



इंडियन ऑयल कॉर्पोरेशन लिमिटेड

बोंगाइगौव रिफाइनरी

बंगलपुर - धालीगौव - 783 385
पिछा - धिपिंग (असम)

Indian Oil Corporation Limited

Bongaigaon Refinery

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रिफाइनरी प्रभाग
Refineries Division

REF: IOC/BGR/ENV/INDMAX ETC./MoEF&CC/2021-22/01

Date: 16/12/2021

To

The Regional Officer,
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office, Guwahati,
4th Floor, House fed Building,
GS Road, Rukminigaon Guwahati-781022


Subject: Half yearly Report for the period of (1st April, 2021 to 30th September, 2021) for BGR
INDMAX & BS-VI Projects

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of 1st April, 2021 to 30th September, 2021 for your kind perusal. The reports are being sent as per EIA Rules'2006 on the "Environmental Clearances" issued by MoEF&CC to Bongaigaon Refinery (BGR), for "BGR INDMAX & BS-VI Projects".

Thanking you,

Yours faithfully,


(Biman Gogoi)
CM (HSE)
Ph: 9435122647

Copy to:

1. Member Secretary, Pollution Control Board, Assam
Bamunimaidam, Guwahati - 781 021
2. Zonal Officer, Central Pollution Control Board
Eastern Zonal Office 'TUM-SIR' Lower Mafimam

Half yearly Report for BGR INDMAX & BS-VI Project (1st April, 2021 to 30th September, 2021)

INDMAX PROJECT



BS-VI PROJECT



Submitted by:

**Indian Oil Corporation Limited
Bongaigaon Refinery**

PO: Dhaligaon. District: Chirang. Assam

INTRODUCTION

IOCL, the energy of India is contributing the nation in its development by means of employment generation and through CSR activity. For the development of the nation as well as the company and for Environment protection, IOCL is adding new plant for environment friendly and value added product. IOCL, Bongaigaon Refinery has established a new unit, INDMAX for LPG maximization and BS-VI project for cleaner fuel.

To establish the new unit, EIA study was done by M/s ABC TECHNO LABS INDIA PVT. LTD, Chennai.

Based on the EIA study, IOCL, BGR applied for EC to MoEF&CC on 31/05/2015.

Going through all the process and formalities, MoEF&CC granted EC No. J-11011/48/216-IA-II (I), Dated: 19th April 2017 to IOCL, BGR to establish following projects:

sl	Units	Date of commissioning
1.	Refinery capacity enhancement from 2.35 MMTPA to 2.70 MMTPA	30.04.2021 (after commissioning of NHT Unit under BS-VI Project)
2.	INDMAX FCC Unit, 740 TMTA	07.11.2020
3.	Prime- G+/ BS-VI projects (Including SRU, SDS/ARU)	Prime G+ : 05.12.2020 ARU : 30.10.2020 SDS : 30.04.2021 SRU : under implementation
4.	DHDT capacity enhancement from 1.2 MMTPA to 1.8 MMTPA	15.03.2020
5.	HGU Revamp (Capacity enhancement from 25 TMTA to 30 TMTA)	12.03.2020
6.	CRU-MSQ Revamp	With the commissioning of Prime-G+/ BS-VI projects

Compliance/ progress report for the above projects are listed below:

1.0

BGR INDMAX & BS-VI PROJECTS: EC CONDITIONS, COMPLIANCE STATUS.

EC Reference: J-11011/48/2016-IA-II (I) Dt. 19.04.2017

Monthly Status Report for the period (1st April, 2021 to 30th September, 2021)

INDEX:

Sl. No	Conditions	Status
1.	General conditions and Compliance status of MS Quality improvement Project.	Annexure- A
2.	Six monthly Stack Monitoring/ Air Quality Data	Furnished in Appendix-A1
3.	Six monthly effluent discharged Quality	Furnished in Appendix-A2
4.	Tree Plantation Data	Furnished in Appendix-A3
5.	Additional Information	Furnished in Appendix-A4
6.	Fugitive Emission Data	Furnished in Appendix-A5
7.	Annual return of hazardous waste	Furnished in Appendix-A6(a)
8.	Authorization from PCBA under Hazardous and Other Waste (Management and Transboundary Movement) Rules 2016	Furnished in Appendix-A6(b)
9.	Details of Waste water treatment and disposal system	Furnished in Appendix-A7
10.	Quarterly Noise Survey Report.	Furnished in Appendix-A8
11.	Status of Rainwater Harvesting	Furnished in Appendix-A9
12.	Screen Shot of IOCL Website upload of report	Furnished in Appendix-A10
13.	Organ gram of HSE Department	Furnished in Appendix-A11
14.	NABL certificate of QC Lab of Bongaigaon Refinery	Furnished in Appendix-A12
15.	Employees Occupational Health Check up Status	Furnished in Appendix-A13
16.	Flare system.	Furnished in Appendix-A14

2.0

BGR INDMAX & BS-VI PROJECTS: EC CONDITIONS, COMPLIANCE STATUS. EC Reference: J-11011/48/2016-IA-II (I) Dt. 19.04.2017

Six Monthly Status Report for the period (1st April, 2021 to 30th September, 2021)

Special Conditions:

EC SI No	Condition	Compliance Status
(i)	<p>All pollution control and monitoring equipments shall be installed, tested and interlocked with the process.</p> <p>SPCB shall grant 'Consent to Operate' after ensuring that all the mentioned pollution control equipments, construction of storm water drain, rain water harvesting structure, Greenbelt, uploading of compliance report on the website etc have been implemented.</p>	<p>Complied</p> <p>Total 19 nos of SO_x, NO_x, CO and PM analyzers have been installed in all 5 stacks of -</p> <ol style="list-style-type: none"> 1. ATF Splitter re boiler 2. New NHT furnace 3. New SRU furnace 4. INDMAX Flue Gas Boiler 5. PrimeG+ two new furnace, <p>Consent to Established Certificate issued by Pollution Control Board, Assam vide no. WB/BONG/T-2266/PT-I/08-09/40/936, Dated: 12th Jan 2018.</p> <p>Validity of CTE extended upto 11/01/2023, vide letter reference, no. WB/BONG/T-2266/PT-I/08-09/43/2237.</p> <p>'Consent to operate' for commissioning of the projects issued by PCBA vide letter no. WB/BONG/T-266/pt-I/08-09/51/580, dated: 15/10/2020.</p> <p>All the units of the Project commissioned successfully except SDS (SRU) unit.</p> <p>Construction of storm water drains in the project area completed.</p> <p>Two roof top RWH scheme commissioned in the new project and Two more RWH scheme commissioned in Admn. Building and in BGR township temple complex during FY(2020-21)</p> <p>Details of setting up of green belt in different phases. (Phase-I & II)</p> <p>Phase-1: 10000 saplings planted in newly developed green belt area (Old debris yard area) during May-July 2017. Photograph of the green belt attached..</p> <p><u>Details of plantation done in and around the complex, since 2017-18</u></p> <p>Year 2017-18: 29600 nos of Sapling Year 2018-19: 30060 nos. of sapling Year 2019-20: 14340 nos. of sapling Year 2020-21: 25606 nos. of sapling Year 2021-22: 1,00,000 nos. of sapling(Inside the complex North side of the IndMax unit 11,500 sapling planted)</p> <p>Phase-2: After completion of the project, plantation will be continued in the following areas:</p> <ol style="list-style-type: none"> (a) North/west side of the complex, in between LPG bottling plant and newly developed green belt area (b) Surrounding of PSF Building area (c) Downward direction and along road side of new project area. <p>Uploading of EC compliance status report on the website is in practice.</p>

EC Sl. No	Special Condition	Compliance Status
(ii)	<p>Ambient air quality data shall be collected as per NAAQS standards notified by the Ministry vide G.S.R. No. 826(E) dated 16th September, 2009. The levels of PM10, PM2.5, SO2, NOx, VOC and CO shall be monitored in the ambient air and emissions from the stacks and displayed at a convenient location near the main gate of the company or at important public places.</p> <p>The company shall upload the results of monitored data on its website and shall update the same periodically. It shall simultaneously be sent to the Regional office of MOEF&CC, the respective Zonal office of CPCB and the state Pollution Control Board (SPCB).</p>	<p>Ambient air quality data & Stack emission monitoring data of the existing units are displayed at BGR Main gate.</p> <p>Configuration done for IndMax and BS-VI(all five stack) in existing system at main gate and online data are displayed at LED display board at BGR main gate.</p> <p>The results of monitored data are uploaded on IOCL website.</p> <p>Also half yearly status reports for the running units are submitted in the month of December and June to the Regional office of MoEF&CC, the Zonal office of CPCB and the State Pollution Control Board (SPCB).</p>
(iii)	<p>In plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Fugitive emissions shall be controlled by providing closed storage, closed handling & conveyance of chemicals/ materials, multi cyclone separator and water sprinkling system. Dust suppression system including water sprinkling system shall be provided at loading and unloading areas to control dust emissions. Fugitive emissions in the work zone environment, product, raw materials storage area etc. shall be regularly monitored. The emissions shall conform to the limits stipulated by the SPCB.</p>	<p>Fugitive emissions are monitored from all vulnerable sources (i.e. Glands, flanges etc) and rectification is carried out if leakage is observed.</p> <p>Quarterly fugitive emissions Survey is being carried out regularly in the work zone environment, product, raw materials storage area etc. and confirm the emission limits stipulated by as per SPCB norms.</p> <p>The quarterly reports for the period of 1st April, 2021 to 30th September, 2021 are attached as Appendix-A5.</p> <p>All liquid and gaseous products and chemicals are handled in the closed system.</p> <p>Water sprinkling system is being taken care off at loading area to control dust emission.</p>
(iv)	<p>The project proponent shall take due care and adopt best practices to ensure that there is no oil spill. However, to meet with any unforeseen situation and combat the oil spill, the PP shall prepare the Oil Spill Disaster Contingency Plan in line with the provisions of the National Oil Spill Disaster Contingency Plan. Regular mock drills shall also be conducted.</p>	<p>Emergency Response & Disaster Management Plan (ERDMP) is in place at BGR and mock drills(on-site & off-site) conducted quarterly on various emergency scenarios.</p> <p>Last Off-site mock drill was conducted on 09/02/2021 in coordination with District Administration.</p>

EC SI No	Special Condition	Compliance Status
(v)	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.	<p>Complied</p> <p>The gaseous emission from DG set is dispersed through adequate stack height (3.0 Mtrs as per CPCB standards).</p> <p>However, DG set not available for new projects.</p>
(vi)	Total fresh water requirement from existing source shall not exceed 370m ³ /hr and prior permission shall be obtained from the Competent Authority. No ground water shall be used without permission.	NOC for ground water extraction for Fresh water requirement (ground water) from CGWA applied. Application No : 21-4/ 1306 /AS / IND/2021, dated: 21/04/2021
(vii)	Waste water shall be treated in ETP. The treated effluent water shall be reused as make up water for cooling tower and green belt development. No Effluent shall be discharged outside the plant premises.	<p>a. Waste water is treated in ETP.</p> <p>b. The treated effluent water is reused as make up water for cooling tower, Fire water network, housekeeping and horticulture.</p> <p>c. No effluent is discharged outside the plant premises.</p>
(viii)	Automatic / online monitoring system (24 x 7 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 and in the Company's website.	<p>Online Continuous Effluent monitoring system for flow measurement and relevant pollutants in the treatment system is available.</p> <p>On-line data is made available to CPCB and SPCB.</p>
(ix)	Adequate odour management plan and its mitigation measure to be implemented on priority.	Adequate odour management plan and its mitigation measure had been implemented along with the project.
(x)	Regular VOC monitoring to be done at vulnerable points.	Occupational Health section is monitoring the VOC at different vulnerable areas in the Refinery on monthly basis.
(xi)	The oily sludge shall be subjected to melting pit for oil recovery and the residue shall be bio-remediated. The sludge shall be stored in HDPE lined pit.	<p>The oily sludge is processed in melting pit for oil recovery and stored in brick lined sludge lagoon.</p> <p>Oily sludge from lagoon is processed for recovery of oil regularly. A new third party is engaged for processing of the oily sludge & recovery of oil from the oily sludge stored in the sludge lagoon. During 1st April, 2021 to 30th September, 2021 1974.00 MT of oily sludge has been processed by mechanised processing.</p> <p>The leftover residue is further bio-remediated before disposal.</p>
(xii)	<p>Comprehensive water audit to be conducted on annual basis and report to the concerned Regional Office of MoEF&CC.</p> <p>Outcome from the report to be implemented for conservation scheme.</p>	<p>M/s EIL conducted a comprehensive water audit & final report submitted.</p> <p>Action plan formulated for implemented of short & long term conservation schemes.</p>

EC SI No	Special Condition	Compliance Status
(xiii)	Oil catchers/oil traps shall be provided at all possible locations in rain/ storm water drainage system inside the factory premises.	Complied Oil catchers/ oil traps are already there in the existing storm water channel and have been installed in rain/ storm water drainage system in the new project. One additional oil catcher/oil trap system provided in rain/storm water drain along with project
(xiv)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc.	Complied Hazardous chemicals are stored in tanks and drums.
	Flame arresters shall be provided on tank farm.	Complied Flame arrestors are installed as per design of tanks in tank farm.
	Solvent transfer shall be by pumps.	Installation of transfer pumps is completed.
(xv)	The by-products which fall under the purview of the Hazardous Waste Rules, be handled as per the provisions of the said Rules and necessary permissions shall be obtained.	Poly Ammonium Sulfide (PAS) dosing facility has been implemented in INDMAX FCCU for mitigation of Cyanide in effluent water generated from INDMAX. Regular testing for Cyanide in effluent is being done. If required, the same will be further treated in upcoming effluent pre-treatment facility in future.
(xvi)	The Company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All Transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	The rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 is complied.
		Transportation of Hazardous Chemicals is followed as per the Motor Vehicle Act (MVA), 1989.
(xvii)	The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire fighting system shall be as per the norms	Gas detectors with Hooters installed and commissioned in DHDT Revamp, HGU Revamp, INDMAX FCCU, Prime G+, NHT and ARU.
		Gas detectors installed and under commissioning in SRU.
		Fire fighting system installed as per OISD-STD-116 and commissioned.
(xviii)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Complied. Occupational health surveillance of the workers are done on a regular basis and records maintained as per the Factories Act. Details attached as Appendix-A13 .

EC SI No	Special Condition	Compliance Status
(xix)	At least 2.5 % of the total cost of the project shall be earmarked towards the Enterprise Social Commitment (ESC) based on local needs and action plan with financial and physical breakup /details shall be prepared and submitted to the Ministry's Regional Office. Implementation of such program shall be ensured accordingly in a time bound manner.	As per MoEFCC guideline dtd. 1 st May 2018, ESC has been replaced with CER (Corporate Environment Responsibility). Expenditure incurred under CSR for the year: 2016-17: 304.84 lakhs 2017-18: 740.95 lakhs 2018-19: 960.00 lakhs 2019-20: 916.08 lakhs 2020-21: 184.66 lakhs 2021-22: 243.46 lakhs(1 st Half) Expenditure incurred under CER for the year: 2021-22: Rs 198.0 lakhs(1 st Half) and total 664.0 Lacks till date against the project
(xx)	A regular Environment Manager, having post graduate qualification in environmental sciences/ environmental engineering, to be appointed for looking after the environmental management practices in the plant.	One executive from HSE Dep't has completed one year PG Diploma course on Env. Management from Tezpur University. He has been entrusted to look after the environmental management practices in the plant.
(xxi)	As proposed, green belt over 33% shall be developed within plant premises with at least 10 meter wide green belt (perennial trees) on all sides along the periphery of the project area, in downward direction, and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the DFO.	Details of setting up of green belt in different phases. (Phase-I & II) Phase-1: 10000 saplings planted in newly developed green belt area (Old debris yard area) during May-July 2017. Photograph of the green belt attached.. <u>Details of plantation done in and around the complex, since 2017-18</u> Year 2017-18: 29600 nos of Sapling Year 2018-19: 30060 nos. of sapling Year 2019-20: 14340 nos. of sapling Year 2020-21: 25606 nos. of sapling Year 2021-22: 1,00,000 nos. of sapling(Inside the complex North side of the IndMax unit 11,500 sapling planted) Phase-2: After completion of the project, plantation will be continued in the following areas: (a) North/west side of the complex, in between LPG bottling plant and newly developed green belt area (b) Surrounding of PSF Building area (c) Downward direction and along road side of new project area.

EC GENERAL CONDITIONS:

EC SI No	Condition	Compliance Status
(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.	Noted. Strict adherence to stipulations made by Statutory authorities will be complied along with project implementation.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and 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.	Noted.
(iii)	The location of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Already four manual ambient air quality monitoring stations are there inside the complex and one in Town ship. One more continuous monitoring station is in BGR Township. Data from the same is being transmitted directly to CPCB/PCBA
(iv)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be followed.	NAAQS issued by the Ministry is being followed & complied.
(v)	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise level shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Complied. Taken care during implementation of the project. Quarterly Noise Survey is being carried out regularly. Quarterly Reports for the period of 1st April, 2021 to 30th September, 2021 are attached as Appendix-A8..
(vi)	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.	Two roof top RWH scheme commissioned in the new project and Two more RWH scheme commissioned in Admn. Building during and in Town Ship Temple complex during the FY(2020-21)
(vii)	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Training on safe handling of chemicals is imparted to all employees. Pre-employment and routine periodical medical examinations for all employees are undertaken on regular basis. Details of medical examinations attached as Appendix-A13.

EC Sl. No	General Condition	Compliance Status
(viii)	The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.	Environmental protection measures and safeguards as recommended in EIA has been complied and implemented along with commissioning of the project.
(ix)	The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villages and administration.	Measures for improving the socio-economic condition of the surrounding area is undertaken under CSR.
(x)	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.	Measures are being undertaken in the nearby villages of the project area under CSR & CER..
(xi)	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	<p>Already exists. BGR is having a separate environmental management cell and a full-fledged laboratory to carry-out environment management and monitoring functions.</p> <p>Organogram of HSE Department is attached as Appendix-A11.</p> <p>BGR Environment Laboratory is accredited by NABL</p>
(xii)	The company shall earmark sufficient funds towards capital cost and recurring cost per annum 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 earmarked for environment management/pollution control measures shall not be diverted for any other purposes.	Dedicated fund is earmarked for environment management and pollution control measures.
(xiii)	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila Parisad/Municipal Corporation, Urban local body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	<p>Not Applicable.</p> <p>However, the clearance dated 19.04.2017 has been published in local dailies, "The Sentinel" and "Amar Asom" on 27.04.2017.</p>
(xiv)	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and concerned SPCB. A copy of Environmental Clearance and six monthly compliance status reports shall be posted on the website of the company.	Noted and is being complied.

EC Sl. No	General Condition	Action
(xv)	The environmental statement for each financial year ending 31 st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	Noted and is being complied.
(xvi)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	Complied. The granting of Environment clearance dated 19.04.2017 has been published in "The Sentinel" and "Amar Asom" on 27.04.2017. The copy of the publication of EC forwarded to the Regional office of MoEF&CC, Shillong and SPCB office on 08.05.2017.
(xvii)	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. Date of final approval and the date of start of the project was informed to the Regional office as well as Ministry. Financial closure of the Project is not yet complete.

APPENDIX –A1STACK MONITORING DATA: (1st April, 2021 to 30th September, 2021)**A. SO₂ Emission (mg/Nm³):**

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	7.89	19.8	43.3
CDU-II		9.97	12.7	13.5
DCU-I		0.90	12.4	45.9
DCU-II		0.01	9.50	57.3
CPP		2.21	47.3	95.0
Reformer		4.09	10.7	54.9
HO-1		11.9	25.1	106.8
HO-2		Shut Down		
Isomerisation		4.89	14.1	64.9
DHDT		0.45	11.0	77.0
HGU		0.48	12.1	45.3
SRU		90.4	129.6	184.5
GTG		1.39	4.09	12.3

B. NO_x Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	11.7	24.2	39.1
CDU-II		1.54	2.80	5.87
DCU-I		2.16	3.21	5.53
DCU-II		0.05	2.83	8.03
CPP		6.71	12.0	20.3
Reformer		33.3	68.9	95.8
HO-1		43.4	100.0	148.1
HO-2		Shut Down		
Isomerisation		18.4	43.8	56.3
DHDT		5.38	25.7	49.7
HGU		2.31	15.9	30.1
SRU		No Analyser		
GTG		16.3	24.32	35.92

C. PM Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	10.42	14.3	20.5
CDU-II		2.99	9.0	16.6
DCU-I		1.13	3.8	7.7
DCU-II		0.06	3.7	9.7
CPP		0.04	7.6	15.2
Reformer		0.89	4.1	15.5
HO-1		2.61	7.9	20.3
HO-2		Shut Down		
Isomerisation		0.30	3.0	12.0
DHDT		0.31	3.4	16.2
HGU		0.32	6.6	33.4
SRU		6.78	18.0	35.6
GTG		1.87	16.7	22.2

STACK MONITORING DATA: (1st April, 2021 to 30th September, 2021)

D. CO Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	2.97	10.3	13.9
CDU-II		2.04	12.5	36.3
DCU-I		0.30	6.5	45.8
DCU-II		0.04	4.7	13.4
CPP		0.13	5.5	41.0
Reformer		2.17	8.6	14.6
HO-1		0.27	12.5	27.9
HO-2		Shut Down		
ISOMERISATION		6.21	17.6	21.1
DHDT		0.99	7.4	16.0
HGU		4.81	9.7	95.6
SRU		5.03	8.4	15.0
GTG		2.39	8.7	21.5

E. Ni + V Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 5	BDL	BDL	BDL
CDU-II		BDL	BDL	BDL
DCU-I		BDL	BDL	BDL
DCU-II		BDL	BDL	BDL
CPP		BDL	BDL	BDL
Reformer		BDL	BDL	BDL
HO-1/2		BDL	BDL	BDL
ISOMERISATION		BDL	BDL	BDL
DHDT		BDL	BDL	BDL
HGU		BDL	BDL	BDL
SRU		BDL	BDL	BDL
GTG		BDL	BDL	BDL

AMBIENT AIR QUALITY AROUND BGR COMPLEX

(Average of monthly sample Schedule – VII)
(1st April, 2021 to 30th September, 2021)

	Station	Continuous Monitoring Station	Near Tube Well No.14	Near LPG Bottling plant	Rural Health Centre	Bartala Rail Gate	Near TW No.7 in Township
1	SO₂ (Std. 50/80 µg/m³)						
	Min	0.15	12.0	8.80	11.7	10.5	11.9
	Average	2.35	16.4	16.0	16.7	17.0	17.0
	Max	8.85	30.2	23.6	23.9	23.9	22.1
	No. of observation	Continuous	48	48	54	54	48
2	NO₂ (Std. 40/80 µg/m³)						
	Min	0.99	15.8	13.3	17.4	11.2	16.2
	Average	7.35	21.0	20.4	21.7	21.7	21.7
	Max	10.0	29.0	29.8	27.6	27.4	25.3
	No. of observation	Continuous	48	48	54	54	48
3	PM-10 (Std. 60/100 µg/m³)						
	Min	7.69	52.6	51.3	51.0	53.7	51.7
	Average	19.7	68.0	67.4	69.0	69.7	66.9
	Max	92.2	92.0	84.0	89.3	86.5	89.0
	No. of observation	Continuous	48	48	54	54	48
4	PM-2.5 (Std. 40/60 µg/m³)						
	Min	2.30	26.8	23.7	23.9	25.2	22.8
	Average	9.64	35.1	34.6	35.5	34.9	33.4
	Max	31.0	50.6	49.0	49.9	44.9	49.8
	No. of observation	Continuous	48	48	54	54	48
5	Ammonia (Std. 100/400 µg/m³)						
	Min	1.69	10.8	10.8	10.5	10.8	10.8
	Average	5.33	16.5	16.4	16.0	17.2	16.0
	Max	10.0	23.0	21.5	23.9	31.1	23.8
	No. of observation	Continuous	48	48	54	54	48
6	Pb (Std. 0.5/1.0 µg/m³)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		48	48	54	54	48
7	Arsenic (As) (Std. 6 ng/m³)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		48	48	54	54	48

	Station	Continuous Monitoring Station	Near Tube Well No.14	Near LPG Bottling plant	Rural Health Centre	Bartala Rail Gate	Near TW No.7 in Township					
8	Ni (Std. 20 ng/m ³)											
	Min		BDL	BDL	BDL	BDL	BDL					
	Average		BDL	BDL	BDL	BDL	BDL					
	Max		BDL	BDL	BDL	BDL	BDL					
	No. of observation		48	48	54	54	48					
9	CO (Std. 2/4 mg/m ³)											
	Min	0.00	BDL	BDL	BDL	BDL	BDL					
	Average	0.13	BDL	BDL	BDL	BDL	BDL					
	Max	1.49	BDL	BDL	BDL	BDL	BDL					
	No. of observation	Continuous	48	48	54	54	48					
10	Ozone (Std.100/180 µg/m ³ for 8 hrs/1 hr)											
	Min	29.4	18.1	16.0	14.8	15.2	14.8					
	Average	43.6	22.5	22.1	21.7	22.3	21.6					
	Max	80.1	29.4	32.0	30.3	29.8	29.0					
	No. of observation	Continuous	48	48	54	54	48					
11	Benzene (Std. 5 µg/m ³)											
	Min	0.06	BDL	BDL	BDL	BDL	BDL					
	Average	0.24	BDL	BDL	BDL	BDL	BDL					
	Max	0.68	BDL	BDL	BDL	BDL	BDL					
	No. of observation	Continuous	48	48	54	54	48					
12	Benzo (a) Pyrene (Std. 1 ng/m ³)											
	Min		BDL	BDL	BDL	BDL	BDL					
	Average		BDL	BDL	BDL	BDL	BDL					
	Max		BDL	BDL	BDL	BDL	BDL					
	No. of observation		48	48	54	54	48					
Average of Six Stations												
Parameter	SO ₂	NO ₂	PM-10	PM-2.5	NH ₃	Pb	As	Ni	Benzo (a) Pyrene	CO	C ₆ H ₆	O ₃
Unit	µg/m ³					ng/m ³			mg/m ³	µg/m ³		
NAAQ Std. 2009	50/80	40/80	60/100	40/60	100/400	0.5/1.0	Max 6	Max 20	Max 1	2/4	Max 5	100/180
Min	0.15	0.99	7.69	2.3	1.69	BDL	BDL	BDL	BDL	0.00	0.06	14.8
Average	14.2	19.0	60.1	30.5	14.6	BDL	BDL	BDL	BDL	0.13	0.24	25.6
Max	30.2	29.8	92.2	50.6	31.1	BDL	BDL	BDL	BDL	1.49	0.68	80.1

APPENDIX-A2**Effluent Discharged (Figure in M³/Hr): (1st April, 2021 to 30th September, 2021)**

A	Industrial Effluent M ³ /Hr	152.9
B	Domestic Effluent from BGR Township M ³ /Hr	43.7
C	Total Effluent Treated (A + B) M ³ /Hr	196.6
D	Treated Effluent Reused M ³ /Hr	196.6
E	Effluent Discharged M ³ /Hr	0.00
F	M ³ of Effluent discharged for 1000 tons of Crude processed	0.00

1. Treated Effluent Quality**(1st April, 2021 to 30th September, 2021)**

Sl. No	Parameter	Std,2008	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	6.5	7.3	8.5
2	Oil and Grease, mg/l	5.0	0.8	3.7	5.0
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	4.0	9.4	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	9.4	30.2	121.7
5	Suspended solids, mg/l	20.0	6.0	12.9	18.6
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.04	0.17	0.35
7	Sulphide (as S), mg/l	0.50	0.17	0.22	0.42
8	CN mg/l	0.20	0.10	0.10	0.10
9	Ammonia as N, mg/l	15.0	2.00	3.00	4.20
10	TKN, mg/l	40.0	5.20	7.33	11.20
11	P, mg/l	3.0	0.40	0.49	0.62
12	Cr (Hexavalent), mg/l	0.10	-	BDL	-
13	Cr (Total), mg/l	2.0	-	BDL	-
14	Pb, mg/l	0.10	-	BDL	-
15	Hg, mg/l	0.01	-	BDL	-
16	Zn, mg/l	5.0	0.13	0.25	0.41
17	Ni, mg/l	1.0	-	BDL	-
18	Cu, mg/l	1.0	0.27	0.35	0.42
19	V, mg/l	0.20	-	BDL	-
20	Benzene, mg/l	0.10	-	BDL	-
21	Benzo (a) pyrene, mg/l	0.20	-	BDL	-

EFFLUENT QUALITY

2. Final Outlet (From the Complex) Effluent Quality

(1st April, 2021 to 30th September, 2021)

Sl. No.	Parameter	Std 2008	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	6.50	7.32	8.50
2	Oil and Grease, mg/l	5.0	0.80	4.34	5.80
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	4.00	11.3	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	9.64	35.3	118.0
5	Suspended Solids, mg/l	20.0	8.00	15.3	20.0
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.06	0.23	0.35
7	Sulphide (as S), mg/l	0.50	0.12	0.39	0.50
8	CN, mg/l	0.20	0.01	0.01	0.01
9	Ammonia as N , mg/l	15.0	2.20	2.51	2.80
10	TKN, mg/l	40.0	8.40	12.13	16.8
11	P, mg/l	3.0	0.16	0.44	0.61
12	Cr (Hexavalent), mg/l	0.10	-	BDL	-
13	Cr (Total), mg/l	2.0	-	BDL	-
14	Pb, mg/l	0.10	-	BDL	-
15	Hg, mg/l	0.01	-	BDL	-
16	Zn, mg/l	5.0	0.12	0.14	0.17
17	Ni, mg/l	1.0	0.12	0.15	0.18
18	Cu, mg/l	1.0	0.15	0.34	0.47
19	V, mg/l	0.20	-	BDL	-
20	Benzene, mg/l	0.10	-	BDL	-
21	Benzo (a) pyrene, mg/l	0.20	-	BDL	-

5.0

APPENDIX - A3

Tree Plantation (1st April, 2021 to 30th September, 2021)

The entire area inside BGR covered with greenery through massive plantation activities. Through massive plantation work and by giving protection to natural forest growth in side BGR premises, the entire area has become green. The entire plant area where processing plant facilities do not exist has a green cover. This helps in reduction of noise and air pollution level in one hand while on the other hand provides protection to ecological features of the area. The refinery has an excellent quality environment around its complex. Natural greenery can be seen all around the complex as well as in BGR Township and in all seasons of the year.

Tree Census was done by Divisional Forest Office, Chirang. As per census, 84545 numbers of plants which include trees including shrubs, ocular estimated 33000 numbers bamboos in 1150 no. bamboo culms and also trees planted by BGR during 2003 to 2012

BGR has planted 29600 nos of saplings in the FY 2017-18, in FY 2018-19, 30,062 nos, in FY 2019-20 14340 nos, and in FY 2020-21 25606 nos. of saplings planted in and around the complex

During, 1st April, 2021 to 30th September, 2022 BGR has planted 1,00,000 nos. of tree saplings

Tree Plantation 2017-18



Birhangaon State Dispensary Plantation, 10,000 nos. Sapling Planted by Miyawaki Method in the month of August,2017. Growth as on Aug,2021

Tree Plantation 2018-19



BGR TOWNSHIP PLANTATION, Planted Van mahotsav 2018, Growth as on Oct'2021

Tree Plantation 2019-20



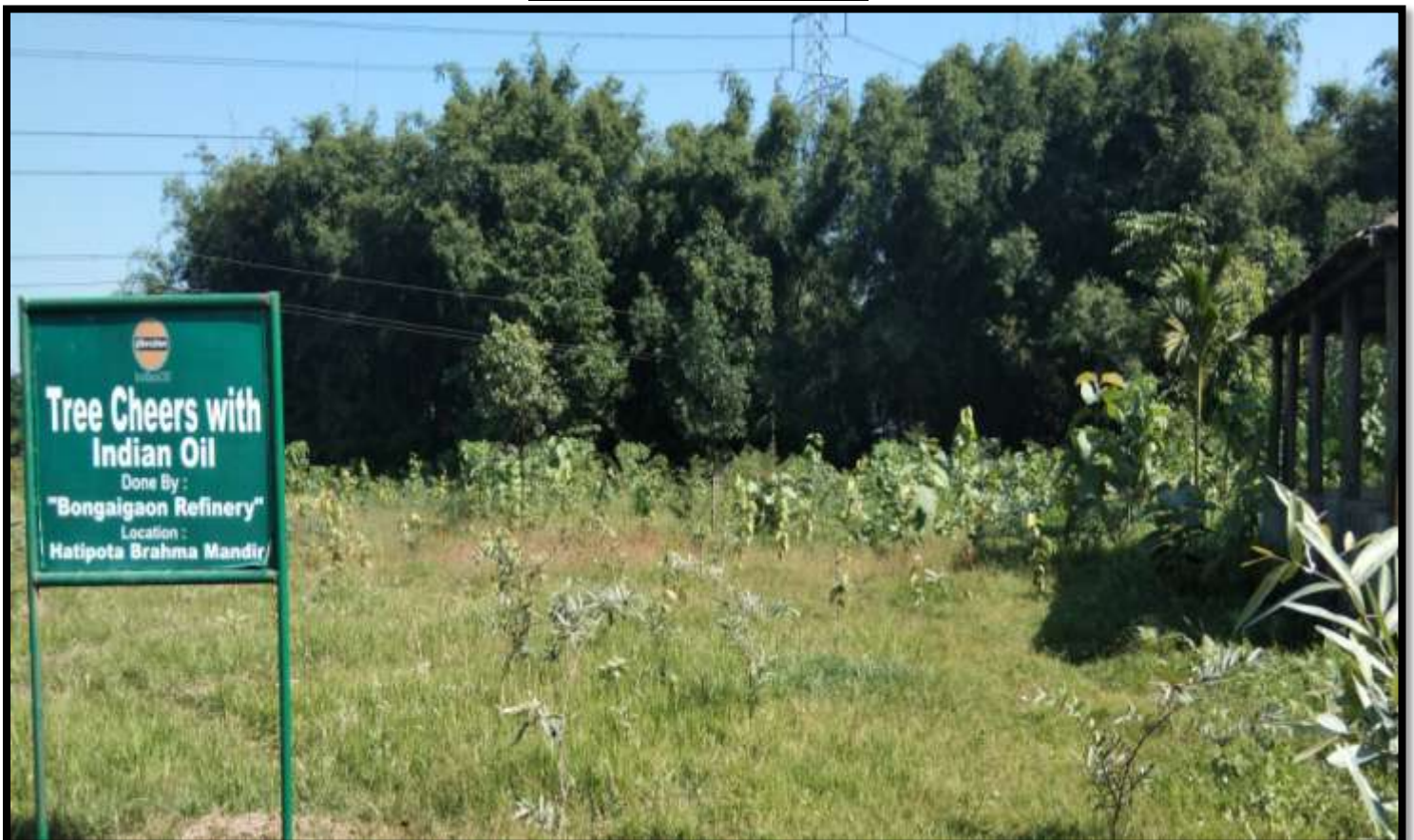
Birhangaon State Dispensary Plantation, 5375 nos. Sapling Planted by Miyawaki Method in the month of September,2019 Growth as on Nov,2021.

Tree Plantation 2020-21



On WED'2020, 3740 nos. of sapling planted in BGR Township, Growth as on Nov,2021.

Tree Plantation 2020-21



4810 nos of sapling Planted in the month of August'2020 at Hatipota Brahma Mandir, Growth as on Nov,2021.

Tree Plantation 2020-21



4000 nos of sapling planted at Kashikotra Model Hospital in Nov'2020

Tree Plantation 2021-22 (One Lacks sapling planted during current FY)



At Amguri Forest Range, Koila Moila, In collaboration with DFO Chirang

APPENDIX – A 4

Additional Information

(1st April, 2021 to 30th September, 2021)

Effluent reused during the period is **100%** of the total effluent treated which includes plant effluent as well as BGR Township sewer.

Under the Leak Detection and Repair programme (LDAR), BGR is conducting quarterly Fugitive Emission Survey. During the period from **1st April, 2021 to 30th September, 2021**, **38823** potential leaky points checked and **142** Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **126.79** MTA (approx.) of light Hydrocarbon to the atmosphere through fugitive sources but also able to keep healthy work environment in the plants.

To ensure work area quality and health of equipments, quarterly noise survey was conducted covering all the operating plants, control rooms and ambient surrounding the BGR. During **1st April, 2021 to 30th September**, Noise Survey for two quarters of **2020-21** has been completed and no abnormality was reported.

As a measure of Hazardous Waste Management, A third party has been engaged for processing tank bottom sludge through mechanized treatment. Another third party is engaged for processing of the oily sludge & recovery of oil from the oily sludge stored in the concrete lagoon. Melting pit facility is available for recovering oil from oily sludge.

One old slurry thickener in ETP, from Petrochemical section was converted to confined space bio-remediation reactor to treat oily sludge with help from IOCL-R&D. The process of bio-remediation started from July 2017. From **1st April, 2021 to 30th September**, **82 MT** of oily sludge has been processed in the Bio-reactor.



Bio-remediation facility of BGR

Further two more Rain Water Harvesting (Ground Water Recharging) schemes in BS-VI project have been implemented during 2019-20 and Two more implemented in the FY 2020-21 in Admn. Building and BGR Township temple complex..

7.0

APPENDIX –A5

Quarterly Fugitive emission Data
(1st April, 2021 to 30th September, 2021)



FUG EMISSION
Report 1ST QTR 2021



FUG EMISSION
Report 2ND QTR 202

8.0

APPENDIX-A6 (a)



Haz Waste Return
FORM-4 (2020-21).doc

9.0

Annexure –A6 (b)

**Authorization from PCBA for Hazardous Waste
(Management and Transboundary Movement) Rules 2016**

No. WB/BONG/T-748/19-20/109

39



HW Authorisation
2019.pdf

10.0

APPENDIX-A7

Detail of Waste water treatment and disposal system.



ETP Description.pdf

11.0

ANNEXURE-A8

Quarterly Noise Survey Data

(1st April, 2021 to 30th September, 2021)

HSE (ENVIRONMENT) DEPARTMENT



NOISE SURVEY
Report 1ST QTR 2021



NOISE SURVEY
Report 2ND QTR 2021

ANNEXURE-A9
Rain Water Harvesting Data

BGR: Rain Water Harvesting till March 2021

Sl.No.	RWH systems	Area In m ²	Recharging, m ³ /Yr	Total Recharging, m ³ /Yr	Status
1	Rainwater Harvesting at Mandir Complex Pond	7125	20748	99239.14	In operation
2	Manjeera Guest House	677	1848		
3	Deoshri Guest House	581	1586		
4	Rainwater Harvesting at Farivesh Udyan Pond	5775	16817		
5	Rainwater Harvesting at Eco-Park Pond	20000	58240		
6	Mandir Complex	833	2274	14597	In operation
7	Manas Guest House	639	1744		
8	BGR HS School, BGR Township	1361	3718		
9	DPS Block-I	704	1922		
10	DPS Block-II	1010	4941		
11	BGR Canteen, CISF Office & Scooter Shed	3134	8556	8556	In operation
12	Champa Club (Officers Club)	1100	3003	10046	In operation
13	Refinery Club cum Community Centre	2580	7043		
14	Employee Union Conference Hall Building	275	751	3003	In operation
15	CISF Quarter Guards Building	825	2252		
16	CISF Conference Hall & Barack	1050	2867		
17	BGR Community Centre	650	1775	4541	In operation
18	Foot Ball Stadium gallery	988	2697	2697	In operation
19	Vollyball Stadium Gallery				
20	Control Room – BS-VI	1372.5	3747	3747	Commissioned in June'2020
21	Substation – BS-VI	942	2572	2572	
22	Admin. Block-B	1730	4723	4723	Commissioned In Aug'2020
23	Temple Complex(NEW)	1015.1	2771	2771	Commissioned in March'2021
	TOTAL	55,167	156593	156592	

M
16/12/21
CMLHS(E)

13.0

ANNEXURE-A10

Screen Shot of IOCL Website upload of report

Link: <https://iocl.com/statutory-notice>

Statutory Notices : IndianOil x +

← → ↻ iocl.com/statutory-notice

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Statutory Notices




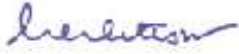
- > Six monthly compliances reports(2nd half FY 2020-21) of Bongaigaon Refinery ^{New}
- > Six Monthly Compliance Report (MS Maximisation) 2nd half, 2020-21
- > Six Monthly Compliance DHT 2nd half, 2020-21
- > Six Monthly Compliance Report (Refinery-II) 2nd half, 2020-21
- > Six Monthly Compliance (IndMax&BS-VI) 2nd half, 2020-21
- > Six Monthly Compliance report(MS Quality Improvement) 2nd half, 2020-21
- > Capacity Determination compliance report as per Schedule -I, under Regulation 4 (2) of the Petroleum and Natural Gas Regulatory Board (Access Code for Common

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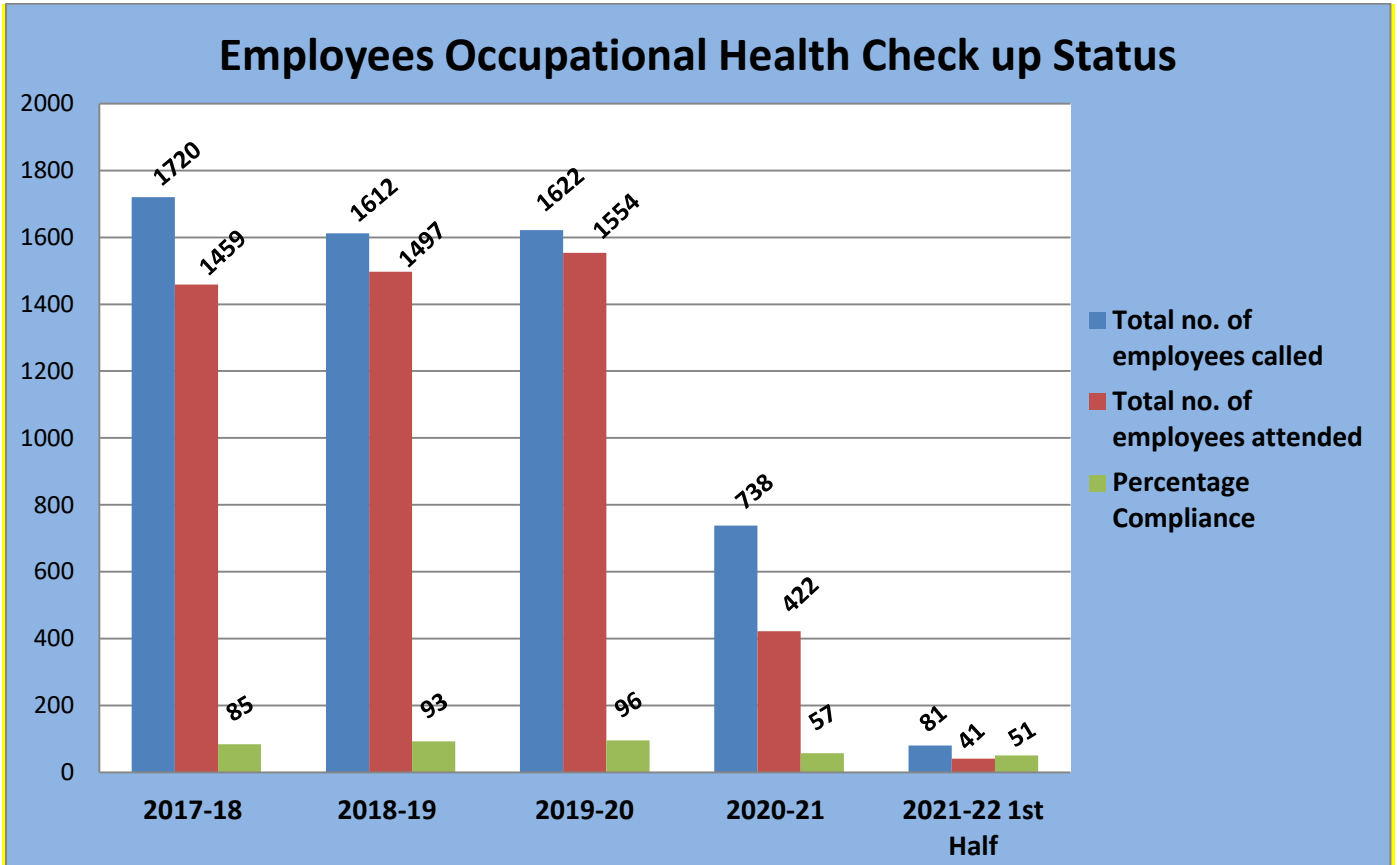
ANNEXURE-A12

NABL certificate of QC Lab of Bongaigaon Refinery

		National Accreditation Board for Testing and Calibration Laboratories	
<u>CERTIFICATE OF ACCREDITATION</u>			
INDIAN OIL CORPORATION LIMITED, QC LABORATORY, BONGAIGAON REFINERY			
has been assessed and accredited in accordance with the standard			
ISO/IEC 17025:2017			
"General Requirements for the Competence of Testing & Calibration Laboratories"			
for its facilities at			
P.O. DHALIGAON, BONGAIGAON, CHIRANG, ASSAM, INDIA			
in the field of			
TESTING			
Certificate Number:	TC-6027	Valid Until:	28/04/2021*
Issue Date:	29/04/2019		
*The validity is extended for one year up to 28.04.2022			
This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL. (To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)			
Name of Legal Identity : INDIAN OIL CORPORATION LIMITED			
Signed for and on behalf of NABL			
	 N. Venkateswaran Chief Executive Officer		

Appendix-A13

Employees Occupational Health Check up Status

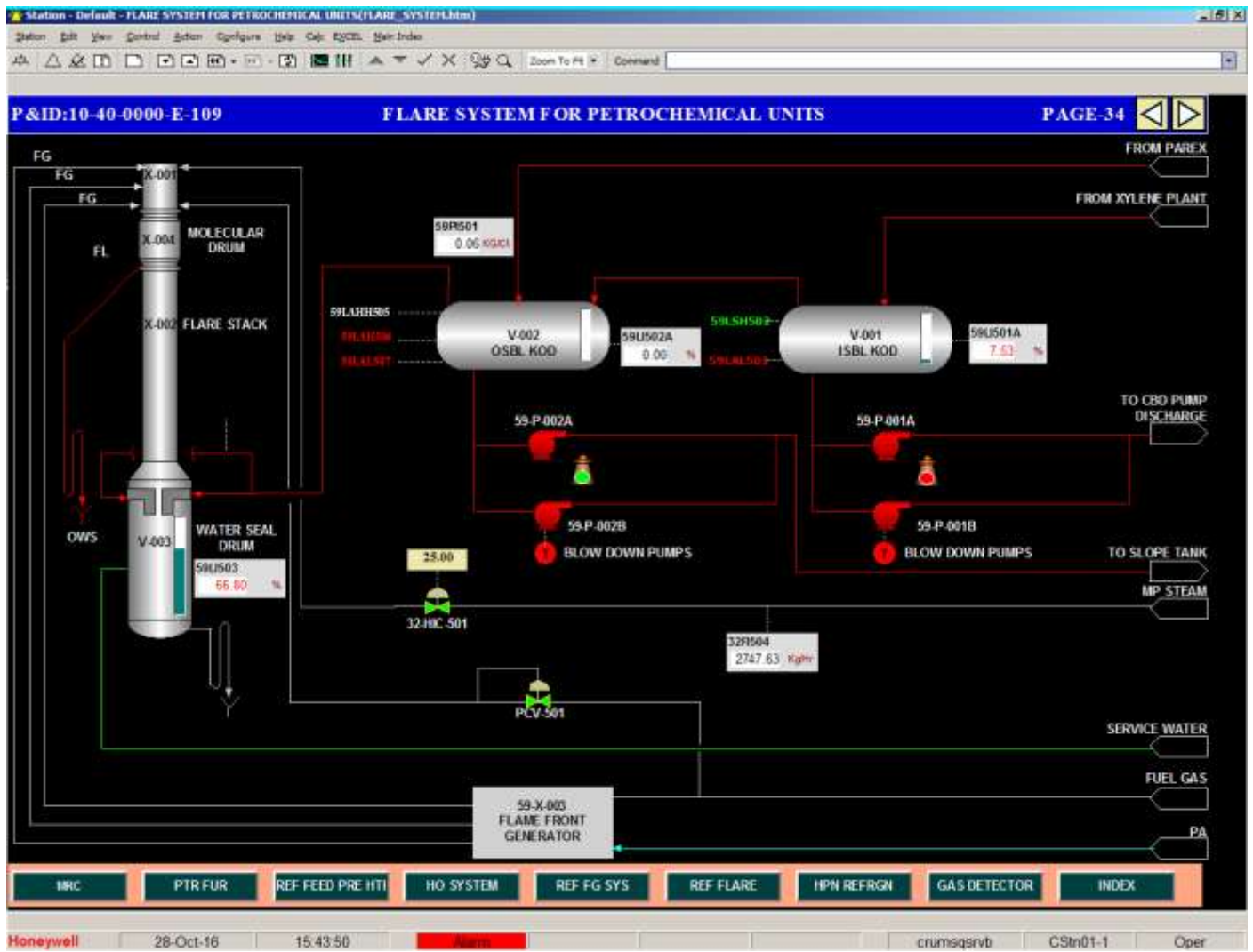


Note: Employees occupational health check up program effected, due to the COVID-2019 pandemic situation.

17.0

Appendix-A14

Flare system.



THANKS