



REF: IOC/BGR/ENV/DHDT/MoEF&CC/2021-22/02

Date: 14.06.2022

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 (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022) for Diesel Hydro Treatment Plant**

Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of **1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022** 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 "Diesel Hydro Treatment Project".

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 Motinagar,  
Near Fire Brigade H.Q., Shillong – 793014



इंडियन ऑयल कॉर्पोरेशन लिमिटेड

बोंगागाँव रिफाइनरी

डाकघर : धारंगी - 783 385

जिला : चिरांग (असम)

Indian Oil Corporation Limited

Bongaigaon Refinery

PO : Dhaliguan, Dist : Chirang, Assam-783385

Phone : 03664

E-mail :

Website : www.iocl.com FAX : 03664



रिफाइनरी प्रभाग  
Refineries Division

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**“Half yearly Report for “Diesel Hydro Treatment Plant”**  
**For the period (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**



**Submitted by:**

**Indian Oil Corporation Limited**

**Bongaigaon Refinery**

**PO: Dhaligaon. District: Chirang. Assam**

## 1.0

### Diesel Hydro-treatment Project,

MoEF letter No. J.11011/78/2001-IA-II (I) dated 25/06/2002.  
Renewal of "Environment Clearance" by MoEF on 01.05.2006

**Six Monthly Status Report for the period: (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**

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16.	Flare system.	Furnished in Appendix-A14

## 2.0

**ANNEXURE-A:**

Sr. No	Specific Conditions	Compliance Status
i	The company must comply with conditions and safeguards stipulated by the Ministry while granting environmental clearance to the refinery expansion project vide Ministry's OM No. J-11011/24/90-IA II (I) dated 3 <sup>rd</sup> June 1991	All conditions of the clearance are complied and verified by statutory agencies time to time.  (Please Refer to compliance report of Refinery Expansion Project and other compliance report against EC granted to BGR.)
ii	A comprehensive risk assessment study for the complex must be undertaken and report submitted to the Ministry before commissioning of the Diesel hydro-treatment project.	<ol style="list-style-type: none"> <li>1. Rapid Risk Analysis (RRA) was carried by M/s EIL in September'2006, and a copy of the report was also submitted to your good office vide our letter No. BRPL/ENV/MS-MAX/06-07/03 dated 08.11.2006.</li> <li>2. Comprehensive Risk Assessment was conducted by M/s Chilworth Technology Pvt. Ltd. was submitted on 11.10.2010.</li> <li>3. Post commissioning, fresh CRA was carried out by M/S CGC Converse Technologies in 2016 and M/s Environmental Technical Service Ltd. In 2021.</li> </ol>
iii	The company must formulate and firm up a scheme/action plan for handling the oily sludge which is presently being disposed off into the oil sludge lagoon. The firmed up plan must be submitted to the Ministry within one year.	<p>AS on when required, third party is engaged for processing of the oily sludge &amp; recovery of oil from the oily sludge stored in the sludge lagoon by mechanised processing. Melting pit facility is also available for recovering oil from oily sludge.</p> <p>During <b>1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022, 3281.00 MT</b> of oily sludge has been processed by mechanised processing.</p> <p>A confined bio reactor was commissioned in July 2017 in association with IOCL R&amp;D for bio-remediation of residual oily sludge.</p> <p>During <b>1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022, 46.00 MT</b> of oily sludge has been processed in the Bio-reactor.</p>
iv	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EMP and risk analysis report prior to commissioning of the project.	Environmental protection measures and safeguards recommended in the EMP and risk analysis reports are implemented & complied.
v	Company must take additional measures to mitigate the risks including the following:	-
	a. Provision of double mechanical seal for the pumps handling H <sub>2</sub> S to reduce the frequency of failure	Taken care off in design stage, installed & commissioned.
	b. Provision of adequate no. of H <sub>2</sub> S detector (s) in appropriate locations of the plant for early detection of the leak so that the release duration and hence the hazardous consequence is reduced.	Following no. of H <sub>2</sub> S detectors along with HC/H <sub>2</sub> detectors provided in various process units under DHDT project as on 30 <sup>th</sup> Sep'2021 after new addition. DHDT : (HC = 35, H <sub>2</sub> S = 5, H <sub>2</sub> = 9) HGU : (HC = 15, H <sub>2</sub> S = 4, CO = 4, H <sub>2</sub> = 4) ARU : (HC=1 & H <sub>2</sub> S = 6) SWSU : (HC=1 & H <sub>2</sub> S=7) SRU : (H <sub>2</sub> S=15, HC=3 & H <sub>2</sub> =2) DHDT-Utility Area: (H <sub>2</sub> S=12, HC=8, H <sub>2</sub> = 4)
	c. Provision of emergency stop button for rich amine group in the control room to stop the pump.	Taken care off in design stage, installed & commissioned.

Sr. No.	Specific Conditions	Compliance Status
vi	Government of Assam (Dept. of Forest and Wildlife), must prepare a contingency plan to mitigate the adverse impact of the increased human activities on the wildlife habitat around the refinery, mainly w.r.t. Golden Langur. Funds for implementing mitigation strategies should be provided by the company. The refinery should also arrange to provide free gas to the villagers residing within Kakoijana reserved forests as well as residents of Hapachara, Garegaon, Gorapara, Rabhapara and Chitkagaon, so that felling of trees for fuel wood is reduced .A comprehensive Action Taken Repot should be submitted within one year.	Complied. i) Free LPG connection under 'Prime Minister's 'Ujjwala Yujana' has been provided by IOC, (M D) , in the villages mentioned ii) BGR has planted around 3000 tree saplings in Rabhapara in Kakoijana Reserve Forest iii) Awareness program was also arranged by IOCL, BGR, among the adjoining villagers of Kakoijana Reserve Forest time to time. One such program was arranges, where noted environmentalist, forest men Dr. Jadav Payang was present as guest speaker.

SL.	General Conditions	Compliance Status
i	The project authority must adhere to the stipulations made by Assam State Pollution Control Board and State Government.	Complied. Stipulations made in the environmental clearance of the project are taken care during detailed engineering and any stipulations made by Assam State Pollution Control Board and State Government implemented.
ii	No expansion or modification of the plant should be carried out without prior approval of this Ministry.	Complied. EC was granted by MoEF&CC to BGR for IndMax & BS-VI projects vide letter F. no.J11011/48/2016-IA-II (I), Dated 19 <sup>th</sup> Apr'2017. <b>The project aims to enhance expansion of Crude processing from 2.35 to 2.7 MMTP, other associated projects, e.g. DHD capacity from 1.2 to 1.8 MMTP, HGU from 25 KTPA to 30 KTPA, CRU-MSQ revamp and SDS (SRU) unit.</b> All the units of the Projects are commissioned successfully except SDS (SRU) unit.
iii	Handling, manufacturing, storage and transportation of hazardous chemicals should be carried out in accordance with the Manufacturing, storage and transportation of hazardous chemicals Rules, 1989, as amended in 1991. Permission from State and Central nodal agencies in this regard must be obtained.	Complied. The rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 is complied.
iv	Hazardous wastes, if any, must be handled and disposed as per Hazardous waste (Management and handling) Rules, 2008. Authorization from State Pollution Control Board in this regard must be obtained.	Complied. Authorization under Hazardous and Other Waste (Management, and Transboundary Movement) Rules 2016 obtained from PCBA and valid up to 5 <sup>th</sup> August, 2022. Copy attached as <b>Appendix A6 (b)</b> .

SL.	General Conditions	Compliance Status
v	Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation etc. should be ensured for construction workers during the construction phase so as to avoid felling of trees and pollution of water and the surrounding.	Complied. Infrastructure facilities like water supply, canteen facility, sanitation were provided during the project construction period to the workers.
vi	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc, on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Complied. a) Taken care off in the design stage, installed & commissioned. b) Precautionary measures were taken during construction period to control the noise level & present activities do not generate noise of high db. c) Quarterly Noise Survey is being carried out regularly to check noise level.  Quarterly Noise survey report for the period of <b>1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022</b> , is attached as <b>Appendix A8</b> .
vii	Occupational health Surveillance of the workers should be done on a regular basis and records maintained.	Complied. Report Attached as <b>Appendix A13</b> .
viii	A separate environmental management cell with full fledged laboratory facilities to carry out various management and monitoring functions should be set up under the control of Senior Executive.	Complied. BGR is having a separate environmental management cell of HSE department and full-fledged laboratory to carry-out environment management and monitoring functions. Organogram of HSE Department is attached as <b>Appendix A11</b> . BGR Environment Laboratory is accredited by NABL. <b>(Copy attached as Appendix A12)</b>
ix	The funds earmarked for the environmental protection measures should be reported to this Ministry and SPCB.	Complied. Funds were made available for implementing all recommendations  Expenditure for the financial year 2018-19 was <b>Rs.1066.6</b> Lacks, financial year 2019-20 was <b>Rs. 503.84</b> Lacks, financial year 2020-21 was <b>Rs. 455.74</b> Lacks and in FY 2021-22 is <b>726.76</b> Lacks.
x	Six monthly status reports on the project vis-a-vis Implementation of environmental measures should be submitted to this Ministry (Regional Office, Shillong/ CPCB/ SPCB).	Complied. Soft copy of last six monthly compliance reports was submitted vide, document no.  <b>IOC/BGR/ENV/DHDT/MoEF&amp;CC/2021-22/01</b> <b>Date: 16.12.2021</b> The six monthly compliance reports were also displayed on the Website of the Company. Screen shot attached as <b>Appendix A10</b> .

SL.	General Conditions	Compliance Status
xi	The project proponent should advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned informing that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with State Pollution Control Board/Committee and may also be seen at Website of the Ministry and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> The advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to Ministry's Regional Office at Shillong.	Complied.
xii	The Project Authorities should inform the Regional Office as well as the Ministry the date of financial closer and final approval of the project by the concerned authorities and the date of land development work.	Board of Directors of the Company has approved revised cost estimate of Rs.1701.52 Crore. Last capitalization date is 06.06.2015. The initial capitalization date is 13.08.2011 (Original approved cost is Rs. 1431.91 crore) for this project on 28th May, 2008.  Financial closure of DHD T Project is not yet complete because of some pending issues of GTG package, which is part of DHD T Project.

Sr. No	CONDITIONS (As given in concurrence to changes in Env. Clearance dated May 1, 2006)	
i	The total SO <sub>2</sub> emission level from the unit after the proposed up gradation shall not exceed 40 kg/MT of the feed.	Taken care in design stage itself.
ii	The company shall comply with the revised standards of NO <sub>x</sub> emission.	
iii	The total effluent generation shall not exceed 7.9 m <sup>3</sup> /hr The fresh water consumption shall not exceed 275 m <sup>3</sup> /hr.	
iv	No further modernization of project shall be carried out without prior permission of this Ministry.	EC was granted by MoEF&CC to BGR for IndMax & BS-VI projects vide letter F. no.J11011/48/2016-IA-II (I), Dated 19 <sup>th</sup> Apr'2017. <b>The project aims to enhance expansion of Crude processing from 2.35 to 2.7 MMTP, other associated projects, e.g. DHD T capacity from 1.2 to 1.8 MMTP, HGU from 25 KTPA to 30 KTPA, CRU-MSQ revamp and SDS(SRU) unit.</b> All the units of the Projects are commissioned successfully except SDS (SRU) unit.
v	The company shall comply with the conditions stipulated in the clearance order of even no. dated 25 <sup>th</sup> June, 2002.	Complied.
vi	The company shall carry out a comprehensive risk assessment study and a copy submitted to the Ministry before commissioning of the Diesel Hydro Treatment Project.  A comprehensive risk assessment study for the complex must be undertaken and report submitted to the Ministry before commissioning of the Diesel hydro-treatment project.	Complied.  1. Rapid Risk Analysis (RRA) was carried by M/s EIL in September'2006, and a copy of the report was also submitted to your good office vide our letter No. BRPL/ENV/MS-MAX/06-07/03 dated 08.11.2006.  2. Comprehensive Risk Assessment was conducted by M/s Chilworth Technology Pvt. Ltd. was submitted on 11.10.2010.  3. Post commissioning, fresh CRA was carried out by M/S CGC Converse Technologies in 2016 and M/s Environmental Technical Service Ltd. In 2021..



## **Status of Diesel Hydro-Treatment Project**

**(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022,)**

**Environmental Clearance for Diesel Hydro-treatment Project,  
MoEF's Letter No. J.1101/78/ 2001- IA- II (I) dated 25/06/2002**

### **Status:**

Following are some of the important mile stones towards implementing of the project:

#### **1. Renewal of "Environment Clearance" from the Ministry of Environment & Forests:**

The Ministry of Environment & Forests had conveyed its 'No Objection' to the proposed revised Diesel up gradation project at Indian Oil - Bongaigaon Refinery vide their letter No.J-1101/78 /2001- IA 11(1) dated 01.05.2006.

#### **2. Renewal of "NOC" from State Pollution Control Board:**

Pollution Control Board of Assam had renewed the NOC vide their letter No. WB/Z-II/T-1 345/2000-2001/138 Dated Guwahati, the 8th May, 2006

#### **3. Board approval for Project:**

Board of Directors of IOCL has approved revised cost estimate of **Rs.1701.52** Crore (original approved cost is Rs. 1431.91 crore) for this project.

#### **4. Fresh REIA & RRA Study:**

REIA & RRA study for the project was carried out by M/s EIL, New Delhi. Final report was submitted in September, 2006.

Further, HAZOP study for DHDT unit (13.12.06 to 22.12.06), Sulfur Block (15.01.07 to 24.01.07), HGU (08.10.07 to 12.10.07) and OSBL Utilities & Off sites (16.10.07 to 17.10.07) completed and reports submitted by EIL on 04.01.07, 17.02.07, 27.10.07 & 31.10.07 respectively.

Fresh HAZOP study completed by **Asia Pacific Risk Management Services Pvt. Ltd in February 2014**

**Further, Fresh EIA & RRA for New Projects conducted in 2015-16 by M/s ABC Techno Lab Pvt. Ltd, Chennai**

#### **1. Commissioning of various units under DHDT project:**

- a) All the utilities & off sites viz. LP steam, MP steam, VHP steam, Service Water, DM water, Drinking water, Nitrogen, Process Air, Inst. Air, CK, Slop, GO, FG lines commissioned
- b) H<sub>2</sub> unloading & Storage facility along with H<sub>2</sub> unloading Compressor commissioned
- c) All the Seven Feed tanks commissioned
- d) Nitrogen Plant & Flare System commissioned
- e) Hydrogen Generation Unit (HGU) commissioned in March, 2011
- f) Diesel Hydro Treatment (DHDT) Unit has been commissioned in August, 2011.
- g) Amine Absorption Unit & Sour Water Stripping Unit commissioned
- h) Sulfur Recovery Unit (SRU) commissioned in December, 2012.
- i) Gas Turbine Generator (GTG) with Heat Recovery Steam Generator (HRSG) commissioned in May, 2013.
- j) HGU Revamp (Capacity enhancement from 25 TMTPA to 30 TMTPA) in March.2020.
- k) DHDT capacity enhancement from 1.2 MMTPA to 1.8 MMTPA in March, 2020.

**APPENDIX -A1**STACK MONITORING DATA: (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**A. SO<sub>2</sub> Emission (mg/Nm<sup>3</sup>):**

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	2.34	44.4	147.3
CDU-II		1.17	12.4	20.8
DCU-I		1.04	20.8	123.5
DCU-II		0.85	49.0	344.2
CPP		4.88	72.3	124.9
Reformer		0.00	10.4	27.5
HO-1		0.2	40.4	152.94
HO-2		<b>Shut Down</b>		
Isomerisation		0.66	17.1	63.2
DHDT		4.27	14.6	240.5
HGU		3.52	11.3	15.5
SRU		171.7	175.8	187.8
GTG		2.07	8.66	18.5

**B. NO<sub>x</sub> Emission (mg/Nm<sup>3</sup>)**

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	4.99	17.4	28.2
CDU-II		4.27	6.3	10.4
DCU-I		3.38	7.2	14.6
DCU-II		2.24	8.5	14.5
CPP		4.43	16.6	24.0
Reformer		0.23	40.9	62.4
HO-1		0.11	90.5	155.7
HO-2		<b>Shut Down</b>		
Isomerisation		0.24	37.6	54.9
DHDT		8.36	10.4	11.4
HGU		5.92	12.9	27.8
SRU		<b>No Analyser</b>		
GTG		12.5	16.1	20.2

**C. PM Emission (mg/Nm<sup>3</sup>)**

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	0.47	8.54	20.73
CDU-II		0.31	5.48	11.69
DCU-I		1.08	5.82	12.93
DCU-II		0.06	4.67	11.56
CPP		3.47	10.28	21.08
Reformer		0.09	3.62	7.60
HO-1		1.03	5.16	20.72
HO-2		<b>Shut Down</b>		
Isomerisation		0.10	3.79	8.30
DHDT		0.07	0.49	5.84
HGU		0.12	3.51	21.77
SRU		6.73	52.71	123.85
GTG		0.51	6.19	11.13

**STACK MONITORING DATA: (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**

**D. CO Emission (mg/Nm<sup>3</sup>)**

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	2.15	6.99	16.38
CDU-II		1.50	11.32	20.51
DCU-I		1.12	4.51	7.51
DCU-II		0.60	6.57	21.76
CPP		5.41	11.94	49.16
Reformer		0.32	7.89	17.82
HO-1		1.24	11.77	25.01
HO-2		Shut Down		
ISOMERISATION		0.11	10.18	22.49
DHDT		5.41	11.94	49.16
HGU		8.19	25.61	86.35
SRU		6.37	11.28	15.20
GTG		0.84	21.91	57.12

**E. Ni + V Emission (mg/Nm<sup>3</sup>):**

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)  
(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)

	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
<b>1</b>	<b>SO<sub>2</sub> (Std. 50/80 µg/m<sup>3</sup>)</b>						
	Min	0.49	10.4	10.2	9.00	9.50	9.20
	Average	5.94	15.3	14.0	13.8	13.5	13.2
	Max	27.7	20.5	18.5	17.4	17.4	17.0
	No. of observation	Continuous	49	46	51	51	51
<b>2</b>	<b>NO<sub>2</sub> (Std. 40/80 µg/m<sup>3</sup>)</b>						
	Min	0.94	10.3	17.4	17.67	18.4	16.2
	Average	1.83	22.0	21.7	21.7	22.0	21.5
	Max	5.21	25.79	26.27	26.3	27.44	26.8
	No. of observation	Continuous	49	46	51	51	51
<b>3</b>	<b>PM-10 (Std. 60/100 µg/m<sup>3</sup>)</b>						
	Min	10.0	69.6	70.3	70.4	69.4	70.9
	Average	16.2	77.8	78.5	78.0	78.7	76.1
	Max	20.0	86.8	90.7	87.8	88.7	81.5
	No. of observation	Continuous	49	46	51	51	51
<b>4</b>	<b>PM-2.5 (Std. 40/60 µg/m<sup>3</sup>)</b>						
	Min	3.98	28.4	28.3	28.6	28.8	27.4
	Average	7.95	38.8	38.7	36.9	38.8	37.4
	Max	10.0	44.6	46.9	45.3	46.7	46.1
	No. of observation	Continuous	49	46	51	51	51
<b>5</b>	<b>Ammonia (Std. 100/400 µg/m<sup>3</sup>)</b>						
	Min	1.69	8.25	9.17	9.40	9.17	9.43
	Average	2.34	16.0	14.4	15.3	15.8	15.4
	Max	4.70	25.4	23.8	23.6	31.8	22.4
	No. of observation	Continuous	49	46	51	51	51
<b>6</b>	<b>Pb (Std. 0.5/1.0 µg/m<sup>3</sup>)</b>						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		49	46	51	51	51
<b>7</b>	<b>Arsenic (As) (Std. 6 ng/m<sup>3</sup>)</b>						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		49	46	51	51	51

	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 <sup>3</sup> )											
	Min		BDL	BDL	BDL	BDL	BDL					
	Average		BDL	BDL	BDL	BDL	BDL					
	Max		BDL	BDL	BDL	BDL	BDL					
	No. of observation		49	46	51	51	51					
9	CO (Std. 2/4 mg/m <sup>3</sup> )											
	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	49	46	51	51	51					
10	Ozone (Std.100/180 µg/m <sup>3</sup> for 8 hrs/1 hr)											
	Min	31.2	17.3	18.6	19.4	18.6	19.0					
	Average	35.1	24.0	24.1	24.0	24.1	22.9					
	Max	36.1	28.4	28.7	28.4	28.1	27.4					
	No. of observation	Continuous	49	46	51	51	51					
11	Benzene (Std. 5 µg/m <sup>3</sup> )											
	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	49	46	51	51	51					
12	Benzo (a) Pyrene (Std. 1 ng/m <sup>3</sup> )											
	Min		BDL	BDL	BDL	BDL	BDL					
	Average		BDL	BDL	BDL	BDL	BDL					
	Max		BDL	BDL	BDL	BDL	BDL					
	No. of observation		49	46	51	51	51					
<b>Average of Six Stations</b>												
Parameter	SO <sub>2</sub>	NO <sub>2</sub>	PM-10	PM-2.5	NH <sub>3</sub>	Pb	As	Ni	Benzo (a) Pyrene	CO	C <sub>6</sub> H <sub>6</sub>	O <sub>3</sub>
Unit	µg/m <sup>3</sup>						ng/m <sup>3</sup>			mg/m <sup>3</sup>	µg/m <sup>3</sup>	
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	0.49	0.94	9.97	3.98	1.69	BDL	BDL	BDL	BDL	0.08	0.20	17.3
Average	12.6	18.5	67.6	33.1	13.2	BDL	BDL	BDL	BDL	0.31	0.32	25.7
Max	27.7	27.4	90.7	46.9	31.8	BDL	BDL	BDL	BDL	0.67	0.36	36.1

## 4.0

**APPENDIX-A2****Effluent Discharged (Figure in M<sup>3</sup>/Hr): (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**

<b>A</b>	<b>Industrial Effluent M<sup>3</sup>/Hr</b>	<b>156.44</b>
<b>B</b>	<b>Domestic Effluent from BGR Township M<sup>3</sup>/Hr</b>	<b>38.43</b>
<b>C</b>	<b>Total Effluent Treated (A + B) M<sup>3</sup>/Hr</b>	<b>194.87</b>
<b>D</b>	<b>Treated Effluent Reused M<sup>3</sup>/Hr</b>	<b>194.87</b>
<b>E</b>	<b>Effluent Discharged M<sup>3</sup>/Hr</b>	<b>0.00</b>
<b>F</b>	<b>M<sup>3</sup> of Effluent discharged for 1000 tons of Crude processed</b>	<b>0.00</b>

**1. Treated Effluent Quality****(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**

<b>Sl. No</b>	<b>Parameter</b>	<b>Std,2008</b>	<b>Min</b>	<b>Avg.</b>	<b>Max</b>
1	p <sup>H</sup> value	6.0 - 8.5	6.5	7.2	8.5
2	Oil and Grease, mg/l	5.0	2.3	4.2	5.0
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	2.0	9.1	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	9.3	34.6	122.0
5	Suspended solids, mg/l	20.0	8.0	15.1	20.0
6	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l	0.35	0.01	0.22	0.35
7	Sulphide (as S), mg/l	0.50	0.08	0.29	0.48
8	CN mg/l	0.20	0.01	0.01	0.02
9	Ammonia as N, mg/l	15.0	2.20	3.60	5.60
10	TKN, mg/l	40.0	9.00	11.07	13.44
11	P, mg/l	3.0	0.48	0.54	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	0.20	0.23	0.29
17	Ni, mg/l	1.0	-	BDL	-
18	Cu, mg/l	1.0	0.31	0.37	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	-

## 2. Final Outlet (From the Complex) storm water channel Quality

(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)

Sl. No.	Parameter	Std 2008	Min	Avg.	Max
1	p <sup>H</sup> value	6.0 - 8.5	7.00	7.26	7.54
2	Oil and Grease, mg/l	5.0	3.80	4.25	4.60
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	6.00	10.5	14.00
4	Chemical Oxygen Demand (COD), mg/l	125.0	18.3	31.6	50.0
5	Suspended Solids, mg/l	20.0	14.0	16.8	18.0
6	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l	0.35	0.19	0.21	0.23
7	Sulphide (as S), mg/l	0.50	0.40	0.44	0.49
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0	1.80	1.80	1.80
10	TKN, mg/l	40.0	15.4	15.4	15.4
11	P, mg/l	3.0	0.51	0.51	0.51
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	0.11	0.11	0.11
17	Ni, mg/l	1.0	0.12	0.12	0.12
18	Cu, mg/l	1.0	0.41	0.41	0.41
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 (1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)**

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 the FY 2021-22 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 May,2022**



**Tree Plantation 2018-19**



**BGR TOWNSHIP PLANTATION, Planted Van mahotsav 2018, Growth as on April'2022**

**Tree Plantation 2019-20**



**Birhangaon State Dispensary Plantation, 5375 nos. Sapling Planted by Miyawaki Method in the month of September,2019 Growth as on March,2022.**

**Tree Plantation 2020-21**



**On WED'2020, 3740 nos. of sapling planted in BGR Township, Growth as on April,2022.**

**Tree Plantation 2020-21**



**4810 nos of sapling Planted in the month of August'2020 at Hatipota Brahma Mandir, Growth as on April,2022.**

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



**Planted on WED'2021, in BGR Township, Growth as on April,2022**

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



**Part of Plantation at Amguri Forest Range, Koila Moila, In collaboration with DFO Chirang**

## APPENDIX – A 4

### Additional Information

(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)

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 **1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022**, all potential leaky points checked and few Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **0.726** MT/D (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 **1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022**, Noise Survey for two quarters of **2021-22(Q3 & Q4)** 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 **1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022**, **46** 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(LDAR)**  
(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)



LDAR Survey Report  
- Q-3 (21-22).pdf



LDAR Survey  
Report- Q-4(21-22).p

8.0

APPENDIX-A6 (a)



Haz waste Return  
Form-4(2021-22).pdf

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

3.9



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**

(1<sup>st</sup> October, 2021 to 31<sup>st</sup> March, 2022)

HSE (ENVIRONMENT) DEPARTMENT



Noise Survey Report  
( Q-3 of 21-22 ).pdf



Noise Survey Report  
( Q-4 of 21-22).pdf

**ANNEXURE-A9**  
**Rain Water Harvesting Data**

**BGR: Rain Water Harvesting till March 2021**

Sl.No.	RWH systems	Area in m <sup>2</sup>	Recharging, m <sup>3</sup> /Yr	Total Recharging, m <sup>3</sup> /Yr	Status
1	Rainwater Harvesting at Mandir Complex Pond	7125	20748	99239.14	In operation
2	Manjeera Guest House	677	1845		
3	Deoshri Guest House	581	1585		
4	Rainwater Harvesting at Parivesh 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	8555	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	4541	In operation
17	BGR Community Centre	650	1775		
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
	<b>TOTAL</b>	<b>55,167</b>	<b>156593</b>	<b>156592</b>	

✓  
16/12/21  
CMLHS(E)

13.0

## ANNEXURE-A10

**Screen Shot of IOCL Website upload of report**

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

The screenshot displays the IOCL website's 'Statutory Notices' page. At the top, the IndianOil logo is visible with the tagline 'The Energy of India'. A navigation menu includes 'About Us', 'IndianOil For You', 'IndianOil for Environment', and 'We are Listening'. Below the menu is a large image of an industrial refinery at night. The breadcrumb trail reads 'Home > We are Listening > Statutory Notices'. The main content area is titled 'Statutory Notices' and lists several reports for the 1st half of FY 2021-22:

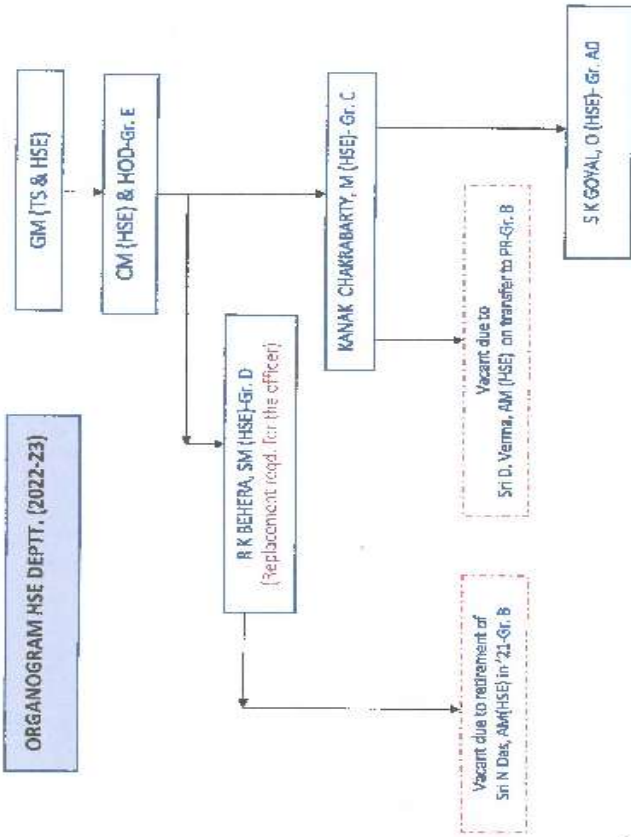
- > Six monthly compliances reports(1<sup>st</sup> half FY 2021-22) of Bongaigaon Refinery *new!*
- > Six Monthly Compliance (Refinery-II) 1<sup>st</sup> half, 2021-22
- > Six Monthly Compliance (DHDT) 1<sup>st</sup> half, 2021-22
- > Six Monthly Compliance (MS Maximisation) 1<sup>st</sup> half, 2021-22
- > Six Monthly Compliance (MS Quality Improvement) 1<sup>st</sup> half, 2021-22
- > Six Monthly Compliance (IndMax&BS-VI) 1<sup>st</sup> half, 2021-22

The Windows taskbar at the bottom shows the system tray with a temperature of 22°C, smoke alarm, and the date 24-Dec-21 at 1:50 PM.

**APPENDIX-A11**

**HSE Organogram of IOCL-BGR**

<p><b>R K BEHERA, SM(HSE)</b> -All safety &amp; system audit related jobs including coordination for audit, conducting and liquidation of all interventions, uploading of audit data in e-report portal, coordination activities for HSE education, Strategy audit related jobs, TQM, coordination for HSE audit in HSE, Lining execution, Billing of contracts as assigned, generation of Commission and safety issues, routing to others for awareness on HSE parameters, Commission and providing inputs to H-Q &amp; others as &amp; when necessary etc.</p> <p>Any other jobs as and when assigned depending upon departmental requirement and at the discretion of HOD / Higher management.</p>	<p><b>KANAK CHAKRABARTY, M(HSE)</b> -All environment related jobs including audits of this (ecological agency) / statutory authorities, Application for various permits, Coordination of the Pollution Permits under HSE with various authorities, Hazardous waste disposal permit renewal, Study, audit, results &amp; coordination of activities for WED celebration, Statutory authority related jobs, Generation of all regulatory authorities related reports, Training to others for awareness on HSE activities, coordination and providing inputs to H-Q &amp; others as &amp; when necessary etc.</p> <p>Any other jobs as and when assigned depending upon departmental requirement and at the discretion of HOD / Higher management.</p>	<p><b>SAURAV KUMAR GOVALO (HSE)</b> All environment and safety related jobs as and when assigned for HSE related assignments, Training to others for awareness on HSE activities, coordination and providing inputs to H-Q &amp; others as &amp; when necessary etc.</p> <p>Any other jobs as and when assigned depending upon departmental requirement and at the discretion of HOD / Higher management.</p>
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- Note:**
- 1) Replacement requires for Shri Dheeraj Varma, AM (HSE) transferred to PR
  - 2) Replacement required for Sr(HSE) due to his frequent unauthorized absence from office affecting HSE functions adversely.
  - 3) The job profile of the officer's may change depending upon departmental requirement / final manpower position for departmental functions.

*(Handwritten signatures and dates)*

B Gogoi	R Mashahary	S B Lahkar
CM(HSE)	GM(TS&HSE)	GM(TS&HSE)

**ANNEXURE-A12**

NABL certificate of QC Lab of Bongaigaon Refinery



National Accreditation Board for  
Testing and Calibration Laboratories

**CERTIFICATE OF ACCREDITATION**

**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

Issue Date: 29/04/2022

Valid Until:

28/04/2024

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](http://www.nabl-india.org))

Name of Legal Identity : Indian Oil Corporation Limited

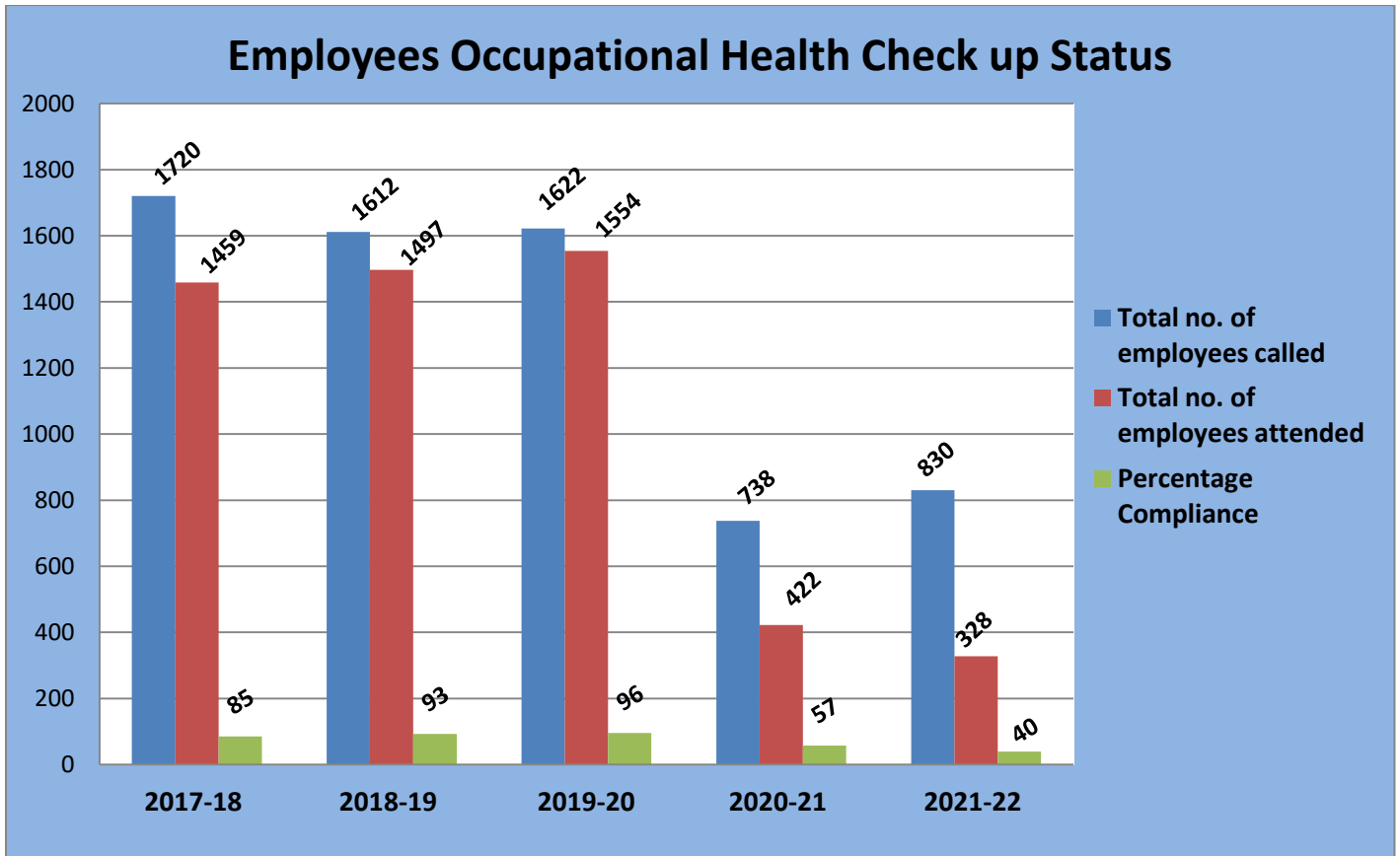
**Signed for and on behalf of NABL**



N. Venkateswaran  
Chief Executive Officer

Appendix-A13

Employees Occupational Health Check up Status

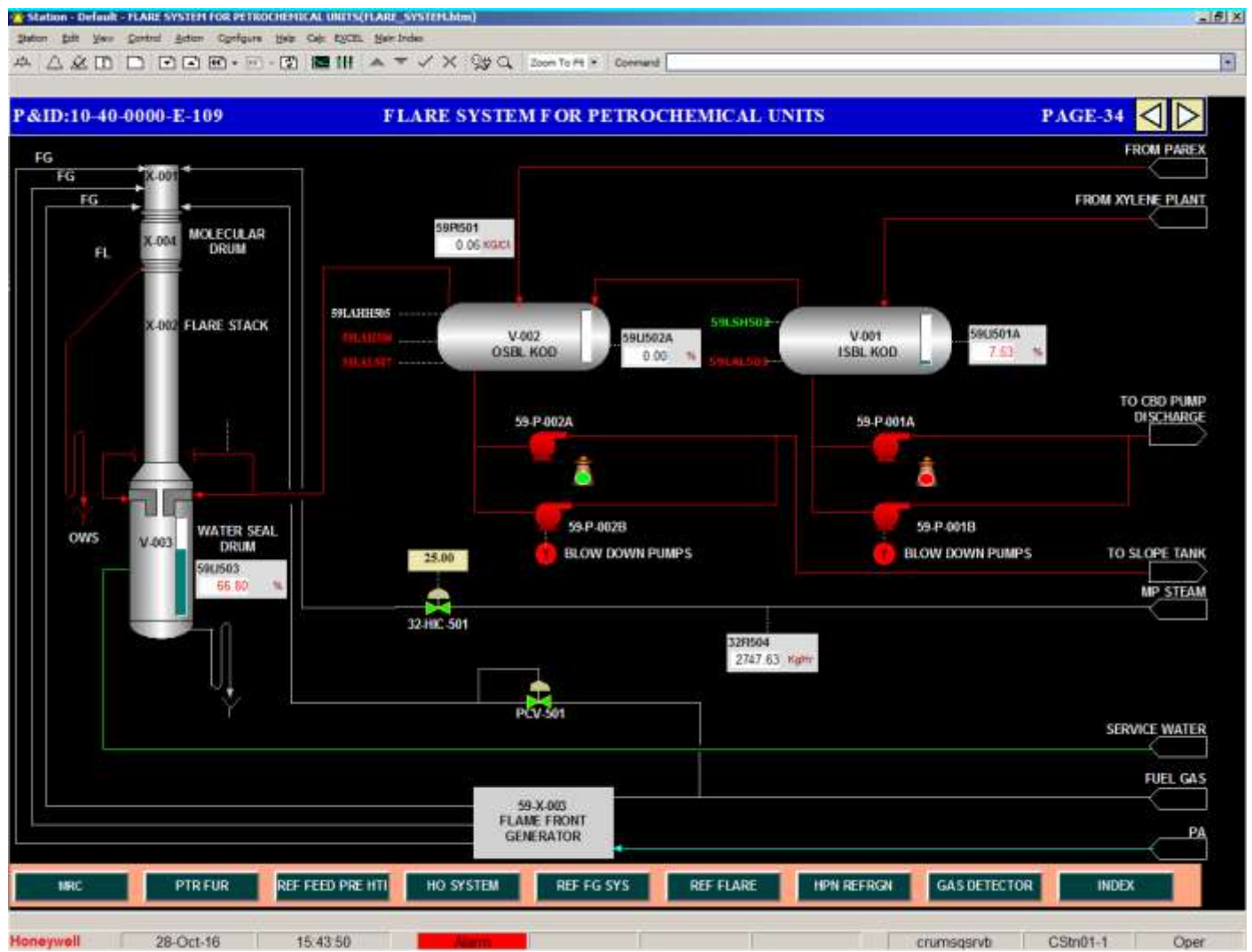


Note: Employees occupational health check up program effected, due to the COVID-2019 pandemic situation.

17.0

# Appendix-A14

Flare system.



THANKS