04-2022	60	1.01	0.801	265	3.5	3.6	43	52	21	--	18	--	--	
23	FCC NHT	75-F-51	13-04-2022	60	1.35	1.430	152	1.5	3.9	46	51	24	--	16	--	--	
24	FCCU-I	FGD-I	27-04-2022	60	1.76	2.433	66	13.3	37.7	64	68	28	--	14	BDL	BDL	
25	FCCU-II	FGD-II	28-04-2022	60	2.00	3.142	65	4.1	39.4	47	66	21	--	20	BDL	BDL	
26	DHDSSRU	65-X-001	20-04-2022	60	1.21	1.150	235	2.6	18.8	60	58	19	8.3	15	--	--	
27	DHDSSRU	79-X-310	20-04-2022	60	1.01	0.801	204	3.4	18.4	47	64	20	8.5	16	--	--	
28	DHT-SRU	92-M-22	08-04-2022	60	1.50	1.767	246	5.3	8.1	45	53	18	8.7	19	--	--	

Stack emissions Revised Norm (mg/Nm³)

	Fuel Type	SO ₂	NO _x	PM	CO	Ni & V	H ₂ 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	Year
PM	Methods for measurement of emissions from stationary sources	IS: 11255	(Part I)	1985
SO ₂	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO _x	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method	-	-	-

Verified by
(B. Ravi Teja)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director



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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 GudalaBhagavan	
Fax No.	0891-2759861	DGM – Technical	
Date of Reporting	06 th June, 2022	Nature of the Sample	Fuel Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-26) May, 2022	No. of Samples	26
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO ₂ , NO _x , HC, CO, H ₂ 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 ²	Temp. °C	Velocity m/s	PM	SO ₂	NO _x	CO	H ₂ S	HC	Ni	V
1	CDU-I	2-F-1	13-05-2022	60	1.40	1.539	176	7.2	42.6	485	140	20	--	20	BDL	BDL
2	CDU-I	2-F-2	13-05-2022	60	1.00	0.785	235	6.1	48.4	410	132	22	--	23	BDL	BDL
3	CDU-I	2-F-4	13-05-2022	60	1.60	2.01	164	4.5	41.5	390	125	18	--	21	BDL	BDL
4	CDU-II	11-F-01	16-05-2022	60	2.55	5.104	216	6.7	40.2	380	110	19	--	22	BDL	BDL
5	CDU-II	12-F-01	16-05-2022	60	1.60	2.01	232	4.3	42.6	365	106	17	--	20	BDL	BDL
6	CDU-III	42-F-01	18-05-2022	60	2.74	5.896	206	4.5	39.3	350	156	22	--	21	BDL	BDL
7	CDU-III	42-F-02	18-05-2022	60	1.59	1.986	278	3.6	35.2	325	175	24	--	24	BDL	BDL
8	FCCU-I	4-F-51	25-05-2022	60	2.18	3.733	184	2.3	19.2	190	94	19	--	21	BDL	BDL
9	FCCU-II	14-F-01	17-05-2022	60	1.35	1.431	210	4.4	17.8	165	190	20	--	20	BDL	BDL
10	DHT	90-F-01/2	24-05-2022	60	3.05	7.309	164	3.6	17.1	356	116	18	--	18	BDL	BDL
11	DHT- HGU	91-F-20	24-05-2022	60	2.15	3.63	148	7.4	7.6	62	73	23	--	17	BDL	BDL
12	DHDS	61-F-11	31-05-2022	60	1.60	2.011	158	6.5	31.3	48	83	17	--	21	BDL	BDL
13	NHT	72- F-01/02	19-05-2022	60	1.50	1.767	172	3.8	4.1	43	74	20	--	18	BDL	BDL
14	CCR	74-F-1/2/3/4	19-05-2022	60	3.37	8.923	154	3.5	3.8	41	75	21	--	22	BDL	BDL
15	CPP	HRSG-III	30-05-2022	60	3.00	7.065	162	12.8	19.5	37	82	16	--	21	BDL	BDL
16	CPP	HRSG-IV	30-05-2022	60	3.00	7.065	155	13.1	18.2	34	74	18	--	15	BDL	BDL
17	CPP	HRSG-V	30-05-2022	60	3.00	7.065	152	13.0	18.7	32	66	20	--	14	BDL	BDL
18	CPP	HRSG-VI	30-05-2022	60	3.00	7.065	175	12.9	19.3	43	68	21	--	20	BDL	BDL
19	PP-1	IBH	26-05-2022	60	2.40	4.525	160	3.5	36.2	48	72	22	--	16	BDL	BDL
20	DHT- HGU	91-F-01	24-05-2022	60	1.30	1.327	295	0.6	8.3	34	67	23	--	17	--	--
21	FCC NHT	75-F-01	20-05-2022	60	1.01	0.801	272	3.4	4.1	39	62	18	--	15	--	--
22	FCC NHT	75-F-51	20-05-2022	60	1.35	1.430	158	1.6	4.3	41	58	20	--	18	--	--
23	FCCU-I	FGD-I	25-05-2022	60	1.76	2.433	66	13.2	35.6	56	75	24	--	16	BDL	BDL
24	FCCU-II	FGD-II	17-05-2022	60	2.00	3.142	65	4.0	36.7	41	60	18	--	21	BDL	BDL
25	DHDSSRU	65-X-001	31-05-2022	60	1.21	1.150	218	2.5	18.2	54	53	17	8.5	17	--	--
26	DHT-SRU	92-M-22	26-05-2022	60	1.50	1.767	230	5.4	8.5	40	49	16	8.6	17	--	--

Stack emissions Revised Norm (mg/Nm³)

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

Methodology for testing of pollutants

Pollutant	Methodology	IS: 11255	Part	Year
PM	Methods for measurement of emissions from stationary sources	IS: 11255	(Part I)	1985
SO ₂	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO _x	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method			

MD. Azeem
Verified by
(MD. Azeem)
Analyst

M. Ravi Kiran
Authorized Signatory
(M. Ravi Kiran)
Managing director



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Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 GudalaBhagavan DGM - Technical	
Fax No.	0891-2759861		
Date of Reporting	02 nd September, 2022	Nature of the Sample	Fuel Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-27) August, 2022	No. of Samples	23
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO ₂ , NO _x , HC, CO, H ₂ 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 ₂	NO _x	CO	H ₂ S	HC	Ni	V
				m	m	m ²	°C	m/s	mg/Nm ³							
1	CDU-I	2-F-1	18-08-2022	60	1.40	1.539	192	7.5	35.2	435	130	23	--	22	BDL	BDL
2	CDU-I	2-F-2	18-08-2022	60	1.00	0.785	245	6.4	40.6	410	125	18	--	25	BDL	BDL
3	CDU-I	2-F-4	18-08-2022	60	1.60	2.01	176	4.6	32.3	450	115	20	--	23	BDL	BDL
4	CDU-II	11-F-01	11-08-2022	60	2.55	5.104	224	6.5	36.8	390	102	17	--	22	BDL	BDL
5	CDU-II	12-F-01	11-08-2022	60	1.60	2.01	195	4.1	37.2	375	95	16	--	21	BDL	BDL
6	CDU-III	42-F-01	16-08-2022	60	2.74	5.896	218	4.3	38.6	390	124	21	--	24	BDL	BDL
7	CDU-III	42-F-02	16-08-2022	60	1.59	1.986	245	3.8	31.2	350	132	22	--	22	BDL	BDL
8	FCCU-II	14-F-01	30-08-2022	60	1.35	1.431	216	4.5	18.5	175	135	20	--	20	BDL	BDL
9	DHT	90-F-01/2	24-08-2022	60	3.05	7.309	185	3.6	19.1	340	85	18	--	21	BDL	BDL
10	DHT-HGU	91-F-20	24-08-2022	60	2.15	3.63	186	7.1	8.2	62	77	16	--	20	BDL	BDL
11	DHDS	60-F-01	30-08-2022	60	1.34	1.410	210	3.3	35.8	65	74	19	--	22	BDL	BDL
12	NHT	72-F-01/02	23-08-2022	60	1.50	1.767	206	3.6	3.5	42	68	23	--	24	BDL	BDL
13	CCR	74-F-1/2/3/4	23-08-2022	60	3.37	8.923	198	3.5	3.2	48	72	18	--	23	BDL	BDL
14	CPP	HRSG-III	17-08-2022	60	3.00	7.065	168	12.9	18.8	44	75	21	--	22	BDL	BDL
15	CPP	HRSG-IV	17-08-2022	60	3.00	7.065	160	13.0	19.2	39	63	24	--	17	BDL	BDL
16	CPP	HRSG-V	17-08-2022	60	3.00	7.065	147	13.4	18.3	37	60	23	--	21	BDL	BDL
17	CPP	HRSG-VI	17-08-2022	60	3.00	7.065	163	13.2	18.6	45	62	20	--	23	BDL	BDL
18	PP-1	IBH	26-08-2022	60	2.40	4.525	195	3.4	34.5	46	65	21	--	17	BDL	BDL
19	DHT-HGU	91-F-01	24-08-2022	60	1.30	1.327	250	0.6	7.8	38	62	19	--	18	--	--
20	FCC NHT	75-F-01	22-08-2022	60	1.01	0.801	262	3.2	4.0	42	56	16	--	20	--	--
21	FCC NHT	75-F-51	22-08-2022	60	1.35	1.430	175	1.5	3.8	36	52	22	--	22	--	--
22	DHDSRU	65-X-001	26-08-2022	60	1.21	1.150	212	2.6	21.8	47	42	23	8.3	23	--	--
23	DHT-SRU	92-M-22	25-08-2022	60	1.50	1.767	240	5.2	8.9	36	43	22	8.5	19	--	--

Stack emissions Revised Norm (mg/Nm³)

	Fuel Type	SO ₂	NO _x	PM	CO	Ni & V	H ₂ 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 ₂	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO _x	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method	-	-	-

MD. Azeem
Verified by
(MD. Azeem)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director



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(ISO 9001:2015, OHSMS ISO 45001:2018)

Plot No. B15 & 16, Industrial Estate, Behind Pollution Control Board
Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 GudalaBhagavan	
Fax No.	0891-2759861	DGM - Technical	
Date of Reporting	01 st October, 2022	Nature of the Sample	Fuel Gases
Our Ref. No.	Pra/Env/HPCL (Stack 1-25) September, 2022	No. of Samples	25
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 11255
Parameters	Temperature, Velocity, PM, SO ₂ , NO _x , HC, CO, H ₂ 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 ²	Temp. °C	Velocity m/s	PM	SO ₂	NO _x	CO	H ₂ S	HC	Ni	V
1	CDU-I	2-F-1	08-09-2022	60	1.40	1.539	184	7.3	38.5	390	120	25	--	20	BDL	BDL
2	CDU-I	2-F-2	08-09-2022	60	1.00	0.785	232	6.5	44.3	440	118	20	--	22	BDL	BDL
3	CDU-I	2-F-4	08-09-2022	60	1.60	2.01	186	4.5	36.8	465	106	22	--	19	BDL	BDL
4	CDU-II	11-F-01	15-09-2022	60	2.55	5.104	235	6.3	32.4	375	90	19	--	20	BDL	BDL
5	CDU-II	12-F-01	15-09-2022	60	1.60	2.01	186	4.2	41.6	356	86	18	--	18	BDL	BDL
6	CDU-III	42-F-01	12-09-2022	60	2.74	5.896	210	4.1	40.2	420	115	20	--	21	BDL	BDL
7	CDU-III	42-F-02	12-09-2022	60	1.59	1.986	232	3.7	33.7	380	120	21	--	20	BDL	BDL
8	FCCU-I	4-F-51	02-09-2022	60	2.18	3.733	185	2.6	19.3	178	98	18	--	24	BDL	BDL
9	FCCU-II	14-F-01	29-09-2022	60	1.35	1.431	208	4.4	19.2	185	126	22	--	22	BDL	BDL
10	DHT	90-F-01/2	27-09-2022	60	3.05	7.309	176	3.5	19.8	350	76	19	--	24	BDL	BDL
11	DHT- HGU	91-F-20	27-09-2022	60	2.15	3.63	178	7.2	7.8	67	70	18	--	23	BDL	BDL
12	DHDS	60-F-01	29-09-2022	60	1.34	1.410	224	3.5	37.4	70	83	23	--	24	BDL	BDL
13	NHT	72- F-01/02	26-09-2022	60	1.50	1.767	217	3.4	3.8	48	75	25	--	22	BDL	BDL
14	CCR	74-F-1/2/3/4	26-09-2022	60	3.37	8.923	190	3.3	3.5	54	78	19	--	25	BDL	BDL
15	CPP	HRSG-III	21-09-2022	60	3.00	7.065	176	13.1	19.4	47	82	23	--	20	BDL	BDL
16	CPP	HRSG-IV	21-09-2022	60	3.00	7.065	168	13.2	19.7	44	72	26	--	19	BDL	BDL
17	CPP	HRSG-V	21-09-2022	60	3.00	7.065	154	13.0	19.7	42	66	21	--	23	BDL	BDL
18	CPP	HRSG-VI	21-09-2022	60	3.00	7.065	158	13.3	19.2	49	68	17	--	21	BDL	BDL
19	PP-1	IBH	22-09-2022	60	2.40	4.525	186	3.5	31.8	51	72	20	--	17	BDL	BDL
20	DHT- HGU	91-F-01	27-09-2022	60	1.30	1.327	235	0.6	7.3	43	69	17	--	20	--	--
21	FCC NHT	75-F-01	20-09-2022	60	1.01	0.801	240	3.4	4.4	47	63	18	--	22	--	--
22	FCC NHT	75-F-51	20-09-2022	60	1.35	1.430	182	1.6	4.2	41	60	20	--	23	--	--
23	FCCU-I	FGD-I	02-09-2022	60	1.76	2.433	66	13.5	35.7	55	78	19	--	20	BDL	BDL
24	DHDSSRU	65-X-001	29-09-2022	60	1.21	1.150	204	2.8	20.4	52	46	21	8.2	25	--	--
25	DHT-SRU	92-M-22	22-09-2022	60	1.50	1.767	226	5.4	8.5	40	48	20	8.4	17	--	--

Stack emissions Revised Norm (mg/Nm³)

	Fuel Type	SO ₂	NO _x	PM	CO	Ni & V	H ₂ 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	Year
PM	Methods for measurement of emissions from stationary sources	IS: 11255	(Part I)	1985
SO ₂	Methods for measurement of emissions from stationary sources	IS: 11255	(Part II)	1985
NO _x	Methods for measurement of air pollution	IS: 11255	(Part VII)	2005
HC&CO	GC Method	-	-	-

MD. Azeem
Verified by
(MD. Azeem)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director



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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 DGM - Technical	
Fax No.	0891-2759861		
Date of sampling	15 th April, 2022	Nature of the Sample	Ambient Air
Date of Reporting	04 th May, 2022	No. of Samples	3
Our Ref. No.	Pra/Env/HPCL/04 (AAQ-03)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Parameters PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel & HC	

Discipline: Chemical Testing:
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	HLPH	South Gate	Store Yard
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	65	68	73
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	25	27	24
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	19	17	15
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	24	21	20
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8 hrs	12	11	10
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL	BDL	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.52	0.47	0.45
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	11	10	09
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.39	0.44	0.35
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL	BDL	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL	BDL	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL	BDL	BDL
13	HC(mg/m ³)	GC Analysis, IS:5182 (Part XVII)	--	BDL	BDL	BDL

Note: BDL- Below Detectable Limit.

Verified by
(B. Ravi Teja)
Analyst

Authorized Signatory
(M. Ravi kiran)
Managing director



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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 DGM - Technical	
Fax No.	0891-2759861		
Date of sampling	13 th May, 2022	Nature of the Sample	Ambient Air
Date of Reporting	06 th June, 2022	No. of Samples	3
Our Ref. No.	Pra/Env/HPCL/05 (AAQ-03)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Parameters	
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel & HC		

Discipline: Chemical Testing:

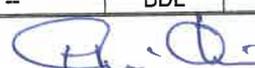
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	HLPH	South Gate	Store Yard
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	76	82	70
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	32	35	29
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	17	15	13
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	22	18	16
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8 hrs	14	12	11
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL	BDL	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.56	0.50	0.48
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	10	08	07
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.43	0.48	0.40
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL	BDL	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL	BDL	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL	BDL	BDL
13	HC (mg/m ³)	GC Analysis, IS:5182 (Part XVII)	--	BDL	BDL	BDL

Note: BDL- Below Detectable Limit.


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing director



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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 DGM - Technical	
Fax No.	0891-2759861		
Date of sampling	30 th June, 2022	Nature of the Sample	Ambient Air
Date of Reporting	04 th July, 2022	No. of Samples	3
Our Ref. No.	Pra/Env/HPCL/06 (AAQ-03)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Parameters	
Parameters		PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel & HC	

Discipline: Chemical Testing:
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	HLPH	South Gate	Store Yard
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	65	73	62
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	28	32	26
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	20	19	16
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	26	23	20
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8 hrs	16	14	12
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL	BDL	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.59	0.55	0.52
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	13	10	09
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.47	0.52	0.45
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL	BDL	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL	BDL	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL	BDL	BDL
13	HC (mg/m ³)	GC Analysis, IS: 5182 (Part XVII)	--	BDL	BDL	BDL

Note: BDL- Below Detectable Limit.


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



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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 DGM - Technical	
Fax No.	0891-2759861		
Date of sampling	12 th August, 2022		
Date of Reporting	02 nd September, 2022	Nature of the Sample	Ambient Air
Our Ref. No.	Pra/Env/HPCL/08 (AAQ-03)	No. of Samples	3
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Method of Analysis	IS: 5182 & AWMA
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel & HC		

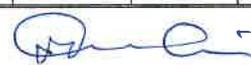
Discipline: Chemical Testing:
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	HLPH	South Gate	Store Yard
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	65	70	62
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	28	34	27
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	18	20	16
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	25	26	23
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8 hrs	14	12	13
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL	BDL	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.53	0.56	0.50
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	12	11	10
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.45	0.51	0.44
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL	BDL	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL	BDL	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL	BDL	BDL
13	HC(mg/m ³)	GC Analysis, IS:5182 (Part XVII)	--	BDL	BDL	BDL

Note: BDL- Below Detectable Limit.


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

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(ISO 9001:2015, OHSMS ISO 45001:2018)

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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 DGM - Technical	
Fax No.	0891-2759861		
Date of sampling	09 th September, 2022	Nature of the Sample	Ambient Air
Date of Reporting	01 st October, 2022	No. of Samples	3
Our Ref. No.	Pra/Env/HPCL/09 (AAQ-03)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG		
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel & HC		

Discipline: Chemical Testing;
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	HLPH	South Gate	Store Yard
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	54	60	51
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	23	26	22
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	14	16	12
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	19	21	17
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8 hrs	11	10	12
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL	BDL	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.45	0.48	0.42
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	10	9.0	8.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.38	0.42	0.40
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL	BDL	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL	BDL	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL	BDL	BDL
13	HC (mg/m ³)	GC Analysis, IS: 5182 (Part XVII)	--	BDL	BDL	BDL

Note: BDL- Below Detectable Limit.

MD. Azeem
Verified by
(MD. Azeem)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director



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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 GudalaBhagavan	
Fax No.	0891-2759861	DGM – Technical	
Date of sampling	15 th April, 2022	Nature of the Sample	Ambient Air
Date of Reporting	04 th May, 2022	No. of Samples	1
Our Ref. No.	Pra/Env/HPCL/04 (AAQ-01)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG		
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel		

Discipline: Chemical Testing:

Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	Malkapuram
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	75
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	30
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	12
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	16
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8hrs	10.0
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.30
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	08.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.21
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL

Note: BDL- Below Detectable Limit.

Verified by
(B. Ravi Teja)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director



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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 GudalaBhagavan	
Fax No.	0891-2759861	DGM –Technical	
Date of sampling	14 th May, 2022	Nature of the Sample	Ambient Air
Date of Reporting	06 th June, 2022	No. of Samples	1
Our Ref. No.	Pra/Env/HPCL/05 (AAQ-01)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG		
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel		

Discipline: Chemical Testing:

Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	Malkapuram
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	65
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	27
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	11
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	14
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8hrs	9.0
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.34
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	7.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0- Annum	0.25
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0- Annum	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0- Annum	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 - Annum	BDL

Note: BDL- Below Detectable Limit.


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing director



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Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 GudalaBhagavan	
Fax No.	0891-2759861	DGM -Technical	
Date of sampling	30 th June, 2022	Nature of the Sample	Ambient Air
Date of Reporting	04 th July, 2022	No. of Samples	1
Our Ref. No.	Pra/Env/HPCL/06 (AAQ-01)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG		
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel		

Discipline: Chemical Testing:

Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	Malkapuram
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	58
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	23
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	13
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	19
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8hrs	11.0
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.38
8	NH ₃ (µg/m ³)	indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	9.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.30
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL

Note: BDL- Below Detectable Limit.


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



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Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 sampling	08 th July, 2022	Nature of the Sample	Ambient Air
Date of Reporting	14 th July, 2022	No. of Samples	1
Our Ref. No.	Pra/Env/HPCL/07 (AAQ-01)	Method of Analysis	
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	IS: 5182 & AWMA	
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel		
ULR No.	ULR-TC5741220000000272F		
Our Report No	PLCPL/22/3006/1980		

Discipline: Chemical Testing;
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	Malkapuram
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	50
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	19
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	11
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	15
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8hrs	9.0
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.30
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	08.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.25
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL

Note: BDL- Below Detectable Limit

MD. Azeem
Verified by
(MD. Azeem)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director

COPY

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TEST REPORT

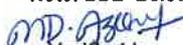
Industry Name	Hindustan Petroleum Corporation Limited		
Address	Visakh Refinery, Malkapuram, Visakhapatnam-530 011		
Phone No.	0891-2894825/4818	Kind attention to: Sri GudalaBhagavan	
Fax No.	0891-2759861	DGM -Technical	
Date of sampling	12 th August, 2022	Nature of the Sample	Ambient Air
Date of Reporting	02 nd September, 2022	No. of Samples	1
Our Ref. No.	Pra/Env/HPCL/08 (AAQ-01)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG		
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel		

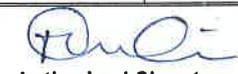
Discipline: Chemical Testing
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	Malkapuram
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	57
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	21
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	13
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	18
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8hrs	11.0
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.36
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	10.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.30
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL

Note: BDL- Below Detectable Limit.


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



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Telefax : 040-23717213 Mail : info@pragathilabs.com Web : 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 sampling	09 th September, 2022	Nature of the Sample	Ambient Air
Date of Reporting	01 st October, 2022	No. of Samples	1
Our Ref. No.	Pra/Env/HPCL/09 (AAQ-01)	Method of Analysis	IS: 5182 & AWMA
P.O. No.	20000433-HB/PR200066-HP/LOA/AG		
Parameters	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, CO, NH ₃ , Benzene, Benzo(a)pyrene, Arsenic & Nickel		

Discipline: Chemical Testing
Group: Atmospheric Pollution

AMBIENT AIR QUALITY

No.	Pollutant	Methods of Measurement & Analysis	NAAQS	Malkapuram
1	PM ₁₀ (µg/m ³)	Gravimetric, IS: 5182 (Part 23)	100 - 24 hrs	48
2	PM _{2.5} (µg/m ³)	Gravimetric, SOP- AIR 004	60 - 24 hrs	19
3	SO ₂ (µg/m ³)	Improved West & Gaeke, IS: 5182 (Part 02)	80 - 24 hrs	10
4	NO ₂ (µg/m ³)	Modified Jacob & Hochheiser (NaArsenite), IS: 5182 (Part 06)	80 - 24 hrs	14
5	O ₃ (µg/m ³)	Chemical method, IS: 5182 (Part 09)	100 - 8hrs	9.0
6	Pb (µg/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, IS: 5182 (Part 22)	1.0-24 hrs	BDL
7	CO (mg/m ³)	Gas Chromatography based on Continuous analyzer, IS: 5182 (Part 10)	2.0- 1 hr	0.30
8	NH ₃ (µg/m ³)	Indophenol blue Method, Method: 401 AWMA	400 - 24 hrs	8.0
9	C ₆ H ₆ (µg/m ³)	Gas Chromatography based on continuous analyzer, IS: 5182 (Part 11)	5.0-Annum	0.23
10	B(a)P (ng/m ³)	GC analysis, CPCB	1.0-Annum	BDL
11	As (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	6.0-Annum	BDL
12	Ni (ng/m ³)	AAS Method after Sampling on EPM 2000 or equipment Filter Pa-, Method: 822, AWMA	20 -Annum	BDL

Note: BDL - Below Detectable Limit.

MD. Azeem
Verified by
(MD. Azeem)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing Director



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Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT



Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3363/2182	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021	ULR No	ULR-TC5741220000000304F
Sample particulars	Bore water-4 (At Labour gate) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of 1L		
Test required	Color, Odor, Taste, Turbidity, pH, TDS, Al, Ca, Cl, Cu, F, Residual free Chlorine, Fe, Mg, Mn, NO ₃ , Se, SO ₄ , Tot. Alk, Tot. Hardness, Zn, Cd, Pb, Hg, Ni, As, Tot. Chromium, Oil & Grease, S, B,		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Colour	Hazen	IS:3025(P04)	<5	5	15
Odour	-	IS:3025(P05)	Agreeable	Agreeable	Agreeable
Taste	-	IS:3025(P07)	Agreeable	Agreeable	Agreeable
Turbidity	NTU	IS:3025(P10)	1.0		
pH	-	IS:3025(P11)	7.5	6.5 to 8.5	NR
TDS	mg/l	IS:3025(P16)	841	500	2000
Aluminium (as Al) (Max.)	mg/l	IS:3025(P55)	0.03	0.03	0.2
Ammonia as N	mg/l	IS:3025(P34)	<0.1	0.5	0.5
Calcium as Ca	mg/l	IS:3025(P40)	66	75	200
Chlorides as Cl (Max.)	mg/l	IS:3025(P32)	195	250	1000
Copper as Cu (Max.)	mg/l	IS:3025(P42)	0.04	0.05	1.5
Fluorides as F (Max.)	mg/l	IS:3025(P60)	1.0	1	1.5
Residual free Chlorine	mg/l	IS:3025(P26)	0.08	0.2	1
Iron (as Fe) (Max.)	mg/l	IS:3025(P53)	0.1	1.0	1.0
Magnesium as Mg	mg/l	IS:3025(P46)	17	30	100
Manganese (as Mn)	mg/l	IS:3025(P59)	0.06	0.1	0.3
Nitrate as NO ₃	mg/l	IS:3025(P34)	3.5	45	45
Selenium (as Se) (Max.)	mg/l	IS:3025(P56)	BDL	0.01	NR
Sulphates as SO ₄	mg/l	IS:3025(P24)	77	200	400
T. Alkalinity as CaCO ₃	mg/l	IS:3025(P23)	204	200	600
T. Hardness as CaCO ₃	mg/l	IS:3025(P21)	236	200	600
Zinc (as Zn) (Max.)	mg/l	IS:3025(P49)	2.7	5	15
Cadmium (as Cd) (Max.)	mg/l	IS:3025(P41)	BDL	0.003	NR
Lead (as Pb) (Max.)	mg/l	IS:3025(P47)	BDL	0.01	NR
Mercury (as Hg) (Max.)	mg/l	IS:3025(P48)	BDL	0.001	NR
Nickel as Ni	mg/l	IS:3025(P54)	BDL	0.02	NR
Total Arsenic (as As) (Max.)	mg/l	IS:3025(P37)	BDL	0.01	0.01
Total Chromium (as Cr ⁺⁶)	mg/l	IS:3025(P52)	BDL	0.05	NR
Oil and Grease	mg/l	IS:3025(P39)	0.1	0.5	0.5
Sulphide (as S)	mg/L	IS:3025(P29)	BDL	0.05	NR
Boron (as B) (Max.)	mg/l	IS:3025(P57)	<0.01	0.5	2.4

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha
Verified by
(K. Anusha)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

Plot No. B15 & 16, Industrial Estate, Behind Pollution Control Board
Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT



Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3364/2184	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date.:2/7/2021	ULR No	ULR-TC5741220000000304F
Sample particulars	Bore water-8 (West of tank 90) No. of samples 1(One) packed in 2 containers (PVC No.1+Bsgb No.1) each 1L		
Test required	Color, Odor, Taste, Turbidity, pH, TDS, Al, Ca, Cl, Cu, F, Residual free Chlorine, Fe, Mg, Mn, NO ₃ , Se, SO ₄ , Tot. Alk, Tot. Hardness, Zn, Cd, Pb, Hg, Ni, As, Tot. Chromium, Oil & Grease, S, B.		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Colour	Hazen	IS:3025(P04)	<5	5	15
Odour	-	IS:3025(P05)	Agreeable	Agreeable	Agreeable
Taste	-	IS:3025(P07)	Agreeable	Agreeable	Agreeable
Turbidity	NTU	IS:3025(P10)	1.0		
pH	--	IS:3025(P11)	7.1	6.5 to 8.5	NR
TDS	mg/l	IS:3025(P16)	1211	500	2000
Aluminium (as Al) (Max.)	mg/l	IS:3025(P55)	0.06	0.03	0.2
Ammonia as N	mg/l	IS:3025(P34)	0.2	0.5	0.5
Calcium as Ca	mg/l	IS:3025(P40)	81	75	200
Chlorides as Cl (Max.)	mg/l	IS:3025(P32)	235	250	1000
Copper as Cu (Max.)	mg/l	IS:3025(P42)	0.05	0.05	1.5
Fluorides as F (Max.)	mg/l	IS:3025(P60)	1.2	1	1.5
Residual free Chlorine	mg/l	IS:3025(P26)	Nil	0.2	1
Iron (as Fe) (Max.)	mg/l	IS:3025(P53)	0.3	1.0	1.0
Magnesium as Mg	mg/l	IS:3025(P46)	45	30	100
Manganese (as Mn)	mg/l	IS:3025(P59)	0.07	0.1	0.3
Nitrate as NO ₃	mg/l	IS:3025(P34)	4.2	45	45
Selenium (as Se) (Max.)	mg/l	IS:3025(P56)	BDL	0.01	0.01
Sulphates as SO ₄	mg/l	IS:3025(P24)	101	200	400
T. Alkalinity as CaCO ₃	mg/l	IS:3025(P23)	276	200	600
T. Hardness as CaCO ₃	mg/l	IS:3025(P21)	386	200	600
Zinc (as Zn) (Max.)	mg/l	IS:3025(P49)	2.3	5	15
Cadmium (as Cd) (Max.)	mg/l	IS:3025(P41)	BDL	0.003	NR
Lead (as Pb) (Max.)	mg/l	IS:3025(P47)	BDL	0.01	NR
Mercury (as Hg) (Max.)	mg/l	IS:3025(P48)	BDL	0.001	NR
Nickel as Ni	mg/l	IS:3025(P54)	BDL	0.02	NR
Total Arsenic (as As) (Max.)	mg/l	IS:3025(P37)	BDL	0.01	0.01
Total Chromium (as Cr ⁶⁺)	mg/l	IS:3025(P52)	BDL	0.05	NR
Oil and Grease	mg/l	IS:3025(P39)	0.3	0.5	0.5
Sulphide (as S)	mg/L	IS:3025(P29)	BDL	0.05	NR
Barium (as Ba)	mg/L	Annex F of IS 13428	0.05	0.7	NR
Boron (as B) (Max.)	mg/l	IS:3025(P57)	0.03	0.5	2.4

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha
Verified by
(K. Anusha)
Analyst

M. Ravi Kiran
Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

PLCPL/C.1.7.8/F2

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS,GOVT.OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

Plot No. B15 & 16, Industrial Estate, Behind Pollution Control Board
Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT

Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery ,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August,2022	Date of Receipt	30 th August,2022
Date of test performed	30 th August to 05 th September,2022	Date of Reporting	05 th September,2022
Report No.	PLCPL/22/3364/2185	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021		
Sample particulars	Bore water-8 (West of tank 90) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of one liter.		
Test required	Phenolic compds,CN, Pb, Hg, Mo, Ag, MBAS, Ba,Chloramines, Mineral oil, PCB, PAH, Trihalomethanes		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline:Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Phenolic compounds	mg/l	IS:3025(P43)	Nil	0.001	0.002
Cyanide (as CN) (Max.)	mg/l	IS:3025(P27)	Nil	0.05	NR
Molybdenum	mg/l	IS:3025(P02)	BDL	0.07	0.07
Silver (as Ag)	mg/L	Annex J of IS 13428	BDL	0.1	NR
Anionic detergents as MBAS	mg/L	IS 13428	BDL	0.2	1.0
Barium (as Ba)	mg/L	Annex F of IS 13428	0.06	0.7	NR
Chloramines as Cl ₂	mg/l	IS:3025(P26)	BDL	4.0	4.0
Mineral oil	mg/l	IS:3025(P39)	0.2	0.5	0.5
Polychlorinated biphenyls	mg/l	ASTM 5175	BDL	0.0005	0.0005
Polynuclear Aromatic hydrocarbon as PAH	mg/l	APHA 6440	BDL	0.0001	0.0001
Trihalomethanes					
Bromoform	mg/l	APHA 6232	BDL	0.1	0.1
Dibromochloromethane	mg/l	APHA 6232	BDL	0.1	0.1
Bromodichloromethane	mg/l	APHA 6232	BDL	0.06	0.06
Chloroform	mg/l	APHA 6232	BDL	0.2	0.2

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anushe

Verified by
(K. Anusha)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT



Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3365/2186	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021	ULR No	ULR-TC574122000000304F
Sample particulars	Bore water-9 (South East SS6/B Substation) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of 1L		
Test required	Color, Odor, Taste, Turbidity, pH, TDS, Al, Ca, Cl, Cu, F, Residual free Chlorine, Fe, Mg, Mn, NO ₃ , Se, SO ₄ , Tot. Alk, Tot. Hardness, Zn, Cd, Pb, Hg, Ni, As, Tot. Chromium, Oil & Grease, S, B,		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Colour	Hazen	IS:3025(P04)	<5	5	15
Odour	-	IS:3025(P05)	Agreeable	Agreeable	Agreeable
Taste	-	IS:3025(P07)	Agreeable	Agreeable	Agreeable
Turbidity	NTU	IS:3025(P10)	1.0		
pH	-	IS:3025(P11)	7.4	6.5 to 8.5	NR
TDS	mg/l	IS:3025(P16)	721	500	2000
Aluminium (as Al) (Max.)	mg/l	IS:3025(P55)	0.03	0.03	0.2
Ammonia as N	mg/l	IS:3025(P34)	<0.1	0.5	0.5
Calcium as Ca	mg/l	IS:3025(P40)	53	75	200
Chlorides as Cl (Max.)	mg/l	IS:3025(P32)	135	250	1000
Copper as Cu (Max.)	mg/l	IS:3025(P42)	0.03	0.05	1.5
Fluorides as F (Max.)	mg/l	IS:3025(P60)	0.9	1	1.5
Residual free Chlorine	mg/l	IS:3025(P26)	<0.1	0.2	1
Iron (as Fe) (Max.)	mg/l	IS:3025(P53)	0.13	1.0	1.0
Magnesium as Mg	mg/l	IS:3025(P46)	18	30	100
Manganese (as Mn)	mg/l	IS:3025(P59)	0.04	0.1	0.3
Nitrate as NO ₃	mg/l	IS:3025(P34)	2.2	45	45
Selenium (as Se) (Max.)	mg/l	IS:3025(P56)	BDL	0.01	NR
Sulphates as SO ₄	mg/l	IS:3025(P24)	63	200	400
T. Alkalinity as CaCO ₃	mg/l	IS:3025(P23)	180	200	600
T. Hardness as CaCO ₃	mg/l	IS:3025(P21)	208	200	600
Zinc (as Zn) (Max.)	mg/l	IS:3025(P49)	3.1	5	15
Cadmium (as Cd) (Max.)	mg/l	IS:3025(P41)	BDL	0.003	NR
Lead (as Pb) (Max.)	mg/l	IS:3025(P47)	BDL	0.01	NR
Mercury (as Hg) (Max.)	mg/l	IS:3025(P48)	BDL	0.001	NR
Nickel as Ni	mg/l	IS:3025(P54)	BDL	0.02	NR
Total Arsenic (as As) (Max.)	mg/l	IS:3025(P37)	BDL	0.01	0.01
Total Chromium (as Cr ⁶⁺)	mg/l	IS:3025(P52)	BDL	0.05	NR
Oil and Grease	mg/l	IS:3025(P39)	0.1	0.5	0.5
Sulphide (as S)	mg/L	IS:3025(P29)	BDL	0.05	NR
Boron (as B) (Max.)	mg/l	IS:3025(P57)	0.01	0.5	2.4

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha
Verified by
(K. Anusha)
Analyst

M. Ravi Kiran
Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT

Issued to

Hindustan Petroleum Corporation Limited
Visakh Refinery ,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3365/2187	Method of Sampling	IS:3025Part(01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021		
Sample particulars	Bore water-9 (South East SS6/B Substation) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each 1L		
Test required	Phenolic compds, CN, Pb, Hg, Mo, Ag, MBAS, Ba, Chloramines, Mineral oil, PCB, PAH, Trihalomethanes		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Phenolic compounds	mg/l	IS:3025(P43)	Nil	0.001	0.002
Cyanide (as CN) (Max.)	mg/l	IS:3025(P27)	Nil	0.05	NR
Molybdenum	mg/l	IS:3025(P02)	BDL	0.07	0.07
Silver (as Ag)	mg/L	Annex J of IS 13428	BDL	0.1	NR
Anionic detergents as MBAS	mg/L	IS 13428	BDL	0.2	1.0
Barium (as Ba)	mg/L	Annex F of IS 13428	<0.1	0.7	NR
Chloramines as Cl ₂	mg/l	IS:3025(P26)	BDL	4.0	4.0
Mineral oil	mg/l	IS:3025(P39)	0.1	0.5	0.5
Polychlorinated biphenyls	mg/l	ASTM 5175	BDL	0.0005	0.0005
Polynuclear Aromatic hydrocarbon as PAH	mg/l	APHA 6440	BDL	0.0001	0.0001
Trihalomethanes					
Bromoform	mg/l	APHA 6232	BDL	0.1	0.1
Dibromochloromethane	mg/l	APHA 6232	BDL	0.1	0.1
Bromodichloromethane	mg/l	APHA 6232	BDL	0.06	0.06
Chloroform	mg/l	APHA 6232	BDL	0.2	0.2

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha

Verified by
(K. Anusha)
Analyst

M. Ravi Kiran

Authorized Signatory
(M. Ravi Kiran)
Managing director



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TEST REPORT

Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery ,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3366/2189	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021		
Sample particulars	Bore water-10 (M.O.I) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of one liter.		
Test required	Phenolic compds, CN, Pb, Hg, Mo, Ag, MBAS, Ba, Chloramines, Mineral oil, PCB, PAH, Trihalomethanes		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Phenolic compounds	mg/l	IS:3025(P43)	Nil	0.001	0.002
Cyanide (as CN) (Max.)	mg/l	IS:3025(P27)	Nil	0.05	NR
Molybdenum	mg/l	IS:3025(P02)	BDL	0.07	0.07
Silver (as Ag)	mg/L	Annex J of IS 13428	BDL	0.1	NR
Anionic detergents as MBAS	mg/L	IS 13428	BDL	0.2	1.0
Barium (as Ba)	mg/L	Annex F of IS 13428	0.08	0.7	NR
Chloramines as Cl ₂	mg/l	IS:3025(P26)	BDL	4.0	4.0
Mineral oil	mg/l	IS:3025(P39)	0.1	0.5	0.5
Polychlorinated biphenyls	mg/l	ASTM 5175	BDL	0.0005	0.0005
Polynuclear Aromatic hydrocarbon as PAH	mg/l	APHA 6440	BDL	0.0001	0.0001
Trihalomethanes					
Bromoform	mg/l	APHA 6232	BDL	0.1	0.1
Dibromochloromethane	mg/l	APHA 6232	BDL	0.1	0.1
Bromodichloromethane	mg/l	APHA 6232	BDL	0.06	0.06
Chloroform	mg/l	APHA 6232	BDL	0.2	0.2

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha
Verified by
(K. Anusha)
Analyst

M. Ravi Kiran
Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
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TEST REPORT



Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3368/2192	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021	ULR No	ULR-TC5741220000000304F
Sample particulars	Bore water-21 (East of Centrifuge ETP-2) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of one liter.		
Test required	Color, Odor, Taste, Turbidity, pH, TDS ,Al, Ca, Cl, Cu, F, Residual free Chlorine, Fe, Mg, Mn, NO ₃ , Se, SO ₄ , Tot. Alk, Tot. Hardness, Zn, Cd, Pb, Hg, Ni, As, Tot. Chromium, Oil & Grease, S, B,		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Colour	Hazen	IS:3025(P04)	<5	5	15
Odour	-	IS:3025(P05)	Agreeable	Agreeable	Agreeable
Taste	-	IS:3025(P07)	Agreeable	Agreeable	Agreeable
Turbidity	NTU	IS:3025(P10)	1.0		
pH	--	IS:3025(P11)	6.9	6.5 to 8.5	NR
TDS	mg/l	IS:3025(P16)	1234	500	2000
Aluminium (as Al) (Max.)	mg/l	IS:3025(P55)	0.07	0.03	0.2
Ammonia as N	mg/l	IS:3025(P34)	0.3	0.5	0.5
Calcium as Ca	mg/l	IS:3025(P40)	82	75	200
Chlorides as Cl (Max.)	mg/l	IS:3025(P32)	240	250	1000
Copper as Cu (Max.)	mg/l	IS:3025(P42)	0.07	0.05	1.5
Fluorides as F (Max.)	mg/l	IS:3025(P60)	1.3	1	1.5
Residual free Chlorine	mg/l	IS:3025(P26)	Nil	0.2	1
Iron (as Fe) (Max.)	mg/l	IS:3025(P53)	0.4	1.0	1.0
Magnesium as Mg	mg/l	IS:3025(P46)	45	30	100
Manganese (as Mn)	mg/l	IS:3025(P59)	0.08	0.1	0.3
Nitrate as NO ₃	mg/l	IS:3025(P34)	4.7	45	45
Selenium (as Se) (Max.)	mg/l	IS:3025(P56)	BDL	0.01	NR
Sulphates as SO ₄	mg/l	IS:3025(P24)	156	200	400
T. Alkalinity as CaCO ₃	mg/l	IS:3025(P23)	280	200	600
T. Hardness as CaCO ₃	mg/l	IS:3025(P21)	392	200	600
Zinc (as Zn) (Max.)	mg/l	IS:3025(P49)	2.9	5	15
Cadmium (as Cd) (Max.)	mg/l	IS:3025(P41)	BDL	0.003	NR
Lead (as Pb) (Max.)	mg/l	IS:3025(P47)	BDL	0.01	NR
Mercury (as Hg) (Max.)	mg/l	IS:3025(P48)	BDL	0.001	NR
Nickel as Ni	mg/l	IS:3025(P54)	BDL	0.02	NR
Total Arsenic (as As) (Max.)	mg/l	IS:3025(P37)	BDL	0.01	0.01
Total Chromium (as Cr ⁶⁺)	mg/l	IS:3025(P52)	BDL	0.05	NR
Oil and Grease	mg/l	IS:3025(P39)	0.2	0.5	0.5
Sulphide (as S)	mg/L	IS:3025(P29)	BDL	0.05	NR
Boron (as B) (Max.)	mg/l	IS:3025(P57)	0.03	0.5	2.4

Note: NS – Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha
Verified by
(K. Anusha)
Analyst

M. Ravi Kiran
Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

Plot No. B15 & 16, Industrial Estate, Behind Pollution Control Board
Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT

Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3368/2193	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021		
Sample particulars	Bore water-21 (East of Centrifuge ETP-2) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of one liter.		
Test required	Phenolic compds, CN, Pb, Hg, Mo, Ag, MBAS, Ba, Chloramines, Mineral oil, PCB, PAH, Trihalomethanes		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Phenolic compounds	mg/l	IS:3025(P43)	Nil	0.001	0.002
Cyanide (as CN) (Max.)	mg/l	IS:3025(P27)	Nil	0.05	NR
Molybdenum	mg/l	IS:3025(P02)	BDL	0.07	0.07
Silver (as Ag)	mg/L	Annex J of IS 13428	BDL	0.1	NR
Anionic detergents as MBAS	mg/L	IS 13428	BDL	0.2	1.0
Barium (as Ba)	mg/L	Annex F of IS 13428	0.04	0.7	NR
Chloramines as Cl ₂	mg/l	IS:3025(P26)	BDL	4.0	4.0
Mineral oil	mg/l	IS:3025(P39)	0.1	0.5	0.5
Polychlorinated biphenyls	mg/l	ASTM 5175	BDL	0.0005	0.0005
Polynuclear Aromatic hydrocarbon as PAH	mg/l	APHA 6440	BDL	0.0001	0.0001
Trihalomethanes					
Bromoform	mg/l	APHA 6232	BDL	0.1	0.1
Dibromochloromethane	mg/l	APHA 6232	BDL	0.1	0.1
Bromodichloromethane	mg/l	APHA 6232	BDL	0.06	0.06
Chloroform	mg/l	APHA 6232	BDL	0.2	0.2

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

Verified by
(K. Anusha)
Analyst

Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

Plot No. B15 & 16, Industrial Estate, Behind Pollution Control Board
Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT



Issued to
Hindustan Petroleum Corporation Limited
Visakh Refinery,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/22/3369/2194	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021	ULR No	ULR-TC5741220000000304F
Sample particulars	Bore water-18 (Chemical House) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of one liter.		
Test required	Color, Odor, Taste, Turbidity, pH, TDS, Al, Ca, Cl, Cu, F, Residual free Chlorine, Fe, Mg, Mn, NO ₃ , Se, SO ₄ , Tot. Alk, Tot. Hardness, Zn, Cd, Pb, Hg, Ni, As, Tot. Chromium, Oil & Grease, S, B.		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Colour	Hazen	IS:3025(P04)	<5	5	15
Odour	-	IS:3025(P05)	Agreeable	Agreeable	Agreeable
Taste	-	IS:3025(P07)	Agreeable	Agreeable	Agreeable
Turbidity	NTU	IS:3025(P10)	1.0		
pH	-	IS:3025(P11)	7.4	6.5 to 8.5	NR
TDS	mg/l	IS:3025(P16)	987	500	2000
Aluminium (as Al) (Max.)	mg/l	IS:3025(P55)	0.03	0.03	0.2
Ammonia as N	mg/l	IS:3025(P34)	0.2	0.5	0.5
Calcium as Ca	mg/l	IS:3025(P40)	61	75	200
Chlorides as Cl (Max.)	mg/l	IS:3025(P32)	155	250	1000
Copper as Cu (Max.)	mg/l	IS:3025(P42)	0.03	0.05	1.5
Fluorides as F (Max.)	mg/l	IS:3025(P60)	1.0	1	1.5
Residual free Chlorine	mg/l	IS:3025(P26)	Nil	0.2	1
Iron (as Fe) (Max.)	mg/l	IS:3025(P53)	0.1	1.0	1.0
Magnesium as Mg	mg/l	IS:3025(P46)	15	30	100
Manganese (as Mn)	mg/l	IS:3025(P59)	0.04	0.1	0.3
Nitrate as NO ₃	mg/l	IS:3025(P34)	2.6	45	45
Selenium (as Se) (Max.)	mg/l	IS:3025(P56)	BDL	0.01	NR
Sulphates as SO ₄	mg/l	IS:3025(P24)	72	200	400
T. Alkalinity as CaCO ₃	mg/l	IS:3025(P23)	206	200	600
T. Hardness as CaCO ₃	mg/l	IS:3025(P21)	228	200	600
Zinc (as Zn) (Max.)	mg/l	IS:3025(P49)	3.2	5	15
Cadmium (as Cd) (Max.)	mg/l	IS:3025(P41)	BDL	0.003	NR
Lead (as Pb) (Max.)	mg/l	IS:3025(P47)	BDL	0.01	NR
Mercury (as Hg) (Max.)	mg/l	IS:3025(P48)	BDL	0.001	NR
Nickel as Ni	mg/l	IS:3025(P54)	BDL	0.02	NR
Total Arsenic (as As) (Max.)	mg/l	IS:3025(P37)	BDL	0.01	0.01
Total Chromium (as Cr ⁶⁺)	mg/l	IS:3025(P52)	BDL	0.05	NR
Oil and Grease	mg/l	IS:3025(P39)	0.1	0.5	0.5
Sulphide (as S)	mg/L	IS:3025(P29)	BDL	0.05	NR
Boron (as B) (Max.)	mg/l	IS:3025(P57)	0.02	0.5	2.4

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit

K. Anusha
Verified by
(K. Anusha)
Analyst

M. Ravi Kiran
Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

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(ISO 9001:2015, OHSMS ISO 45001:2018)

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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT

Issued to

Hindustan Petroleum Corporation Limited
Visakh Refinery ,
Malkapuram
Visakhapatnam-530 011
Phone No. 0891-2894825/4818
Kind attention to Bhukya Rajesh Naik

Date of Sampling	30 th August, 2022	Date of Receipt	30 th August, 2022
Date of test performed	30 th August to 05 th September, 2022	Date of Reporting	05 th September, 2022
Report No.	PLCPL/3369/2195	Method of Sampling	IS: 3025 (Part 01)
Your Ref No.	21000406-OP-46002/SS Date. 12/7/2021		
Sample particulars	Bore water-18 (Chemical House) No. of samples 1 (One) packed in 2 containers (PVC No.1+Bsgb No.1) each of one liter.		
Test required	Phenolic compds, CN, Pb, Hg, Mo, Ag, MBAS, Ba, Chloramines, Mineral oil, PCB, PAH, Trihalomethanes		
Sampling Done by	Mr. I. Ramamurthy Field in charge, PLCPL	Sample Condition	Satisfactory

Discipline: Chemical Testing
Group: Water

TEST RESULTS

Parameter	Unit	Method	Result	IS10500 Limits	
				Acceptable	Permissible
Phenolic compounds	mg/l	IS:3025(P43)	Nil	0.001	0.002
Cyanide (as CN) (Max.)	mg/l	IS:3025(P27)	Nil	0.05	NR
Molybdenum	mg/l	IS:3025(P02)	BDL	0.07	0.07
Silver (as Ag)	mg/L	Annex J of IS 13428	BDL	0.1	NR
Anionic detergents as MBAS	mg/L	IS 13428	BDL	0.2	1.0
Barium (as Ba)	mg/L	Annex F of IS 13428	0.04	0.7	NR
Chloramines as Cl ₂	mg/l	IS:3025(P26)	BDL	4.0	4.0
Mineral oil	mg/l	IS:3025(P39)	0.1	0.5	0.5
Polychlorinated biphenyls	mg/l	ASTM 5175	BDL	0.0005	0.0005
Polynuclear Aromatic hydrocarbon as PAH	mg/l	APHA 6440	BDL	0.0001	0.0001
Trihalomethanes					
Bromoform	mg/l	APHA 6232	BDL	0.1	0.1
Dibromochloromethane	mg/l	APHA 6232	BDL	0.1	0.1
Bromodichloromethane	mg/l	APHA 6232	BDL	0.06	0.06
Chloroform	mg/l	APHA 6232	BDL	0.2	0.2

Note: NS - Not Specified in IS 10500, NR- No Relaxation Note: Results relate only to the sample tested :BDL-Below Detection Limit


Verified by
(K. Anusha)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

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Sanath Nagar, Hyderabad – 500 018, Tele Fax : 040-23717213
E-mail:info@pragathilabs.com Website: www.pragathilabs.com

TEST REPORT

Issued to

Chief Manager-Technical
M/s. Hindustan Petroleum Corporation Ltd.
Visakh Refinery
Malkapuram
Visakhapatnam – 530 011
Andhra Pradesh

Kind attention to: Sri Gudala Bhagavan

Date of Monitoring	15 th April, 2022	Date of Reporting	04 th May, 2022
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Report No.	Pra/Env/HPCL/22/04/N01 to N03
Sample particulars	Noise, No. of samples:3 (Three)		
Instruments used	Model No. SL -4001/I.55417 Make: Aero Vironment Engineers Inc. Due Date: 13.08.2022		
Test required	Recording Noise Levels		
Method of analysis	IS: 9989	Page No.	1 of 1

RESULTS

S. No.	Locations	Equivalent Levels dB (A)	
		Day Time (L _d) (6 am to 10pm)	Night Time (L _n) (10pm to 6 am)
1	1m distance away from South Gate	72	63
2	1m distance away from Store Yard	67	58
3	1m distance away from HLPH	65	56

NOISE QUALITY STANDARDS IN RESPECT OF NOISE

Area Code	Category of Area	Limits in dB(A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40


Verified by
(B. Ravi Teja)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



PRAGATHI LABS & CONSULTANTS PVT.LTD.

(LAB RECOGNISED BY MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

(ISO 9001:2015, OHSMS ISO 45001:2018)

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Opp. Bank of Baroda, Sanath Nagar, Hyderabad - 500 018. Telangana.
Telefax : 040-23717213 Mail : info@pragathilabs.com Web : www.pragathilabs.com

TEST REPORT

Issued to

Chief Manager-Technical
M/s. Hindustan Petroleum Corporation Ltd.
Visakh Refinery
Malkapuram
Visakhapatnam – 530 011
Andhra Pradesh

Kind attention to: Sri Gudala Bhagavan

Date of Monitoring	30 th June, 2022	Date of Reporting	04 th July, 2022
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Report No.	Pra/Env/HPCL/22/06/N01 to N03
Sample particulars	Noise, No. of samples:3 (Three)		
Instruments used	Model No. SL -4001/1.55417 Make: Aero Vironment Engineers Inc. Due Date: 13.08.2022		
Test required	Recording Noise Levels		
Method of analysis	IS: 9989	Page No.	1 of 1

RESULTS

S. No.	Locations	Equivalent Levels dB (A)	
		Day Time (L _d) (6 am to 10pm)	Night Time (L _n) (10pm to 6 am)
1	1m distance away from South Gate	71	62
2	1m distance away from Store Yard	68	57
3	1m distance away from HLPH	63	54

NOISE QUALITY STANDARDS IN RESPECT OF NOISE

Area Code	Category of Area	Limits in dB(A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



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TEST REPORT

Issued to

Chief Manager-Technical
M/s. Hindustan Petroleum Corporation Ltd.
Visakh Refinery
Malkapuram
Visakhapatnam – 530 011
Andhra Pradesh

Kind attention to: Sri Gudala Bhagavan

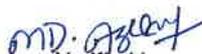
Date of Monitoring	12 th August, 2022	Date of Reporting	02 nd September, 2022
P.O. No.	20000433-HB/PR200066-HP/LOA/AG	Report No.	Pra/Env/HPCL/22/07/N01 to N03
Sample particulars	Noise, No. of samples:3 (Three)		
Instruments used	Model No. SL -4001/I.55417 Make: Aero Vironment Engineers Inc. Due Date: 13.08.2022		
Test required	Recording Noise Levels		
Method of analysis	IS: 9989	Page No.	1 of 1

RESULTS

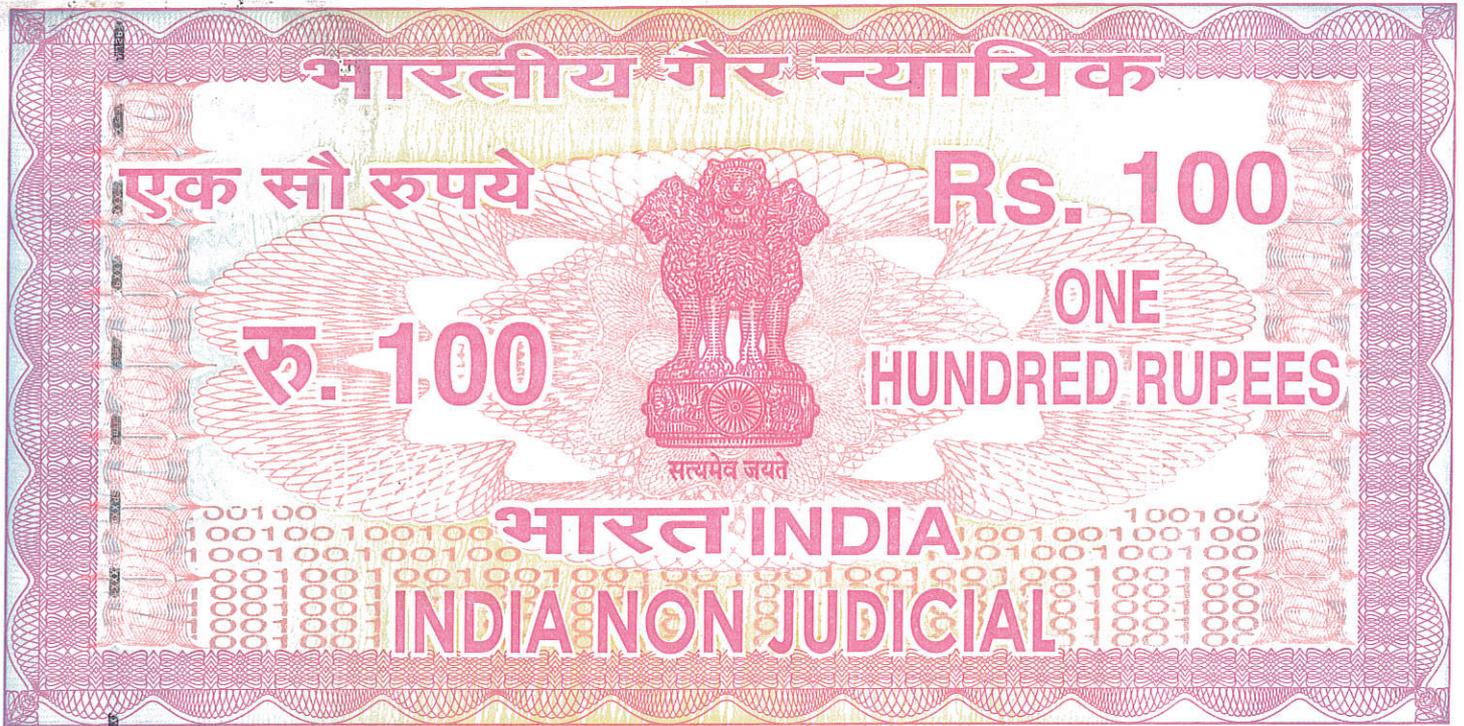
S. No.	Locations	Equivalent Levels dB (A)	
		Day Time (L _d) (6 am to 10pm)	Night Time (L _n) (10pm to 6 am)
1	1m distance away from South Gate	70	62
2	1m distance away from Store Yard	68	60
3	1m distance away from HLPH	67	59

NOISE QUALITY STANDARDS IN RESPECT OF NOISE

Area Code	Category of Area	Limits in dB(A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40


Verified by
(MD. Azeem)
Analyst


Authorized Signatory
(M. Ravi Kiran)
Managing Director



ఆంధ్ర ప్రదేశ్ ఆంధ్ర ప్రదేశ్ ANDHRA PRADESH

BN 581448

Sl.No. 1152 Dt. 02-03-2019 Rs.

R.V. Lakshmayya

R.V. LAKSHMAYYA

Licensed Stamp Vender

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L.No.03/19/008/2012, R.L.No:03-19-021/2018

Sold to whom : Greater Visakhapatnam Smart City Corporation Ltd.

Chandaka, VSP CellNo:-94401 33296

TRIPARTITE AGREEMENT FOR THE SUPPLY OF BULK WATER TO HPCL

This Tripartite Agreement is drawn on the 29th day of March 2019 between:

(i) Greater Visakhapatnam Municipal Corporation (GVMC), a municipal corporation having its office at Tenneti Bhavan, Ram Nagar, Visakhapatnam - 530002 Andhra Pradesh, India, represented herein by its Commissioner (hereinafter referred to as "GVMC" which expression shall include its permitted assignees) on the First Part;

AND

(ii) Greater Visakhapatnam Smart City Corporation Limited (GVSCCL), the Special Purpose Vehicle (SPV) jointly owned by Government of Andhra Pradesh (GoAP) and Greater Visakhapatnam Municipal Corporation (GVMC), having its registered office at Room No. 306, GVMC, Tenneti Bhavan, Ram Nagar, Visakhapatnam 530002 Andhra Pradesh, India represented herein by its Managing Director (hereinafter referred to as "GVSCCL" which expression shall unless repugnant to the context mean and include successors, administrators, legal representatives and assignees) on the Second Part;

[Signature]
DIRECTOR
GVSCCL

[Signature]
COMMISSIONER
Greater Visakhapatnam
Municipal Corporation

[Signature]
V. RATANRAJ
मुख्य महाप्रबन्धक (प्रभारी) / Chief General Manager (I/C) VR
ह.च. पी.सी.एल - विशाख रिफाइनरी / HPCL - Visakh Refinery
एस. राजा / S. RAJA
निर्देशक-बी आर एम पी / Executive Director-VRMP
ह.च. पी.सी.एल - विशाख रिफाइनरी / HPCL - Visakh Refinery



भारतीय प्रजासत्ताक
संविधान संरक्षक
भारतीय प्रजासत्ताक
संविधान संरक्षक

AND

- (iii) **Hindustan Petroleum Corporation Limited (HPCL)**, a Government of India Enterprise, having its registered office at Petroleum House, 17, Jamshedji Tata Road, Mumbai - 400020, Maharashtra, and one of its refineries (Visakh Refinery) at Post Box-15, Malkapuram, Visakhapatnam-530011, Andhra Pradesh, represented herein by its Executive Director (hereinafter referred to as "**HPCL**" which expression shall unless repugnant to the context, mean and include its permitted assignees) on the **Third Part**. 'GVMC', 'GVSCCL' and 'HPCL' are hereinafter collectively referred to as the "**Parties**" and individually as the "**Party**" as the context may permit.

1 Introduction

- A. GVMC intends to develop a sewerage infrastructure project in Visakhapatnam, comprising:
- laying of sewerage network and providing connections in Gajuwaka, Malkapuram and Pendurthi in a phased manner;
 - full utilisation of the existing 108 MLD Sewage Treatment Plant (STP) at Narava;
 - augmentation of the existing sewerage pumping stations and development of new sewerage pumping stations as required;
 - development of a new waste water treatment plant with a system for additional treatment to further treat the treated waste water from the STPs
- for the supply of Recycled Water to various industries in Visakhapatnam (the "**Project**").
- B. GVSCCL has been incorporated as a 50:50 joint venture company by GVMC and the Government of Andhra Pradesh (GoAP) for the purpose of undertaking several obligations pertaining to the development of Visakhapatnam as a Smart City. Further, vide the G.O. Rt. No. 546 dated 26.7.2017 issued by the Municipal Administration & Urban Development Department, GoAP, the 'Project' had been transferred from GVMC to GVSCCL for development and further operations.
- C. GVMC and HPCL have executed 3 agreements for the supply of Bulk Water as per the following details:
- Agreement No. 25/GVMC-Bulk Water/2017-18, dated 11.01.2018 for the supply of **12 LIGD of clear water** by GVMC from its Raiwada source to HPCL for use at its Visakh Refinery;
 - Agreement No. 26/GVMC-Bulk Water/2017-18 dated 11.01.2018 for the supply of **18 LIGD of clear water** by GVMC from its Meghadri Gedda Reservoir to HPCL for use at its Visakh Refinery; and
 - Agreement No. 27/GVMC-Bulk Water/2017-18 dated 11.01.2018 for the supply of **15 LIGD of clear water** by GVMC from its Thatipudi Source to HPCL for use of 14 LIGD at its Visakh Refinery and 1 LIGD at its Waltair Park Housing Complex.

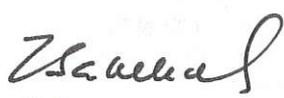

DIRECTOR
GVSCCL


COMMISSIONER
Greater Visakhapatnam
Municipal Corporation


वी. रतनराज
V. RATANRAJ
मुख्य महाप्रबन्धक (प्रभारी) - वि. राजा / S. RAJA
Chief General Manager कार्यकारी निर्देशक-वी आर एम
हेच.पी.सी.एल - विशाख रिफाइनरी
Executive Director-VRM
हेच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery
HPCL - Visakh Refinery

The total quantity agreed to be supplied by GVMC to HPCL under the aforesaid Agreements is 45 LIGD (20.46 MLD). The aforesaid agreements are hereinafter collectively referred to as the 'Executed Agreements' and are attached herewith collectively as **Annexure-I**. In terms of these Executed Agreements, GVMC is already supplying 45 LIGD (20.46 MLD) of clear water to HPCL. However, going forward, once the Project Facility is operational, GVSCCL shall supply 36.2 LIGD (16.46 MLD) of Recycled (treated) Water (hereinafter referred to as the "Product") which shall replace 36.2 LIGD (16.46 MLD) of clear water being supplied by GVMC presently and GVMC shall continue to supply only 8.8 LIGD (4 MLD) of clear water to HPCL.

- D. The Parties agree that the rights and obligations of GVMC under the Executed Agreements shall stand transferred and novated in favour of GVSCCL pursuant to this Agreement and that GVSCCL shall undertake, comply with and perform the said obligations of GVMC under the Executed Agreements.
- E. Post novation of the rights and obligations of GVMC in favour of GVSCCL pursuant to this Agreement, the Parties now agree to the following revised understanding in relation to the supply of water to HPCL:
- (i) Instead of clear water supply from GVMC as per the above said Executed Agreements and Recital C above, HPCL has agreed to accept 36.2 LIGD (16.46 MLD) of Product from GVSCCL, which GVSCCL shall supply to HPCL at the rate of Rs. 57/- per KL (inclusive of all taxes & charges as applicable). Cost to HPCL for the Product will be only Rs. 57/- per KL (all inclusive).
 - (ii) In addition to the above, HPCL has requested and GVSCCL has agreed to supply additional 30 LIGD (13.64 MLD) of Product to HPCL. Thus, a total of 66.2 LIGD (30.10 MLD) [36.2 LIGD (16.46 MLD) + 30 LIGD (13.64 MLD)] of Product water shall be supplied by GVSCCL to HPCL at the rate of Rs. 57/- per KL (inclusive of all taxes & charges as applicable). Cost to HPCL for the Product will be only Rs. 57/- per KL (all inclusive).
 - (iii) Balance 8.8 LIGD (4 MLD) of clear water (hereinafter referred to as the "Clear Water") shall continue to be supplied by GVMC to HPCL, at the current rate of Rs. 60/- per KL (as per the Executed Agreements) or at such revised rates as may be applicable from time to time.
 - (iv) Except to the extent modified above, all the other terms and conditions of the Executed Agreements shall continue to be binding and effective between the Parties and shall be deemed to be incorporated by reference into this Agreement, to the extent the same are required and relevant for the purpose of this Agreement and are not being repeated herein for the sake of brevity. Thus this agreement shall always be read in conjunction with the Executed agreements.
- F. **Priority of Documents:** The Parties agree that in case of any inconsistency or conflict between the Executed Agreements and this Agreement, this Agreement shall prevail as regards the revised understanding of the Parties for the supply of Product and Clear Water is concerned. In relation to the Capital Contribution and other charges already paid by HPCL under the Executed Agreements, the Executed Agreements shall prevail.


DIRECTOR
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COMMISSIONER
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HPCL - Visakh Refinery

2 Project Facility

Project Facility means collectively the following:

- (a) Waste Water Treatment Plant including Ultra-Filtration and Reverse Osmosis (UF&RO) plant being constructed in STP premises at Narava [collectively referred to as "**Tertiary Treatment and Reverse Osmosis plant (TTRO)**"],
- (b) Pumping Station(s) for Product supply,
- (c) Conveyance pipeline from TTRO to HPCL premises on an exclusive basis for supply of the Product,
- (d) Any other infrastructure that forms or may form part of the Project Facility at a future date, and
- (e) The clear water supply facility for meeting contingency in case of quality and quantity issues with respect to STP water.

3 Contracted Quantity

(a) The "**Contracted Quantity**" is 75 LIGD [34.10 Million Litres Per Day (MLD)] comprising of the following:

- i. 66.2 LIGD (30.10 MLD) of Product ("**Contracted Quantity of Product**") and
- ii. 8.8 LIGD (4 MLD) of Clear Water ("**Contracted Quantity of Clear Water**").

(b) GVSCCL and GVMC assure HPCL that supply of Contracted Quantity of Product [66.2 LIGD (30.10 MLD)] and Clear Water [8.8 LIGD (4 MLD)] shall be undertaken as per the terms and conditions provided in this Agreement.

(c) Product:

- i. The supply start date for the Contracted Quantity of Product will be mutually agreed between the Parties and shall be referred to as the '**Effective Date**' in this Agreement. GVSCCL has agreed to supply the Contracted Quantity of Product as per the Specifications attached herewith as Annexure-II. The payment obligations on the part of HPCL shall also commence from the Effective Date.
- ii. The supply obligations on the part of GVSCCL shall commence from the date of this Agreement, which shall include undertaking the Project components and laying down of the conveyance pipelines etc.
- iii. The Contracted Quantity of Product, reckoned on a daily basis, shall be supplied equally in a period spread over 24 hours.

(d) Clear Water:

- i. The Contracted Quantity of Clear Water per day (on an average) will be supplied to HPCL during any duration of the day as per the convenience of GVMC. The supply start date for the Contracted Quantity of Clear Water shall be reckoned from the Effective Date in this agreement.

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/SCCL

Srinath
COMMISSIONER
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4 Delivery Point

(a) Product:

- i. The Product by GVSCCL for HPCL will be delivered with 7 m (0.7 Kg/cm² G) residual head at the existing reservoir of HPCL (i.e. "Delivery Point"), where the other GVMC sources are delivering clear water.
- ii. HPCL shall be responsible for the development and operation of any facilities for storage, usage, etc., of Product in its premises beyond the Delivery Point.
- iii. The title, property & the risk of loss of the Product delivered under this Agreement shall pass from GVSCCL to HPCL at the Delivery Point.

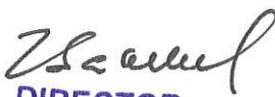
(b) Clear Water:

- i. **Clear Water** shall be continued to be supplied by GVMC from its suitable point / source (Raiwada source / Meghadri Gedda Reservoir / Thatipudi source) to HPCL.

5 Supply Price for the Product and Clear Water

(a) Supply by GVSCCL (Product):

- i. The Supply Price of the Product payable by HPCL to GVSCCL for the supply of the Product will be Rs. 57/- per KL (inclusive of all taxes & charges as applicable). Cost to HPCL for the product will be only Rs. 57/- per KL (all inclusive) from the Effective Date.
- ii. HPCL shall be charged for at least 60% of the Contracted Quantity of Product per month (Contracted Quantity of Product per month is defined as 66.2 LIGD (30.10 MLD x number of days in that particular month) if the quantity of Product consumed in a month is less than 60% of the Contracted Quantity of Product in a month.
- iii. HPCL shall be charged for the actual quantity consumed in a month if it is more than 60% of the Contracted Quantity of Product in a month.
- iv. For the quantity of Product consumed over and above the Contracted Quantity of Product in a month, HPCL shall be charged for the extra quantity at the same price as the Supply Price of the Product.
- v. The Supply Price shall escalate every year on 1st April as per the Whole Sale Price Index (WPI) applicable from the successive year after effective date.
- vi. The escalation provision for Supply Price of the Product shall be such that at any point of time, the Supply Price of the Product shall not exceed the respective Supply Price of the Clear Water by GVMC applicable at that point of time. The price of the Product at any point of time shall be the minimum of escalated price and the price with a differential of Rs.3 per KL with respect to Supply Price of Clear Water.


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(b) Supply by GVMC (Clear Water):

- i. The Supply Price of Clear Water to be supplied by GVMC to HPCL shall be calculated at the rate of Rs. 60/- per KL or at such rate as may be applicable from time to time.
- ii. HPCL will be charged for at least for 60% of the Contracted Quantity of Clear Water per month if the Contracted Quantity of Clear Water consumed in a month is less than 60% of Contracted Quantity of Clear Water.
- iii. HPCL will be charged for actual quantity of Clear Water consumed in a month if it varies between 60% and 100% of Contracted Quantity of Clear Water, reckoned per month at the rate of Rs.60/- per KL or at such rate as may be applicable from time to time.
- iv. HPCL will be charged for additional Clear Water quantity consumed, over and above the Contracted Quantity of Clear Water, reckoned per month at the rate of Rs.120/- per KL.
- v. HPCL will be charged for actual consumption of Clear Water even though it is less than the 60% of Contracted Quantity of Clear Water, reckoned per month, if GVMC is solely responsible for supply of less than 60% of Contracted Quantity of Clear Water.
- vi. HPCL will be charged for maintenance of meters, instrumentation and automation etc., at the rate of 0.75% of the monthly bill, which is subject to revision as and when necessary.
- vii. The existing rate per KL of Clear Water consumed shall be revised as and when deemed necessary by the governing council of GVMC from time to time.
- viii. HPCL will be informed of the revision in Supply Price well in advance by 2 months by directly addressing through a letter.
- ix. The Clear Water supply bye-laws as framed and amended from time to time by the GVMC shall form part of this Agreement to the extent they are consistent with the provisions hereof.

6 Off take by HPCL

The off-take by HPCL shall be of the Contracted Quantity (i.e. Product and Clear Water) except as per prior information to GVSCCL and GVMC and as mutually agreed to by the Parties.

(a) Product:

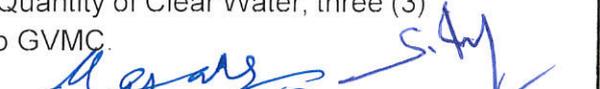
- i. In case HPCL wants a reduction in the Contracted Quantity of Product or is unable to off-take the Contracted Quantity of Product in a specific supply period, it shall inform GVSCCL of the same 24 hours in advance.

(b) Clear Water:

- i. If HPCL desires to reduce the Contracted Quantity of Clear Water, three (3) months' prior intimation should be given to GVMC.


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Chief General Manager (I) Executive Director-VRM
हेच.पी.सी.एल - विशाख रिफ. हेच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery HPCL - Visakh Refinery

7 Failure to Supply

- (a) In the case of any unfortunate event and consequent shortage in provision of Product due to reasons attributable to GVSCCL, the HPCL water requirement shall be met from the existing clear water supply lines by GVMC at the then applicable rate of Clear Water as notified by GVMC without any penalties to HPCL. GVSCCL shall arrange the clear water supplies from GVMC during such periods.
- (b) Appropriate measures will be identified by GVMC to supply the balance quantity remaining unsupplied by GVSCCL to HPCL, from a suitable point. The switching/transition time required for effecting Clear Water supply is normally about 12 hours.
- (c) However, considering unexpected contingencies during the switching /transition period, HPCL is required to make its own arrangements for storage of Product and Clear Water in its premises, the capacity of which should be at least 2 days' cover of the Contracted Quantity of Product and Contracted Quantity of Clear Water per day respectively.
- (d) However, the Parties agree and acknowledge that top priority shall be accorded to the supply of drinking water to the public, if there is any shortage in the availability of Clear Water.
- (e) In such a scenario, the above said Clear Water supply by GVMC shall be in accordance with the provisions of this Agreement and shall be billed separately by GVMC. GVSCCL to coordinate and ensure smooth supplies of clear water from GVMC and billing without any penalties in all such eventualities.

8 Conveyance Pipeline

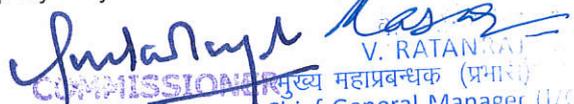
- (a) The Product Water Conveyance pipeline will be laid along Port Road and will enter HPCL premises from the HPCL North boundary on Port Road side. The RoW for shortest possible alignment inside HPCL premises will be made available by HPCL for laying the Product Water Conveyance pipeline. HPCL shall facilitate the same.
- (b) While laying the conveyance pipeline within HPCL premises, the rules and safety precautions as per HPCL policy are to be followed by GVSCCL. HPCL shall facilitate the same.
- (c) GVSCCL shall be responsible for the safety and maintenance of the conveyance pipeline up to the boundary limits of HPCL. HPCL shall be responsible for safety and maintenance of the conveyance pipeline in the HPCL premises.

9 Metering and Calibration

(a) Product:

- i. Metering for determining the exact quantities of the Product supplied shall be done at the Delivery Point in the premises of HPCL. GVSCCL shall install a meter with a standby at the Delivery Point.
- ii. Periodical calibration of the meter shall be carried out by GVSCCL.
- iii. HPCL shall provide adequate space (2m x 2m) for installation of the water meters.
- iv. Power requirement for the metering station shall be provided by HPCL while power backup by way of UPS shall be provided by GVSCCL.


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HPCL - Visakh Refinery

(b) Clear Water:

- i. The metering and connected automation will be arranged immediately at the tapping point of GVMC water supply main.

10 Water Quality

(a) Product:

- i. The Product to be supplied by GVSCCL to HPCL shall be as per the water quality parameters specified by HPCL, which are provided in **Annexure-II**.
- ii. HPCL shall carry out periodic analysis of the Product for ascertaining the quality requirements as specified in **Annexure-II**.
- iii. In case the Product as analysed by HPCL does not meet the specified quality, HPCL shall inform GVSCCL immediately, who shall immediately stop the supply of the Product and shall take necessary measures for improvement in the quality of the Product. Supply of the Product shall be resumed by GVSCCL upon achieving the specified quality. During the period of stoppage of Product supply on account of such quality issues, Clear Water shall be supplied to HPCL by GVMC with due allowance for the switching / transition period, at Supply Price of Clear Water as applicable at that time. GVSCCL will coordinate and ensure clear water supply to HPCL in all such eventualities.
- iv. In the case of any dispute between GVSCCL & HPCL with respect to the quality of the Product, quality analysis of the Product shall be carried out by a mutually agreed third party, whose quality report thereof shall be binding on both GVSCCL & HPCL. The charges of such third-party analysis of the Product shall be equally shared by HPCL and GVSCCL.
- v. GVSCCL shall not be responsible for the quality of Product beyond the Delivery Point.

11 Capital Contribution Charges

- (a) The Parties agree, accept and acknowledge that under the Executed Agreements, HPCL has paid GVMC, the Capital Contribution Charges of Rs. 23,45,71,800/- (Rupees Twenty-Three Crores, Forty-Five Lakhs, Seventy-One Thousand and Eight Hundred only) to GVMC ("CCC"), the details of which are provided below:

Capital Contribution Charges: (Non-Refundable)

S. No.	Source	Contracted Quantity		Rate per KL	Amount paid so far (Rs.)	Details
		LIGD	KL			
1	RWD	12.00	5455.22	-	5,45,52,000	DD No. 069447, dt 20.08.2007
2				-		
3	MGR	18.00	8182.98	-	6,81,90,000	DD. 531356, SBI, dt 03.03.2015 Rcpt key. 2014-CH-61382, dt 09.03.2015

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J. Srinivas
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S. No.	Source	Contracted Quantity		Rate per KL	Amount paid so far (Rs.)	Details
		LIGD	KL			
4	TPD	15	6819.15	-	3,00,00,000	As per Bulk water supply agreement on dt. 31.12.1989
5					8,18,29,800	DD. 579690, SBI, 20.09.2017 Rcpt key. 2017-CH-15243, dt. 20.11.2017
	Total	45	20457.35		23,45,71,800	

- (b) For the purpose of this Agreement, the above said CCC already paid by HPCL to GVMC under the Executed Agreements, shall be deemed to have been paid by HPCL to GVSCCL for the supply of Product water.
- (c) For the additional requirement of 30 LIGD (13.64 MLD) of Product sought by HPCL, Capital Contribution Charges (CCC) as per the present GVMC norms shall be paid by HPCL to GVMC as per the schedule given below:

Schedule for Payment of Capital Contribution Charges for additional 30 LIGD (13.64 MLD)

CCC Instalment No.	Stage	CCC Amount (Rs. Cr.)
1	At the time of Signing of this Agreement	10 % of CCC (Rs. 4.092 Cr.)
2	After 25 % physical progress of the Project Package-1	20 % of CCC (Rs. 8.184 Cr.)
3	After 50 % physical progress of the Project Package-1	20% of CCC (Rs. 8.184 Cr.)
4	After 75 % physical progress of the Project Package-1	25% of CCC (Rs. 10.23 Cr.)
5	At the time of start of actual supply of Product Water to HPCL	25 % of CCC (Rs. 10.23 Cr.)
	Total	Rs. 40.92 Cr.

12 Security for Payment

- (a) The Parties agree, accept and acknowledge that under the Executed Agreements, HPCL has paid GVMC, the Advance Consumption Charges of Rs. 22,46,22,801/- (Rupees Twenty-Two Crores, Forty-Six Lakhs, Twenty-Two Thousand And Eight Hundred and One only) to GVMC ("ACC"), the details of which are provided below:

Advance Consumption Charges: (Refundable)

S. No.	Source	Contracted Quantity		Rate per KL	For a minimum period of	Amount (Rs.)	Details
		LGPD	KL				
1	RWD	12	5455.32	60	183 days	5,98,99,413.60	-
2	MGR	18	8182.98	60	183 days	8,98,49,120.40	-
3	TPD	15	6819.15	60	183 days	7,48,74,267.00	-
	Total	45	20457.45			22,46,22,801.00	

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**DIRECTOR
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Total ACC	Rs. 21,56,14,260	Rs. 14,22,78,840
Amount paid to GVMC against ACC	Rs. 22,46,22,801	---
Balance	(-) Rs. 90,08,541	(+) Rs. 14,22,78,840
Total ACC to be paid to GVMC	Rs. 13,32,70,299	

13 Payment Mechanism for Monthly Consumption Charges

(a) For Product supplied by GVSCCL:

- The bill for the monthly consumption charges for the Product consumed will be raised by GVSCCL once in a month.
- GVSCCL will see that the bill reaches HPCL by the 10th day of every month. In any case if the bill is not received by the 10th day, HPCL has to inform the same to GVSCCL on the 11th day and obtain the duplicate bill.
- HPCL shall pay the bill amount within 15 (fifteen) days from the date of receipt of bill by online transfer into the Bank Account as specified by GVSCCL (or any other mode as may be directed by GVSCCL), failing which, the supply of the Product will be stopped.

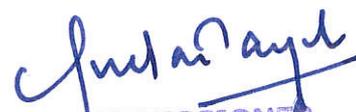
(b) For Clear Water supplied by GVMC:

- The bill for the monthly consumption charges for Clear Water supplied by GVMC will be raised once in a month.
- GVMC will see that the bill reaches HPCL by the 10th day of every month. In any case if the bill is not received by the 10th day, HPCL has to inform the same to GVMC on the 11th day and obtain the duplicate bill.
- HPCL has to pay the bill amount within 15 (fifteen) days from the date of receipt of bill by online transfer into the Bank Account as specified by GVMC or any other mode as may be directed by GVMC, failing which the supply of Clear Water will be stopped.

(c) HPCL shall be liable to pay the total demand amount for monthly consumption charges mentioned in each bill and any part payment will not be accepted by GVMC or GVSCCL.

(d) In case of failure on the part of GVSCCL to supply the Contracted Quantity of the Product to HPCL as mentioned in Clause 7 above, Clear Water in quantity equivalent to the quantity remaining unsupplied/ shortfall, shall be supplied by GVMC to HPCL. In such a case, GVMC shall raise its invoice for the quantity of Clear Water supplied and thereafter GVSCCL and GVMC shall issue joint instructions to HPCL for the release of the payment for the said Clear Water supplied to GVMC.


DIRECTOR
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हेच. पी. सी. एल. - विशाख रिफाइनरी
HPCL - Visakh Refinery

The details of these ACC payments by HPCL to GVMC are as given below:

Available Advance Consumption charges (Security Deposit) with GVMC					
1	-	-	-	Rs. 83,46,150	Cheque nos. VM-18935 dt. 12.07.1972, VM-45434 dt. 17.10.1979, VM- 4676 dt. 16.02.1984, VM-5096 dt. 09.03.1984, VM- 43079 dt. 23.08.1989, VM-46424 dt. 12.01.1990, dd. 082776 dt. 29.04.1997
2	-	-	-	Rs. 3,32,76,720	Cheque no. 069445, dt. 20.08.2007
3	-	-	-	Rs. 66,53,344	Cheque no. 073695, dt. 25.01.2008
4	-	-	-	Rs. 5,05,99,794	Rept key, 2013-CH-32942, 32944, 32945 Dt. 06.07.2013
5	-	-	-	Rs. 1,79,69,429	DD. 531357, SBI, dt. 03.03.2015 Rept key. 2014-CH-61384, dt. 09.03.2015
6	-	-	-	Rs. 7,78,27,657	DD. 017509, IDBI, dt. 24.03.2016 Rept key. 2015-CH-19551, dt. 24.03.2016
7	-	-	-	Rs. 2,99,49,707	DD. 579752, SBI, 11.10.2017 Rept key. 2017-CH-15245, dt. 20.11.2017
				Total Amount	Rs. 22,46,22,801

Advance Consumption Charges shall be paid by HPCL to GVMC for the additional 30 LIGD (13.64 MLD) requirement of Product sought by HPCL which shall be calculated as follows: 13640 KL x 183 days x Supply Price for the Product. = Rs. 14.23 Crores. The ACC will be interest free deposit with GVMC.

(b) The ACC shall be deposited 15 days prior to the Effective Date.

(c) Product:

- HPCL has to pay the difference in amount of 183 days' Advance Consumption charges (Security Deposit) to take into consideration the yearly escalation in Supply Price of the Product. This differential amount shall be payable upon every three years of the Effective Date.

(d) Clear Water:

- HPCL has to pay the difference in amount of 183 days Advance Consumption charges (Security Deposit) whenever a revision in the Supply Price takes place, even though the renewal of this Agreement is not due by that time.

(e) Payable ACC from HPCL to GVMC:

The details of ACC payable by HPCL to GVMC for additional 30 LIGD (13.64 MLD) product after reconciliation of payment already made to GVMC towards ACC for the executed agreements

	Existing Refinery		VRMP
	Clear Water	Product Water	Product Water
Quantity	8.8 LIGD (4 MLD)	36.2 LIGD (16.46 MLD)	30 LIGD (13.64 MLD)
Price per KL	60	57	57
ACC for 183 days	Rs. 4,39,20,000	Rs. 17,16,94,260	Rs. 14,22,78,840

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Commissioner
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14 **Disconnection**

(a) **Product:**

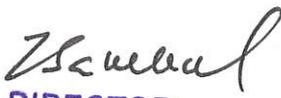
- i. If the monthly consumption charges for the Product are not paid within the due date, Product supply to HPCL will be disconnected after giving a notice of 7 days and penalty of Rs. 10,000/- will be levied on HPCL for reconnection, after clearing the bill.
- ii. Further, if the connection is disconnected, HPCL shall be charged an interest @ 18% from the due date to the date of actual payment over the outstanding due amount, in addition to the penalty of Rs. 10,000/- for reconnection.

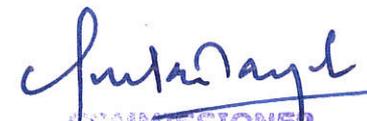
(b) **Clear Water:**

- i. If the monthly consumption charges for Clear Water are not paid within the due date, Clear Water supply to HPCL will be disconnected after giving a notice of 7 days and penalty of Rs. 10,000/- will be levied on HPCL for reconnection, after clearing the bill.
- ii. Further, if the connection is disconnected, HPCL shall be charged an interest @ 18% from the due date to the date of actual payment over the outstanding due amount, in addition to the penalty of Rs. 10,000/- for reconnection.

15 **Dispute Resolution, Governing Law and Jurisdiction**

- (a) In the case of any dispute pertaining to the bills raised by GVSCCL or GVMC, HPCL should bring it to the notice of the concerned Parties within 7 (seven) days from the receipt of the bill, otherwise no objections will be admitted after 7 (seven) days.
- (b) Even if any bill raised by GVSCCL or GVMC is disputed, HPCL should pay the full amount of such disputed bill, pending settlement of the dispute through mutual understanding or arbitration and excess payment, if any, will be adjusted in subsequent bills.
- (c) In case a dispute regarding a bill raised by GVSCCL or GVMC has to be resolved through arbitration, two arbitrators shall be appointed, one by GVSCCL or by GVMC (as the case maybe) and the other by HPCL, who shall jointly appoint a presiding arbitrator who shall lead the arbitral tribunal. The award passed by the arbitral tribunal shall be final and binding on the concerned Parties. This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts at Visakhapatnam shall have exclusive jurisdiction over matters arising out of or relating to this Agreement.


DIRECTOR
GVSCCL


COMMISSIONER
Greater Visakhapatnam
Municipal Corporation


वी. रतनराज
V. RATANRAJ
मुख्य महाप्रबन्धक (प्रभारी)
Chief General Manager (I/c)
हेच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery


एस. राजा S. RAJA
कार्यकारी निर्देशक-वी आर एम
Executive Director-VRM
हेच.पी.सी.एल.-विशाख रिफाइनरी
HPCL - Visakh Refinery

16 Force Majeure

"Force Majeure" shall mean any event or circumstance or combination thereof which prevents the Party claiming Force Majeure (the 'Affected Party') from performing its obligations under this Agreement and which event or circumstance:

- (i) is beyond the reasonable control and not arising out of the default of the Affected Party;
- (ii) the Affected Party has been unable to overcome such circumstance or event by the exercise of due diligence and reasonable efforts, skill and care; and
- (iii) has a material adverse effect on the subsistence of this Agreement.

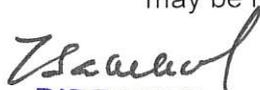
Such events or circumstances shall include, without limitation, the effect of any natural element or other acts of State or God, including but not limited to, fire, flood, earthquake, lightning, cyclone, landslides or other natural disasters, strikes or other industrial disturbances, war, riots, civil commotion, terrorist attacks, embargoes, blockades, governmental restriction, intervention of civil, naval or military authorities or any change in laws applicable to any Party hereto or to the Project.

- (a) A Party shall not be liable to the other Party for any loss, injury, delay, damages or other casualty suffered or incurred by the latter due to Force Majeure, and any failure or delay by any Party in performance of its obligations under this Agreement due to Force Majeure shall not be considered as a breach of this Agreement.
- (b) The Party suffering Force Majeure shall notify the other Parties in writing promptly after the occurrence of such Force Majeure event. Such Party shall, to the extent reasonable and lawful, use its best efforts to remove or remedy such cause. Upon the occurrence of a Force Majeure event, the Party claiming Force Majeure shall use all reasonable endeavours to continue to perform its obligations under this Agreement and to minimize the adverse effects of such circumstances. Such a Party shall notify the other Parties of the steps it proposes to take including any reasonable alternative means for performance. In the event any obligation cannot be performed due to continuance of a Force Majeure event for a period of 7 days or more, the Parties agree that the time period for the performance of such obligation shall stand extended for an equivalent period after such time as the Force Majeure event ceases to exist.
- (c) If, as a result of a Force Majeure event, the Project has been rendered unviable or un-bankable or the Force Majeure event is not likely to be cured within a reasonable foreseeable period, the Parties may decide to terminate this Agreement in respect of such Project in which case the Parties shall be entitled to receive payments accrued and due to them, before the occurrence of the Force Majeure event.

17 Validity, Effectiveness and Operation of this Agreement

This Agreement:

- a) commences and becomes effective on the date it is signed by the last party to do so and shall be valid, effective and binding on the Parties for a period of 5 (five) years from the date of its execution ("Validity Period"),
- b) will remain in place until such time as one or all Parties determine otherwise,
- c) shall be executed in English in three originals, one for each Party, and
- d) can be amended at any time by a written agreement between the Parties or may be mutually extended by the Parties in writing.


DIRECTOR
GVSCCL


COMMISSIONER
Greater Visakhapatnam
Municipal Corporation


एस. राजा / S. RAJA
वी. रतनराजकार्यकारी निर्देशक-वी आर एम
V. RATANRAJ Executive Director-VRM
मुख्य महाप्रबन्धक (प्रभावी) - विशाख रिफाइनरी
Chief General Manager (VP) - विशाख रिफाइनरी
एच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery

Further, the Parties agree that:

- a) GVSCCL and GVMC will take all measures to ensure smooth and regular supply of Product and Clear Water respectively to HPCL but GVSCCL and GVMC shall not be responsible for loss of property or life or what so ever it may be due to shortage in supply due to accidental or unforeseen circumstances or matters beyond the control of GVSCCL and GVMC.
- b) GVSCCL and GVMC will inform in advance to HPCL about the stoppage of Product and Clear Water respectively for maintenance of various water supply installations.
- c) HPCL shall not resort for direct pumping from the GVSCCL and GVMC mains unless otherwise it is permitted by GVSCCL or GVMC as the case may be.

HPCL should approach GVSCCL and GVMC at least one month in advance before the expiry date, for renewal of this Agreement.

Similarly, in respect of each of the Executed Agreements, GVMC and HPCL shall:

- (a) at least one month prior to the respective expiry dates mentioned in the said Executed Agreements, enter into discussions for extending the validity of the relevant Executed Agreement(s), on mutually agreed terms and conditions, during the validity of this agreement; OR
- (b) in the event of enhancement of Bulk Water Supply Charges under one or all of the Executed Agreements, enter into discussions at the earliest for extending the validity of the relevant Executed Agreement(s), on mutually agreed terms and conditions, during the validity of this agreement

18. Termination

- (a) Any Party may terminate this Agreement prior to expiry of its Validity Period, by a 3 months' written notice to the other Parties.
- (b) This Agreement is terminable upon the occurrence of a Material Breach which has a Material Adverse Effect. This Agreement will also terminate automatically upon the bankruptcy of any Party hereto.

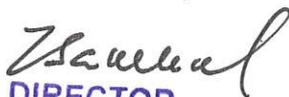
For the purpose of this clause:

"Material Breach" means a breach of the obligations, terms and conditions of this Agreement or covenants by a Party, which materially and substantially affects the performance of the transactions contemplated by this Agreement and results in a Material Adverse Effect.

"Material Adverse Effect" means circumstances which may or do (i) render any right vested in a Party by the terms of this Agreement ineffective; or (ii) adversely affect or restrict or frustrate the ability of any Party to observe and perform in a timely manner its obligations under this Agreement; or (iii) adversely affects the legality, validity, binding nature or enforceability of this Agreement.

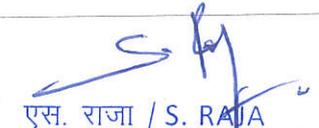
- (c) The termination of this Agreement shall not affect the rights of the Parties accrued prior to such termination.

The Parties confirm that they have carefully gone through the contents of this Agreement and agree to abide by the terms and conditions as laid down herein.


ISAAC
DIRECTOR
GVSCCL


V. RATANRAJ
COMMISSIONER
Greater Visakhapatnam


V. RATANRAJ एस. राजा / S. RAJA
कार्यकारी निदेशक-वी और ए
मुख्य महाप्रबन्धक (प्रभारी) Executive Director-VR
Chief General Manager (हैच.पी.सी.एल.-विशाख रिफाइनरी)
हेच.पी.सी.एल - विशाख रिफाइनरी HPCL - Visakh Refinery
HPCL - Visakh Refinery

Signed for and on behalf of GVSCCL by:	Signed for and on behalf of GVMC by:	Signed for and on behalf of HPCL by:	
 DIRECTOR GVSCCL Name: Designation: Date of signing:	 COMMISSIONER Greater Visakhapatnam Municipal Corporation Name: Designation: Date of signing:	 V. RATANRAJ Chief General Manager (1/C) HPCL - Visakh Refinery Name: Designation: Date of signing:	 S. RAJA Executive Director-VRMP HPCL - Visakh Refinery Name: Designation: Date of signing:

Witness:

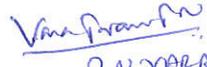
GVSCCL

GVMC

HPCL

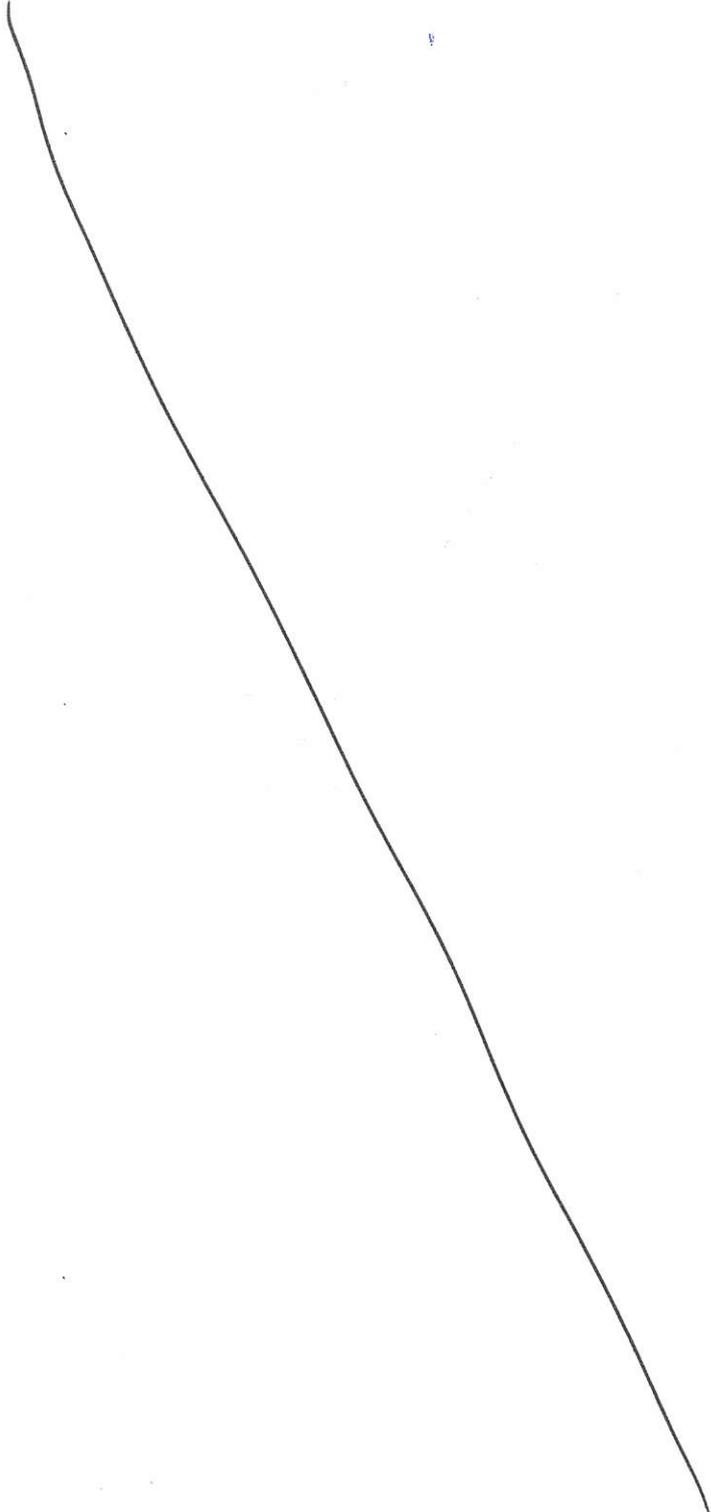
1.

2.


N. Ramachandran HPCL VR

P. N. V. PRASAD HPCL VR

Annexure - I

[Attached all the 3 Executed Agreements here]

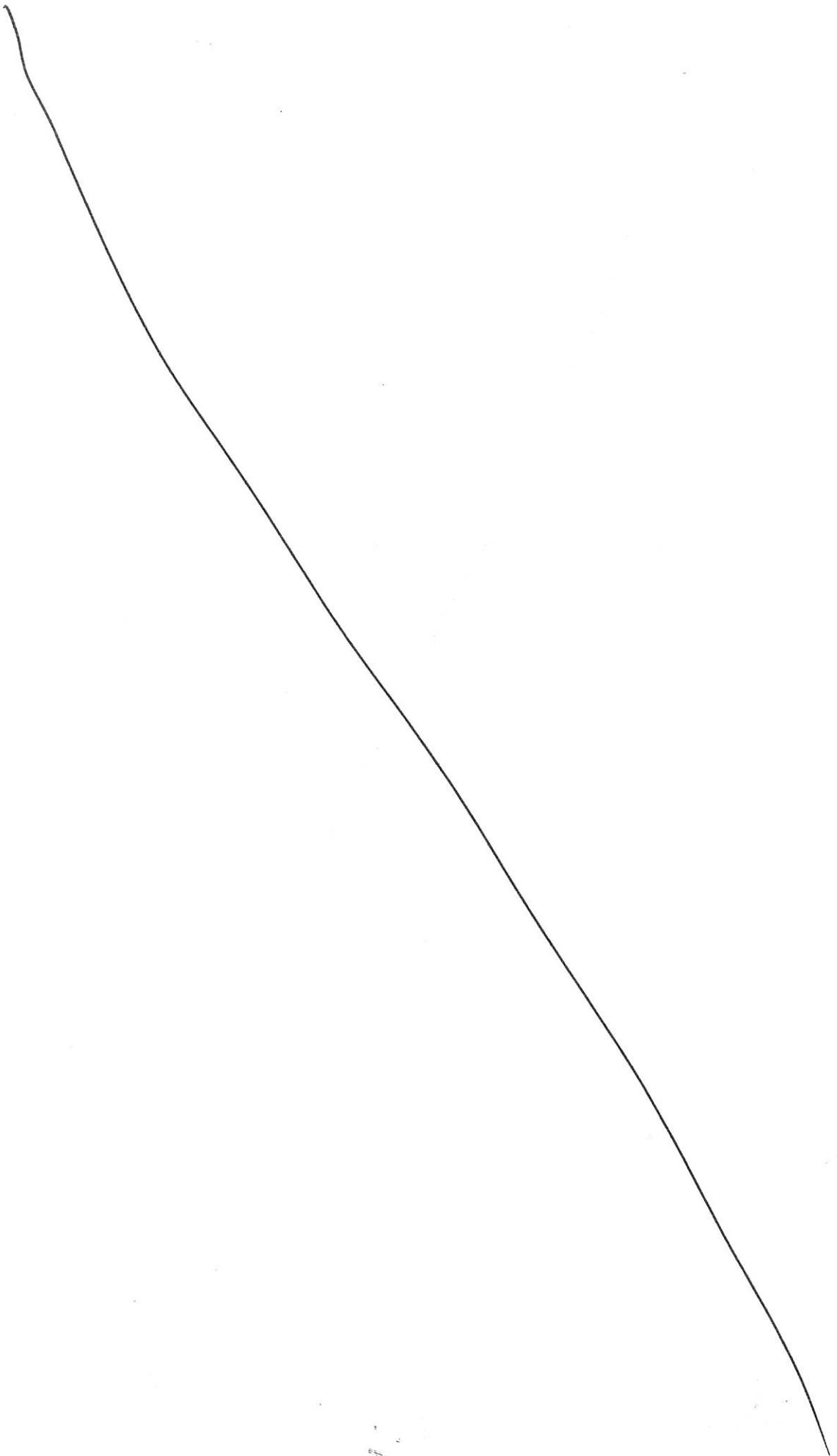


S. Raju
DIRECTOR
GVSCCL

[Signature]
COMMISSIONER
Greater Visakhapatnam
Municipal Corporation

[Signature]
वी. रतनराज
V. RATANRAJ
मुख्य महाप्रबन्धक (प्रभारी) - वि.
Chief General Manager (I/C)-वि.
हेच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery

[Signature]
एस. राजा / S. RAJA
कार्यकारी निर्देशक-वी आर एम्पीए
Executive Director-VRMP
हेच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery



Annexure-II

Product (Recycled Water) Quality and Specifications

Sl. No.	Parameter	Unit	Specification
1	Ph		7.5 - 8.5
2	M-Alkalinity	PPM	60 max
3	Chlorides as Cl	PPM	60 max
4	Ca Hardness	PPM	60 max
5	Mg Hardness	PPM	40 max
6	Sulphates	PPM	17 max
7	Total Hardness	PPM	100 max
8	TDS	PPM	225 max
9	Organic Matter	PPM	3 max
10	TSS	PPM	2 max
11	Turbidity	NTU	1 max
12	Total Iron	PPM	0.02 max
13	Total Copper	PPM	0.02 max
14	Sodium as Na	PPM	Na+K =178.6 max
15	Potassium as K		
16	Total Organic Carbon	PPM	1 max
17	Manganese	PPM	0.1 max
18	KMnO4 value at 100 deg C	PPM	5 max
19	Nitrates as NO3-N	PPM	0.9 max
20	COD	PPM	10 max
21	BOD	PPM	2.5 max
22	Reactive Silica as SiO2	PPM	15 max
23	Colloidal Silica as SiO2	PPM	20 max
24	Organophosphates as PO4	PPM	0.1 max
25	Inorganophosphates as PO4	PPM	0.3 max

Usual
DIRECTOR
GVSCCL

Jubal Singh
COMMISSIONER
Greater Visakhapatnam
Municipal Corporation

Ratanraj
 वी. रतनराज
V. RATANRAJ
 मुख्य महाप्रबन्धक (प्रभारी) -
Chief General Manager (I/C)
 हेच.पी.सी.एल - विशाख रिफाइनरी
HPCL - Visakh Refinery

S. Raja
 एस. राजा / S. RAJA
 कार्यकारी निदेशक-वी आर एम पी
Executive Director-VRMP
 हेच.पी.सी.एल.-विशाख रिफाइनरी
HPCL - Visakh Refinery