इंडियन ऑयल कॉर्पोरेशन लिमिटेड
बोंगाइगाँव रिफाइनरी
डाकघर : धलीगाँव - 783 385
जिला : चिरांग (असम)
Indian Oil Corporation Limited
Bongaigaon Refinery
P.O. : Dhaligaon, Dist : Chirang, Assam-783385
Phone : 03664-
E-mail :
Website : www.iocl.com FAX : 03664-

स्वच्छ भारत
एक कदम स्वच्छता की ओर

रिफाइनरी प्रभाग
Refineries Division

REF: IOC/BGR/ENV/REP/MoEF&CC/2022-23/01 **Date: 30/12/22**

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, 2022 to 30th September, 2022) for "Refinery Expansion, De-bottlenecking of Reformer and LPG facility"

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of **1st April, 2022 to 30th September, 2022** for your kind perusal.

The reports are being sent as per EIA Rules'2006 for the 'Environmental Clearances' issued by MoEF&CC to Bongaigaon Refinery, (BGR) for "Refinery Expansion, De-bottlenecking of Reformer and LPG facility" 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

"Half Yearly Report for "Refinery Expansion Project"

(1st April, 2022 to 30th September, 2022)

Environmental Clearance for
Refinery Expansion, De-bottlenecking of Reformer and LPG facility
Vide MoEF&CC letter No. J.11011/24/90-IA-II dated 03/06/1991

Plant Commissioning dates:

1. **Crude Distillation Unit – II:** **09.05.1995**
2. **Delayed Coker Unit – II :** **06.03.1996**

Submitted by:

Indian Oil Corporation Limited
Bongaigaon Refinery
P.O: Dhaligaon. District: Chirang. Assam

INDEX

1.0

Photo Copy of EC letter: MoEF's letter No. J.11011/24/90-IA-II Dt. 03/06/1991

-1-

No.J.11011/24/90-IA-II
Government of India
Ministry of Environment & Forests
Department of Environment, Forests & Wildlife
(IA-II Division)

Paryavaran Bhavan
CGO Complex,
Lodi Road,
New Delhi-110003

~~May-29~~, 1991.
June 3

MIN ENV & FORESTS
RO, N.E.R., SHILLONG
(ENVT. ... ING)
Rec'd on 21.6.91
Diary No. 115

OFFICE MEMORANDUM

Subject:- Refinery expansion Debottlenecking the reformer and LPG facilities:-Bongaigaon Refineries and Petrochemics Ltd:- Envifonmental Clearance.

....

The undersigned is directed to refer to the above proposal and to state that the environmental aspects of the project have been examined and the project is cleared from environmental angle subject to the following stipulations:

i. The project authority must strictly adhere to the stipulatic made by the State Pollution Control Board and the State Governmen and a comprehensive EIA will be submitted within 18 months.

ii. Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this Ministry.

iii. The gaseous emissions from various process units should conform to the standard 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 adopted by the unit, the respective unit should be put out of operation immediately and should not be restarted until the control measures are rectified to achieve the desired efficiency.

iv. Adequate number (a minimum of 5) of air quality monitoring stations should be set up in the downwind direction as well as where maximum ground level concentration is anticipated. Also, stack emission should be monitored by setting up of automatic stack monitoring unit. The data on stack emission should be submitted to State Pollution Control Board once in three months and to this Ministry once in six months along with the statistical analysis. The air quality monitoring station should be selected on the basis of modelling exercise to represent the short-term ground level concentration.

conted.....2/-

xv. A separate environmental management cell with suitably qualified people to carry out various functions should be set under the control of senior executive who will report directly to the head of the organisation.

xvi The funds ear-marked for the environmental protection measures should not be diverted for other purposes and year-wise expenditure should be reported to this Ministry.

xvii. The Ministry or any other competent authority may stipulate any further condition after reviewing the comprehensive impact assessment report or any other reports prepared by project authorities.

III. The Ministry may revoke clearance if implementation of the conditions is not satisfactory.

IV. The above condition will be enforced inter alia along with the Water(Prevention and Control of Pollution) Act,1974, Air (Prevention and Control of Pollution) Act, 1981 and Environment (Protection) Act,1986 along with the their amendments.

(R.ANANDAKUMAR)
SCIENTIST'SF'

Secretary,
Deptt. of Petroleum & Natural Gas,
Ministry of Petroleum & Chemicals,
Shastri Bhavan,
New Delhi-110001.

Copy to:-

1. Chairman and Managing Director, Bongaigaon Refineries, and Petrochemicals Ltd,P.O. Dhaligaon, Distt. Bongaigaon, Assam-783 385.
2. Chairman,Assam State Pollution Control Board, Bamuni Maidam Guwahati-782 021.
3. Chairman, Central Pollution Control Board, Parivesh Bhavan, CBI-cum-office Complex, East Arjun Nagar, Shahdara, Delhi-3
4. Chief Conservator of Forests(Central) Regional Office (North East Region) Upland Road, LOITUMKHRAH, SHILLONG-793
5. Adviser(Energy) Planning Commission Yojana Bhavan, New Delhi
6. Adviser (P&D) Planning Commission, Yojana Bhavan, New Delhi.
7. Joint Secretary(Plan Finance),Deptt. of Expenditure North Block, New Delhi.
8. Guard file.

2.0

ANNEXURE – A

Sr. No	General Conditions	Compliance Status
1	The project authority must strictly adhere to the stipulations made by Assam State Pollution Control Board and State Government and the comprehensive EIA will be submitted within 18 months.	All stipulations by Pollution Control Board of Assam are strictly followed.
2	Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this Ministry.	EC was granted by MoEF&CC to BGR for IndMax & BS-VI projects vide letter F. no.J11011/48/2016-IA-II (I), Dated 19th Apr'2017. **The project is implemented and commissioned with enhance expansion of Crude processing from 2.35 to 2.7 MMTP, other associated projects, e.g. DHDT capacity from 1.2 to 1.8 MMTP, HGU from 25 KTPA to 30 KTPA, CRU-MSQ revamp and SDS(SRU) unit.** All the units of the Projects are commissioned successfully..
3	The gases emission from the various process units should conform to the standard prescribed by the concern authorities, from time to time. At no time the emission level should go beyond the stipulated standards.	1. The process units are designed to meet the prescribed standards. 2. Units would be put out of operation in the event of mal functioning of pollution control practice at BGR. 3. Please Refer **Appendix - A1**.
4	Adequate number of (a minimum of 5) of Air quality monitoring stations should be set up in the down wind direction as well as where maximum ground level concentration is anticipated. Also, stack emission should be monitored by setting of automatic stack monitoring unit.	1. Six Ambient Air Quality Monitoring Stations are operating around the complex at BGR including one continuous analyzer set up for compilation of Ambient Air Quality data. 2. All these stations are selected based on modeling exercise representing short-term maximum ground level concentration. 3. All major stacks in BGR are monitored with On-line continuous monitoring analyzers installed for SO2, NOx, PM & CO Analysis in all stacks as per CPCB guidelines and connected to CPCB & SPCB servers
5	There should be no change in the stack design without the approval of State Pollution Control Board. Alternative Pollution Control system and design (steam injection system in the stack) should be provided to take care of the excess emission due to failure in any system of the plant.	1. No changes are made to the stack design. 2. Steam injection facility is provided in burners of the furnaces.
6	The ambient Air Quality Data for winter season (November 1990 to January 1991) should be presented by June 1991.	These data were submitted as desired during 1991.
7	The project authority should recycle the waste to the maximum extent. Recycle plan should be submitted within one year. This should include use of recycled water for green belt development plan.	BGR has installed Tertiary Treatment Plant to facilitate reuse of treated effluent inside the complex as Cooling Water & Firewater Make up, unit housekeeping and watering in plantation areas (Horticulture) inside. No effluent is discharged outside the complex.

Sr. No	General Conditions	Compliance Status
8	Adequate number of effluent quality monitoring stations must be set in consultation with State Pollution Control Board and the effluents monitored and should be statistically analysed and the report sent to this Ministry once in six month and State Pollution Control Board every three months.	1. Three joint sampling points for effluent are fixed in and around BGR by Pollution Control Board, Assam (PCBA) to monitor the discharge effluent quality. Joint sampling by Pollution Control Board, Assam is conducted once a month. The samples are tested at PCBA Laboratory. 2. Beside samples are tested at BGR Laboratory as per consent condition and also on a daily basis to track effluent quality. 3. All samples conform to the prescribed Revised Effluent Standards 2008 (Pl. Refer **Appendix - A2**).
9	The project authority should prepare a well-designed scheme for solid waste disposal generated during various process operations or in the treatment plant. The plan for disposal should be submitted to the ministry within six months.	1. All solid waste generated during various process operations or in the treatment plant are handled and disposed off as per laid down procedures in environmentally friendly manner. 2. All hazardous wastes are handled and disposed off as per provisions of the Hazardous and other Waste (Management & Trans boundary Movement) Rules, 2016 and as per directions of statutory agencies. 3. As a measure of Haz. Waste Management,2(two) third parties are engaged for processing of the oily sludge & recovery of oil from the oily sludge stored in the sludge lagoon. During **April'22 and September'22**, **4212.8** MT of oily sludge has been processed by mechanised processing. Melting pit facility is also available for recovering oil from oily sludge. 4. A confined bio-remediation plant of 100 m3 capacity was set up in collaboration with IOCL R&D in 2017 for treatment of oily sludge. During **April'22 and September'22**, **30.5** MT of oily sludge has been processed in the Bio- reactor. 5. All statutory returns are sent to PCBA as per the provision of rule.
10	A detailed risk analysis of LPG storage facility should be carried out and a report be submitted to the ministry within six months.	Risk Analysis for LPG Storage was prepared and submitted to MOEF in 1992. Environment Clearance from MOEF & CC obtained for mounded bullet as per M.B. Lal committee Report. Few units of the project is commissioned.
11	A detailed risk analysis based on maximum credible accident analysis should be done once the process design and layout frozen. Based on this, a disaster management plan has to be prepared and after approval of the nodal agency, should be submitted to this ministry within 6 months.	Detailed risk analysis was prepared and the report was submitted to MoEF&CC. a) On site emergency plan exists and mock drills are conducted time to time to verify effectiveness of the plan as per OISD guidelines. b) Off site emergency plan approved by District authorities exists. Mock drills are conducted time to time to verify effectiveness of the plan in co-ordination with district authorities. Till now, two onsite Mock drills for FY 22-23 (Q-1 & Q-2) conducted on 23rd June'22 and 31-08-22 respectively.

Sr. No	General Conditions	Compliance Status
12	Detailed green belt development plan should be submitted within a year.	Green belt development plan was a part of the comprehensive EIA and the same is already submitted to MOEF. The plan was implemented and continued.
13	A report on occupational health of the workers with the incidents of diseases in the past five years as per record available with the BRPL and their correlation with type of occupational health problem the environment may cause may be submitted within six months.	The report is already submitted as desired. Latest data is attached in **Appendix A -12**.
14	The project must setup a laboratory facility for collection and analysis sampling under the supervision of competent technical personal that will directly report to chief executive.	A well-equipped Laboratory exists in the complex. The Laboratory of BGR is accredited by NABL. **Appendix-A11)**
15	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.	BGR is having a separate environmental management cell of HSE department and full-fledged laboratory to carry-out environment management and monitoring functions.
16	The funds earmarked for the environmental protection measures should not be diverted for any other purpose and year-wise expenditure should be reported to this Ministry and SPCB.	The funds earmarked for the environmental projects are used for this purpose only and not diverted or spent for other purposes. Environmental protection related expenditure for financial year 2020-21 was **Rs. 455.74** Lacks, in FY 2021-22 is **726.76** Lacks and Lacks, in FY 2022-23 1st half is 137.77 lacks**.** CER expenditure against IndMax & BS-VI for the financial year 2021-22: Rs 272.56 lakhs, for FY 2022-23 1st half Rs. 70 lakhs and total 808.56 Lacks till date against the project
17	The Ministry or any competent authority may stipulate any further condition(s) on receiving reports from the project authorities.	--
18	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	--
19	The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.	--

3.0

APPENDIX –A1

STACK MONITORING DATA: (1st April, 2022 to 30th September, 2022)

A. SO_2 Emission (mg/Nm^3):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	5.00	96.6	425.3
CDU-II		2.17	13.0	19.5
DCU-I		0.75	21.0	85.9
DCU-II		3.63	7.91	15.2
CPP		86.5	151.6	240.5
Reformer		2.58	17.2	70.0
HO-1		7.90	62.0	382.4
HO-2		Shut Down		
Isomerisation		0.52	23.2	102.6
DHDT		0.03	30.8	712.7
HGU		8.95	13.8	20.0
SRU		160.0	174.7	197.4
GTG		2.17	8.60	17.2

B. NO_X Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	13.1	21.4	37.7
CDU-II		3.62	12.3	78.3
DCU-I		5.00	9.88	25.0
DCU-II		4.39	10.3	16.0
CPP		14.3	21.6	34.0
Reformer		13.1	47.1	59.1
HO-1		74.2	99.5	151.3
HO-2		Shut Down		
Isomerisation		11.2	35.7	51.7
DHDT		4.09	6.73	11.8
HGU		6.89	9.73	21.4
SRU		No Analyser		
GTG		3.37	11.7	20.5

C. PM Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	0.51	6.64	20.7
CDU-II		1.87	9.49	28.1
DCU-I		0.19	3.52	7.04
DCU-II		1.58	14.9	40.4
CPP		5.81	10.3	14.9
Reformer		1.78	5.28	10.7
HO-1		1.69	4.38	10.7
HO-2		Shut Down		
Isomerisation		1.02	5.34	9.30
DHDT		0.04	0.49	3.60
HGU		0.10	0.87	12.0
SRU		4.24	30.4	103
GTG		1.93	6.47	11.0

STACK MONITORING DATA: (1st April, 2022 to 30th September, 2022)

D. CO Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	0.47	8.4	15.2
CDU-II		1.10	5.2	11.8
DCU-I		3.48	8.6	18.7
DCU-II		2.36	6.3	13.9
CPP		9.98	14.3	24.3
Reformer		3.19	7.8	10.5
HO-1		5.60	12.5	16.4
HO-2		Shut Down		
ISOMERISATION		0.29	9.3	21.5
DHDT		0.01	7.4	57.9
HGU		3.11	10.5	16.6
SRU		0.53	9.9	15.5
GTG		1.68	24.3	62.2

E. Ni + V Emission (mg/Nm^3):

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, 2022 to 30th September, 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
1	SO_2 (Std. 50/80 µg/m^3)						
	Min	0.00	8.39	9.00	8.63	8.00	8.18
	Average	4.56	14.2	14.1	14.2	13.4	13.4
	Max	13.6	22.0	20.9	20.7	18.4	19.8
	No. of observation	Continuous	52	52	52	52	52
2	NO_2 (Std. 40/80 µg/m^3)						
	Min	0.06	10.8	15.4	15.7	14.4	15.4
	Average	0.86	21.0	21.9	22.8	21.3	21.3
	Max	6.01	27.2	28.1	30.9	26.7	27.9
	No. of observation	Continuous	52	52	52	52	52
3	PM-10 (Std. 60/100 µg/m^3)						
	Min	20.0	62.5	61.7	63.1	62.7	62.1
	Average	37.1	71.3	70.1	72.5	72.2	71.6
	Max	50.7	81.2	80.4	85.2	84.3	82.7
	No. of observation	Continuous	52	52	52	52	52
4	PM-2.5 (Std. 40/60 µg/m^3)						
	Min	10.0	22.1	20.8	21.7	21.7	22.7
	Average	13.6	32.5	31.6	33.0	32.8	31.8
	Max	16.2	45.8	43.5	43.3	46.7	42.5
	No. of observation	Continuous	52	52	52	52	52
5	Ammonia (Std. 100/400 µg/m^3)						
	Min	0.00	11.2	9.90	9.05	11.6	22.7
	Average	2.52	16.6	15.1	15.2	16.9	31.8
	Max	5.58	23.3	22.0	21.2	24.6	42.5
	No. of observation	Continuous	52	52	52	52	52
6	Pb (Std. 0.5/1.0 µg/m^3)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		52	52	52	52	52
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		52	52	52	52	52

	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/m3)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		52	52	52	52	52
9	CO (Std. 2/4 mg/m3						
	Min	0.14	0.02	0.020	0.02	0.02	0.02
	Average	0.27	0.03	0.036	0.04	0.03	0.04
	Max	0.52	0.05	0.057	0.06	0.06	0.06
	No. of observation	Continuous	52	52	52	52	52
10	Ozone (Std.100/180 µg/m^3 for 8 hrs/1 hr)						
	Min	31.7	12.8	2.8	13.7	12.8	13.4
	Average	34.0	19.1	19.4	20.2	19.7	18.2
	Max	38.1	31.7	27.6	30.8	30.5	28.2
	No. of observation	Continuous	52	52	52	52	52
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	52	52	52	52	52
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		52	52	52	52	52

Average of Six Stations

Parameter	SO_2	NO_2	PM-10	PM-2.5	NH_3	Pb	As	Ni	Benzo (a) Pyrene	CO	C_6H_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	0.00	0.06	20.0	10.0	0.00	BDL	BDL	BDL	BDL	0.02	0.23	2.83
Average	12.3	18.2	65.8	29.2	13.6	BDL	BDL	BDL	BDL	0.08	0.36	21.8
Max	22.0	30.9	85.2	46.7	24.6	BDL	BDL	BDL	BDL	0.52	0.47	38.1

4.0

APPENDIX-A2

Effluent Discharged (Figure in M^3/Hr): (1^{st} April, 2022 to 30^{th} September, 2022)

A	Industrial Effluent M^3/Hr	151.0
B	Domestic Effluent from BGR Township M^3/Hr	42.3
C	Total Effluent Treated (A + B) M^3/Hr	193.3
D	Treated Effluent Reused M^3/Hr	193.3
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

(1^{st} April, 2022 to 30^{th} September, 2022)

Sl. No	Parameter	Std,2008	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.50	7.1	8.00
2	Oil and Grease, mg/l	5.0	2.00	4.1	5.00
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	4.00	8.0	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	20.0	49.3	115.0
5	Suspended solids, mg/l	20.0	12.0	15.7	20.0
6	Phenolic compounds (as C6H5OH), mg/l	0.35	0.02	0.29	0.35
7	Sulphide (as S), mg/l	0.50	0.29	0.36	0.49
8	CN mg/l	0.20	0.02	0.03	0.04
9	Ammonia as N, mg/l	15.0	3.64	4.08	5.04
10	TKN, mg/l	40.0	7.98	9.15	10.36
11	P, mg/l	3.0	0.52	0.64	0.75
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	0.16	0.35	0.58
17	Ni, mg/l	1.0	-	BDL	-
18	Cu, mg/l	1.0	0.29	0.38	0.48
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

(1st April, 2022 to 30th September, 2022)

Sl. No.	Parameter	Std 2008	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.50	7.48	8.50
2	Oil and Grease, mg/l	5.0	2.60	4.16	4.80
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	4.00	10.5	15.00
4	Chemical Oxygen Demand (COD), mg/l	125.0	30.0	69.5	122.0
5	Suspended Solids, mg/l	20.0	12.0	17.0	20.0
6	Phenolic compounds (as C_6H_5OH), mg/l	0.35	0.28	0.33	0.35
7	Sulphide (as S), mg/l	0.50	0.32	0.44	0.50
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0	3.23	3.64	4.20
10	TKN, mg/l	40.0	10.6	12.2	14.8
11	P, mg/l	3.0	0.54	0.64	0.71
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	0.48	0.52	0.56
17	Ni, mg/l	1.0	BDL	BDL	BDL
18	Cu, mg/l	1.0	0.34	0.41	0.52
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, 2022 to 30th September, 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 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

.

To comply IndMax BS-VI EC conditions, 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, in FY 2020-21 25606 nos. and in FY 2021-22 BGR has planted 1,00,000 nos of saplings planted in and around the complex

During the FY 2022-23 BGR has planted 25610 nos. of tree saplings till September.

Tree Plantation 2017-18

Birhangaon State Dispensary Plantation, 10,000 nos. Sapling Planted by Miyawaki Method in the month of August,2017. Grouth 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 Grouth as on Nov,2022.

Tree Plantation 2020-21

On WED'2020, 3740 nos. of sapling planted in BGR Township, Grouth as on Nov,2022.

Tree Plantation 2020-21

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

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

Planted o**n WED'2021, in BGR Township, Grouth as on Nov,2022**

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

Planted o**n Aug,2021, in the complex, North side of new project(IndMax & BS-VI), Grouth as on Nov,2022**

Tree Plantation 2022-23

Planted o**n WED'2022, in BGR Township, Grouth as on Nov,2022**

6.0

APPENDIX – A 4

Additional Information

(1st October, 2021 to 31st 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 **1st April, 2022 to 30th September, 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 **0.05316** 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 **1st April, 2022 to 30th September, 2022,** Noise Survey for two quarters of **2022-23(Q-1 & Q-2)** 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, 2022 to 30th September, 2022, 30.5 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)

(1st April, 2022 to 30th September, 2022)

Fugitive Emission 2nd qtr 2022-23_R.pdf

Note:Q-1 Survey could not be done due to some technical problem

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

HW Auth. CertiFicate
22-27.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, 2022 to 30th September, 2022)

HSE (ENVIRONMENT) DEPARTMENT

Noise Survey Report
Q-1 of 2022-23.pdf

Noise Survey report
Q-2 of 2022-23.pdf

12.0

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	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	1810	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	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
	TOTAL	55,167	156593	156592	

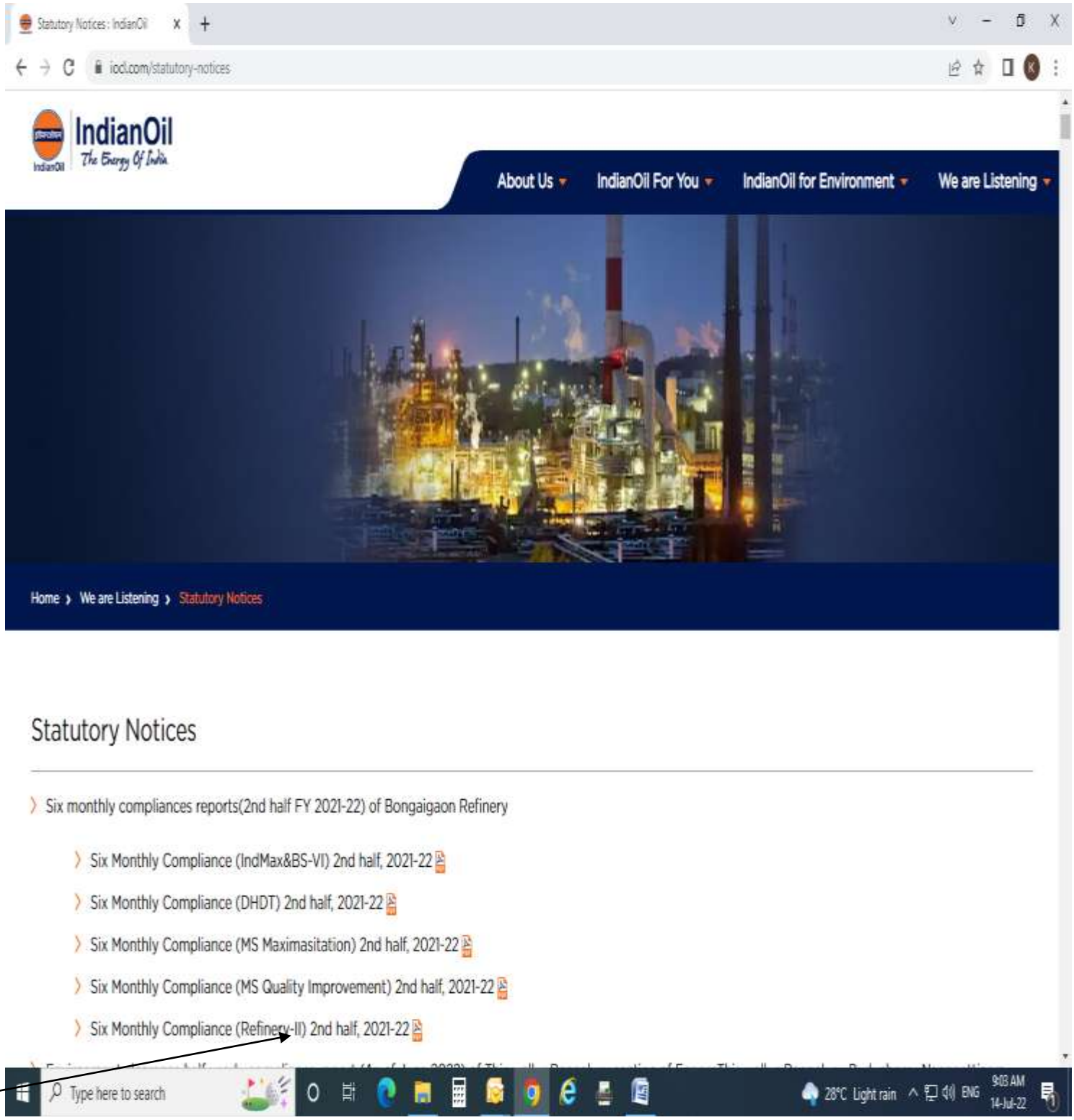
16/12/21
CM(HSE)

13.0

ANNEXURE-A10

Screen Shot of IOCL Website upload of report

Link: https://iocl.com/statutory-notices



15.0

ANNEXURE-A11

NABL certificate of QC Lab of Bongaigaon Refinery

National Accreditation Board for Testing and Calibration Laboratories

NABL

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)

Name of Legal Identity : Indian Oil Corporation Limited

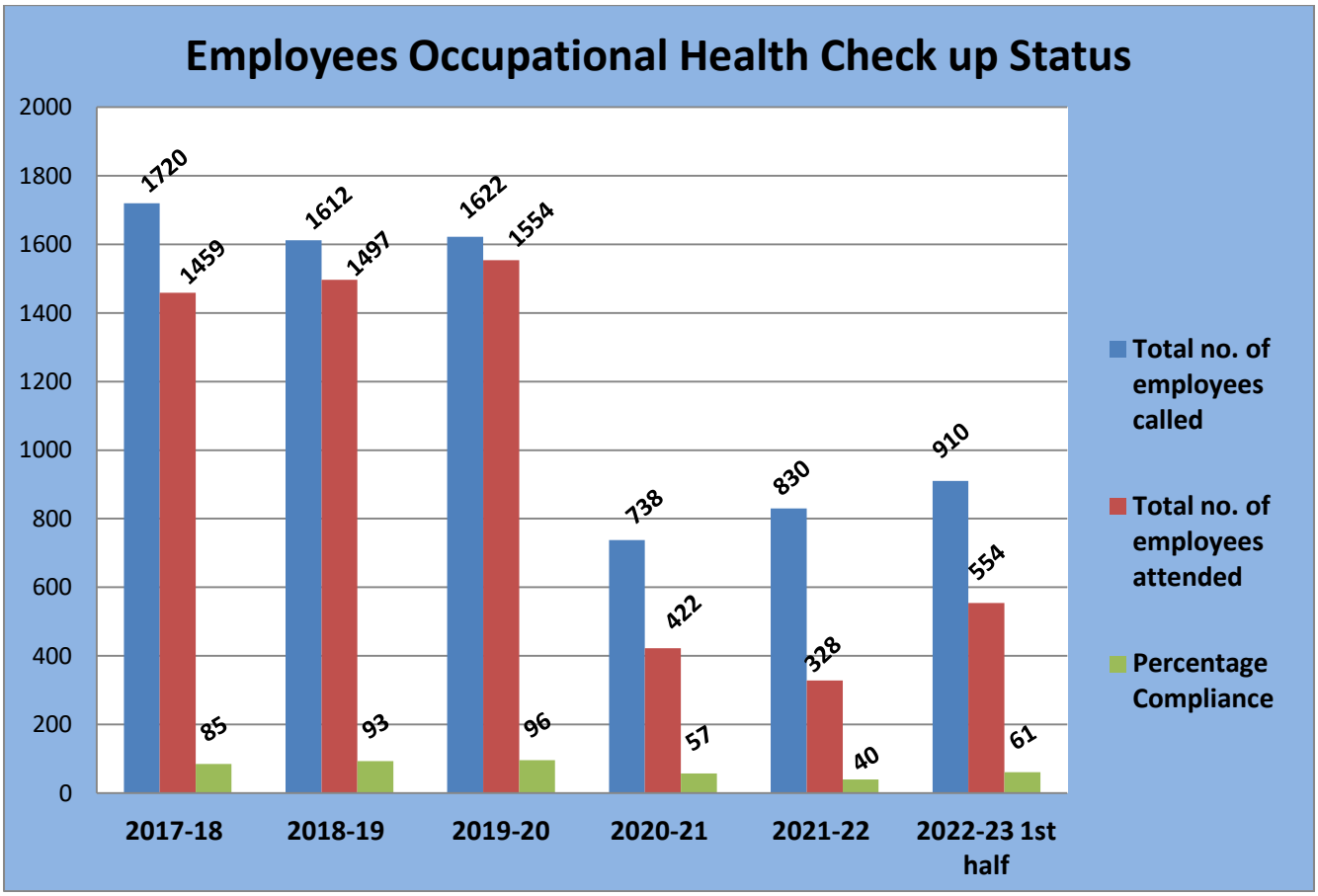
Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

16.0

Appendix-A12

Employees Occupational Heath Check up Status

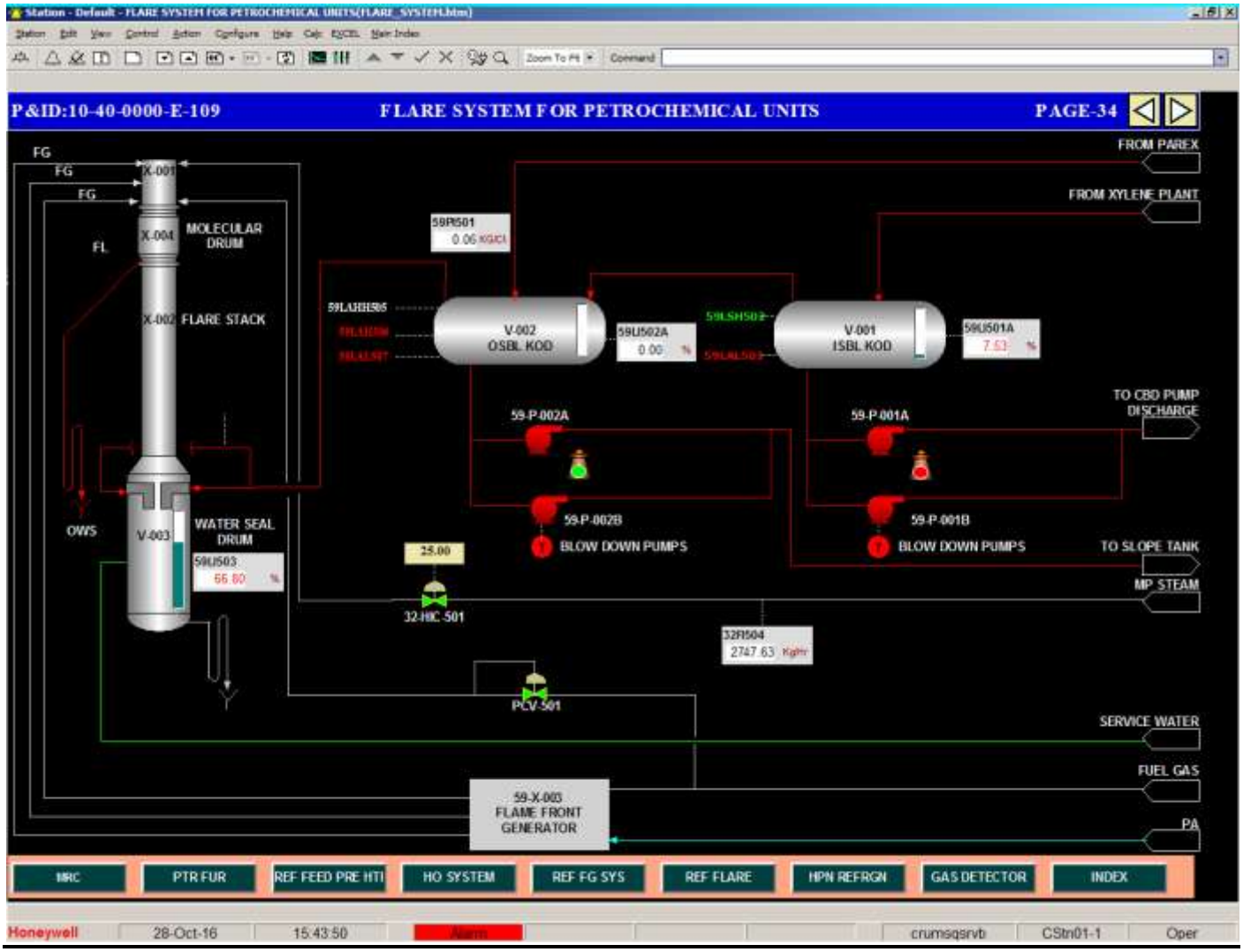


Note: Employees occupational health check up program affected in the year 2020-22, due to the COVID-2019 pandemic situation.

17.0

Appendix-A13

Flare system.



THANKS