



इंडियन ऑयल कॉर्पोरेशन लिमिटेड

बोंगाइगॉव रिफाइनरी

डाकघर : धालीगॉव - 783 385

जिला : चिरांग (असम)

Indian Oil Corporation Limited

Bongaigaon Refinery

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रिफाइनरी प्रभाग
Refineries Division

REF: IOC/BGR/ENV/MS Max/MoEF&CC/2018-19/02

Date: 20.06.2019

To

The Chief Conservator of Forests
Regional Office, North East Region
Ministry of Environment & Forests & Climate Change
Law-U-SIB, Lumbatngen, Near M.T.C. Workshop,
Shillong – 793021

Subject : Half yearly Report for the period of 1st October 2018 to 31st March 2019, for the "MS Maximization Project".

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of 1st October 2018 to 31st March 2019 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 "MS Maximisation Project".

Thanking you.

Yours faithfully,

(A. Basumatary)
DGM (HSE)

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 MS Maximisation Project

(1st October 2018 to 31st March 2019)



Submitted by:

Indian Oil Corporation Limited

Bongaigaon Refinery

PO: Dhaligaon. District: Chirang. Assam

Status of MS Maximisation Project

(1st October 2018 to 31st March 2019)

Environmental Clearance for “Expansion of Pretreater & Reformer from 107,000 TPA to 160,000 TPA of Naphtha for Motor Spirit (MS) Maximisation Project” at Dhaligaon, Chirang, Assam by M/s Bongaigaon Refinery & Petrochemicals Ltd. vide MoEF’s letter No.J.11011/375/2006-IA-II (I) dated 22/03/2007;

Project was commissioned on 31.01.2009

INDEX:

Sl. No	Conditions	Status
1.	General & specific conditions and Compliance status of MS Maximisation Project.	Annexure- A
2.	Six monthly Stack Monitoring/ Air Quality Data	Furnished in Appendix-A1
3.	Six monthly effluent discharged quantity, 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 Waste, Management , Handling and Transboundary Movement Rules 2008	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.	Organogram of HSE Department	Furnished in Appendix-A11
14.	Gazette Notification of BGR Quality Control laboratory (QC Lab) approval under Environment (Protection) Act 1986.	Furnished in Appendix-A12
15.	Employees Occupational Health Check up Status	Furnished in Appendix-A13
16.	Flare system.	Furnished in Appendix-A14

Annexure-A

Sr. No.	Specific Conditions	Compliance Status
(i)	The gaseous emissions (SO ₂ , NO _x , HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, process plants and storage units etc. for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration.	Complied. The gaseous emission is within limits. Emission data attached as <u>Appendix-A1.</u>
(ii)	There will be no increase in the pollution load for any parameter, except the waste water and solid waste generation, due to the expansion project.	No increase in emission pollutant load.
(iii)	No additional stack is envisaged for the revamp of Pretreater and Reformer.	No new stack in the project.
(iv)	The emission levels of the other pollutants shall remain within the existing levels.	The emission levels of the other pollutants are within the existing levels
(v)	Low Sulphur internal fuel oil & fuel gas will be fired in process heaters and boilers.	Low sulphur fuel oil & low sulphur fuel gas is only burnt in the system.
(vi)	Quarterly monitoring of fugitive emissions will be carried out by Fugitive Emission Detectors (GMI Leak Surveyor). Guidelines of CPCB will be followed for monitoring fugitive emissions.	Quarterly fugitive emissions Survey is being carried out regularly. The quarterly reports for the period of 1 st October 2018 to 31 st March 2019 are attached as <u>Appendix-A5.</u>
(vii)	For control of fugitive emissions, all unsaturated hydrocarbons will be routed to the flare system. The flare system shall be designed for smokeless burning.	There is no open vent. All process systems are routed to the Flare Gas Recovery System (FGRS) for recovery of gas before flaring.
(viii)	Flare Gas Recovery System will be installed for reduction of Hydrocarbon loss and emissions of VOCs, NO _x , SO ₂ & CO ₂ to the environment.	Flare Gas Recovery System (FGRS) was installed and commissioned on 2 nd August, 2009.
(ix)	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing monitoring stations will be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional stations shall be set up, if required. It will be ensured that at least one monitoring station is set up in up-wind & in down-wind direction along with those in other directions.	Regular Ambient Air Quality Monitoring is being carried out. The locations of ambient station are decided on the basis of the highest ground level concentration of pollutants based on dispersion modeling in consultation with PCBA. Since the station no. 3 & 4 came closer to the NH-31 (after conversion to 4-lane), review for relocation of these two stations are under consideration of PCBA. Additional station is not envisaged.

Sr. No.	Specific Conditions	Compliance Status
(x)	Online data for air emission shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters.	On-line stack emission data is being transmitted continuously to CPCB and SPCB servers. The analyzers (instruments) used for stack emission and ambient air monitoring are being regularly calibrated.
(xi)	The practice of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hr time weighted average of 90 db (A).	Complied. Quarterly Noise Survey is being carried out regularly. Quarterly Reports for the period of 1 st October 2018 to 31 st March 2019 are attached as Appendix-A8 .
(xii)	All the Pumps and other equipment's where there is a likelihood of HC leakages shall be provided with LEL indicators and hydrocarbon detectors. Provision for immediate isolation of equipments, in case of a leakage will also be made. The company shall adopt Leak Detection and Repair (LDAR) programme for quantification and control of fugitive emissions.	Complied. Additional 2 HC, 2 H ₂ & 1 H ₂ S detectors have been installed in addition to earlier installed 3 H ₂ & 6 HC detectors. LDAR program is being conducted quarterly in accordance with New Effluent & Emission Standards, 2008.
(xiii)	The product loading gantry shall be connected to the product sphere in closed circuit through the vapor arm connected to the tanker. Data on fugitive emission shall be regularly monitored and records will be maintained.	Not Applicable in this project. Quarterly monitoring of fugitive emissions is carried out. The quarterly reports for the period 1 st October 2018 to 31 st March 2019 are attached as Appendix-A5 .
(xiv)	The company shall ensure that no halogenated organic is sent to the flares. If any stream of the halogenated organic are present, then the respective streams may be incinerated. If there are no technically feasible or economically viable reduction/recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.	There is no halogenated organic component in the streams of this project.
(xv)	All new standards/norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e. TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and On-line monitors for VOC measurements may be installed.	New Emission & Effluent Standards'2008 are being complied.
(xvi)	No additional fresh water will be required for the expansion project. The total requirement of 197 m ³ /hr of fresh water will be met from the existing water withdrawal permissions.	Ensured. No additional fresh water is being consumed in this project.
(xvii)	Waste water generation after the expansion project will be around 0.015 m ³ /hr which will be treated in the existing ETP. Part of the treated effluent shall be recycled and remaining shall be disposed into the Tunia Nula through closed pipeline.	Complied. Detail of WWTP is attached as Appendix-A7 .

Sr. No.	Specific Conditions	Compliance Status
(xviii)	Regular monitoring of relevant parameters for the underground water in the surrounding areas will be undertaken and the results will be submitted to the relevant States Pollution Control Board.	Complied. Samples from surrounding areas were tested and report submitted to MoEF&CC, Shillong.
(xix)	Solid waste generated as Pretreater and Reformer Catalysts, Sulphur guard absorbent and Alumina Balls will be disposed off as per the authorisation from State Pollution Control Board.	Complied. Please Refer <u>Appendix-A6(a)</u> .
(xx)	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge will be incinerated in the premises only.	Complied. A third party is engaged for processing of the oily sludge & recovery of oil from the oily sludge stored in the sludge lagoon. During Oct'18-March'19, 2135.08 MT of oily sludge has been processed by mechanised processing. A confined bio reactor was commissioned in July 2017 in association with IOCL R&D for bio-remediation of residual oily sludge. During Oct'18- March'19, 84 MT of oily sludge has been processed in the Bio- reactor.
xxi)	Green belt shall be provided to mitigate the effects of fugitive emissions all around the plant in a minimum of 33% of the plant area in consultation with DFO as per CPCB guidelines.	Greenbelt is already existed. More than 33% of plant area is having green cover. Tree Census has been carried out through DFO Chirang District in 2013 where 84545 nos. of grown up trees were enumerated. The company is planting around 10000 nos. of tree every year as a part of its environment initiative. In the financial year 2018-19, BGR has planted 30062 nos. of trees in and around the complex.
(xxii)	The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	The company followed all the recommendation mentioned in the charter on Corporate Responsibility for Environmental Protection (CREP) prior to coming of the Revised Standards applicable to refinery for Environment Protection.
(xxiii)	The Company shall harvest surface as well as rainwater from rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	20 nos. of Rainwater Harvesting Projects has been implemented covering roof area of 18568 SQM and surface area of 32900 SQM, having potential rainwater harvesting volume of 51468 M ³ . The harvested rainwater for ground water recharge is through recharge pits and recharge trench on the basis of technical details and guidelines from Central Ground Water Board, North Eastern Region, and Guwahati. Details attached as <u>Appendix-A9</u> .
(xxiv)	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Complied. Details attached as <u>Appendix-A13</u> .
(xxv)	The Company shall implement all the recommendations made in the EIA /EMP report and risk assessment report.	All recommendation has been complied.
(xxvi)	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the Socio-economic conditions of the surrounding area.	Complied. Taking care under CSR Program.

C. GENERAL CONDITIONS

Sr. No.	General Conditions	Compliance status
(i)	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Complied.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	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 th Apr'2017. The project aims to enhance expansion of Crude processing from 2.35 to 2.7 MMTP, DHDT capacity from 1.2 to 1.8 MMTP, HGU from 25 KTPA to 30 KTPA, CRU-MSQ revamp and SDS(SRU) unit.
(iii)	At no time, the emissions should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	Complied. Provision for emergency shutdown of unit is provided.
(iv)	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water.	Complied all the stipulations made in the NOC issued by PCBA. Regular monitoring of all relevant parameters is being carried out and reports are being regularly submitted.
(v)	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Waste water disposal system designed to conform to this norm. Detail of Waste water treatment and disposal system is attached as <u>Appendix-A7</u> . Treated Effluent and discharge water quality from refinery is attached as <u>Appendix-A1</u> .
(vi)	The overall noise levels in and around the plant area shall be limited within the prescribed 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).	Taken care during implementation of the project. Quarterly Noise Survey is being carried out regularly. Quarterly Reports for the period of 1st October 2018 to 31st March 2019 are attached as <u>Appendix-A8</u> .
(vii)	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2008 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	Complied.
(viii)	Authorization from the State Pollution Control Board must be obtained for collections/ treatment/ storage/ disposal of hazardous wastes.	Authorization under Hazardous Waste (Management, Handling and Transboundary Movement Rules 2008) obtained from PCBA and valid up to 28 th February 2019. Copy attached as <u>Appendix-A6(b)</u> . Application for renewal of authorisation is submitted to PCBA on 29.12.2018. Authorisation certificate is awaited from PCBA.

(ix)	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Funds were made available for implementing all recommendations Expenditure for the financial year 2018-19 was Rs.1066.6 Lacks
(x)	The stipulated conditions will be monitored by the concerned Regional Office of this Ministry /Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly. It will also be displayed on the Website of the Company.	Complied
(xi)	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://www.envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry.	Complied
(xii)	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project will be informed to the Ministry and its Regional Office.	<ul style="list-style-type: none"> • Project commissioned on: 31.01.2009 • Financial Closure: 29.07.2010 • No land development activity was there in this project
(xiii)	Proper Housekeeping and adequate occupational health Programme shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	BGR has already implemented TPM across the refinery. Regular housekeeping is an integral part of the system. Regular health check-up is carried out for the employees and records are maintained. Details attached as <u>Appendix-A13</u> . All necessary precautions/ preventive measures are taken to avoid direct exposure to emission and other Hydrocarbons etc.
(xiv)	A separate environment management cell with full fledge laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	BGR is already having a separate environmental management cell and full fledged laboratory to carry-out environment management and monitoring functions. Organogram of HSE Department is attached as <u>Appendix-A12</u> . BGR Environment Laboratory is accredited by NABL and recognized by C.P.C.B. as under Section 12&13 of Environment (Protection) Act 1986 and notified in the Govt. of India Gazette no. 439 dated November 4, 2018 vide notification number Legal 42(3)/ 87 dated 3 rd October 2018. (Copy attached as <u>Appendix-A12</u>)

APPENDIX –A1STACK MONITORING DATA: (1st October 2018 to 31st March 2019)**A. SO₂ Emission (mg/Nm³):**

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	60	179	333
CDU-II		59	270	319
DCU-I		37	147	280
DCU-II		6	79	256
CPP		7	76	357
Reformer		6	27	144
HO-1/2		2	23	159
Isomerisation		6	24	265
DHDT		1	11	102
HGU		1	13	65
SRU		40	90	333
GTG		3	12	27

B. NO_x Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	84	85	86
CDU-II		56	136	216
DCU-I		42	51	74
DCU-II		9	43	82
CPP		80	84	92
Reformer		6	37	71
HO-1/2		4	24	93
Isomerisation		11	55	79
DHDT		2	30	50
HGU		2	26	127
SRU		No Analyser		
GTG		10	89	154

C. PM Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	2.1	3.6	4.9
CDU-II		1.4	1.5	1.5
DCU-I		3.4	4.1	5.0
DCU-II		0.2	0.2	0.3
CPP		3.0	3.6	3.7
Reformer		0.2	1.1	11.3
HO-1/2		0.3	1.1	12.8
Isomerisation		0.3	2.8	6.1
DHDT		0.8	1.8	4.0
HGU		0.6	9.9	55.5
SRU				
GTG		2.53	3.85	6.71

STACK MONITORING DATA: (1st October 2018 to 31st March 2019)

D. CO Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	1.9	33.4	64.4
CDU-II		8.0	30.7	70.1
DCU-I		2.8	25.9	90.4
DCU-II		14.7	76.4	107.5
CPP		1.2	8.4	42.4
Reformer		0.7	24.8	77.3
HO-1/2		0.7	30.8	198.1
ISOMERISATION		0.7	21.1	33.0
DHDT		9.8	9.9	10.3
HGU		5.4	8.1	18.4
SRU		1.4	2.0	2.0
GTG		0.03	2.92	14.93

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 October 2018 to 31st March 2019)

	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	0.8	5.2	5.8	5.2	5.2	5.2
	Average	7.2	7.2	7.6	8.2	7.5	6.0
	Max	37.4	9.5	8.8	10.8	9.5	7.5
	No. of observation	Continuous	52	56	56	56	56
2	NO₂ (Std. 40/80 µg/m³)						
	Min	5.0	9.2	9.8	9.2	9.8	9.2
	Average	8.1	11.1	12.9	13.1	12.2	10.2
	Max	10.3	14.2	15.5	16.8	15.8	11.8
	No. of observation	Continuous	52	56	56	56	56
3	PM-10 (Std. 60/100 µg/m³)						
	Min	20.7	46.0	44.0	50.0	46.0	38.0
	Average	51.4	65.4	68.1	74.9	70.9	58.6
	Max	83.0	86.0	84.0	94.0	88.0	74.0
	No. of observation	Continuous	52	56	56	56	56
4	PM-2.5 (Std. 40/60 µg/m³)						
	Min	3.2	22.0	21.0	24.0	22.0	18.0
	Average	9.5	31.8	32.8	36.7	34.1	28.2
	Max	36.6	42.0	40.0	48.0	45.0	36.0
	No. of observation	Continuous	52	56	56	56	56
5	Ammonia (Std. 100/400 µg/m³)						
	Min	4.2	6.5	6.8	7.5	6.2	5.8
	Average	6.0	9.2	9.9	10.5	8.2	6.9
	Max	7.7	12.2	12.8	13.2	11.8	8.2
	No. of observation	Continuous	52	56	56	56	56
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		52	56	56	56	56

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	56	56	56	56
8	Ni (Std. 20 ng/m³)						
	Min		1.80	1.80	1.80	1.50	BDL
	Average		2.87	2.68	3.00	2.40	BDL
	Max		3.80	3.50	4.20	3.80	BDL
	No. of observation		52	56	56	56	56
9	CO (Std. 2/4 mg/m³)						
	Min	0.1	BDL	BDL	0.12	0.16	BDL
	Average	0.6	BDL	BDL	0.21	0.22	BDL
	Max	1.3	BDL	BDL	0.32	0.28	BDL
	No. of observation	Continuous	52	56	56	56	56
10	Ozone (Std.100/180 µg/m³ for 8 hrs/1 hr)						
	Min	30.9	8.0	8.0	8.0	8.0	8.0
	Average	45.1	12.6	12.7	13.0	12.9	11.9
	Max	68.9	20.0	20.0	20.0	20.0	18.0
	No. of observation	Continuous	52	55	55	55	55
11	Benzene (Std. 5 µg/m³)						
	Min	0.30	BDL	BDL	BDL	BDL	BDL
	Average	0.32	BDL	BDL	BDL	BDL	BDL
	Max	0.35	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	52	56	56	56	56
12	Benzo (a) Pyrene (Std. 1 ng/m³)						
	Min		BDL	BDL	BDL	BDL	BDL
	Average		BDL	BDL	BDL	BDL	BDL
	Max		BDL	BDL	BDL	BDL	BDL
	No. of observation		52	56	56	56	56

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	0.8	5.0	20.7	3.2	4.2	BDL	BDL	1.5	0.3	0.1	BDL	8.0
Average	7.3	11.3	64.9	28.8	8.4	BDL	BDL	2.7	0.3	0.3	BDL	18.0
Max	37.4	16.8	94.0	48.0	13.2	BDL	BDL	4.2	0.4	1.3	BDL	68.9

APPENDIX-A2

Effluent Discharged (Figure in M³/Hr): (1st October 2018 to 31st March 2019)

A	Industrial Effluent M³/Hr	201.9
B	Domestic Effluent from BGR Township M³/Hr	46.7
C	Total Effluent Treated (A + B) M³/Hr	248.6
D	Treated Effluent Reused M³/Hr	245.95
E	Effluent Discharged M³/Hr	2.7
F	M³ of Effluent discharged for 1000 tons of Crude processed	9.15

1. Treated Effluent Quality**(1st October 2018 to 31st March 2019)**

Sl. No	Parameter	Std,2008	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	7.0	7.4	8.5
2	Oil and Grease, mg/l	5.0	1.2	2.6	5.0
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	1.2	6.9	15.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	10.8	51.1	125.0
5	Suspended solids, mg/l	20.0	3.0	13.1	20.0
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.010	0.084	0.350
7	Sulphide (as S), mg/l	0.50	0.02	0.10	0.50
8	CN mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N, mg/l	15.0	1.05	1.19	1.28
10	TKN, mg/l	40.0	1.24	3.81	4.80
11	P, mg/l	3.0	0.22	1.09	4.50
12	Cr (Hexavalent), mg/l	0.10	0.25	0.250	0.250
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	0.2	0.25	0.28
17	Ni, mg/l	1.0	0.24	0.24	0.24
18	Cu, mg/l	1.0	0.03	0.04	0.06
19	V, mg/l	0.20	0.05	0.05	0.05
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 October 2018 to 31st March 2019)

Sl. No.	Parameter	Std 2008	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	6.50	7.11	8.00
2	Oil and Grease, mg/l	5.0	1.40	2.93	3.80
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	3.00	7.2	11.60
4	Chemical Oxygen Demand (COD), mg/l	125.0	35.00	52.4	76.80
5	Suspended Solids, mg/l	20.0	4.000	10.5	18.00
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.020	0.075	0.28
7	Sulphide (as S), mg/l	0.50	0.060	0.117	0.30
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0	1.90	2.52	2.80
10	TKN, mg/l	40.0	3.80	4.72	5.20
11	P, mg/l	3.0	0.15	0.17	0.20
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	0.22	0.284	0.34
17	Ni, mg/l	1.0	-	BDL	-
18	Cu, mg/l	1.0	0.02	0.034	0.04
19	V, mg/l	0.20	-	BDL	-
20	Benzene, mg/l	0.10	-	BDL	-
21	Benzo (a) pyrene, mg/l	0.20	-	BDL	-

**Tree Plantation
(1st October 2018 to 31st March 2019)**

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 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.

During, 1st October 2018 to 31st March 2019 BGR has planted 15555 nos. of trees



COMPLEX OLD DEBRIS YARD DEVELOPED INTO GREEN BELT. Planted in July'17, GROWTH as on 15.06.19



IOCL, BGR TOWNSHIP PLANTATION. Planted on April'17 Growth as on 03.06.2019

Tree Plantation 2018-19



BGR TOWNSHIP PLANTATION, Planted Van mahotsav 2018, Growth as on 15.06.19



J N V, BIJNI PLANTATION, 3500 SAPLING PLANTED in the month of Oct'2018

APPENDIX – A 4

Additional Information

(1st October 2018 to 31st March 2019)

Effluent reused during the period was around **98.64 %** 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 October 2018 to 31st March 2019**, **23158** potential leaky points checked and **157** Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **44.184** 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 October 2018 to 31st March 2019**, Noise Survey for the two quarters of 2018 -19 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 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 and at present per batch approximately 35 m3 of oily sludge is being processed. From October'18 to March'19, 84 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 BGR Township have been implemented during 2016-17.

APPENDIX –A5

Quarterly Fugitive emission Data (1st October 2018 to 31st March 2019)



FUG EMISSION DATA
3RD QTR 18-19.pdf



FUG EMISSION DATA
4TH QTR 18-19.pdf

8.0

APPENDIX-A6 (a)



Haz Waste Return
FORM-4 (2017-18).doc

Annexure –A6 (b)

**Authorization from PCBA for Hazardous Waste
(Management, Handling and Transboundary Movement Rules 2008)**



Consent under HW
Rules 2008.pdf

APPENDIX-A7
Detail of Waste water treatment and disposal system.



ETP Description.pdf

ANNEXURE-A8

Quarterly Noise Survey Data

(1st October 2018 to 31st March 2019)

HSE (ENVIRONMENT) DEPARTMENT



**NOISE SURVEY DATA
3RD QTR 18-19.pdf**

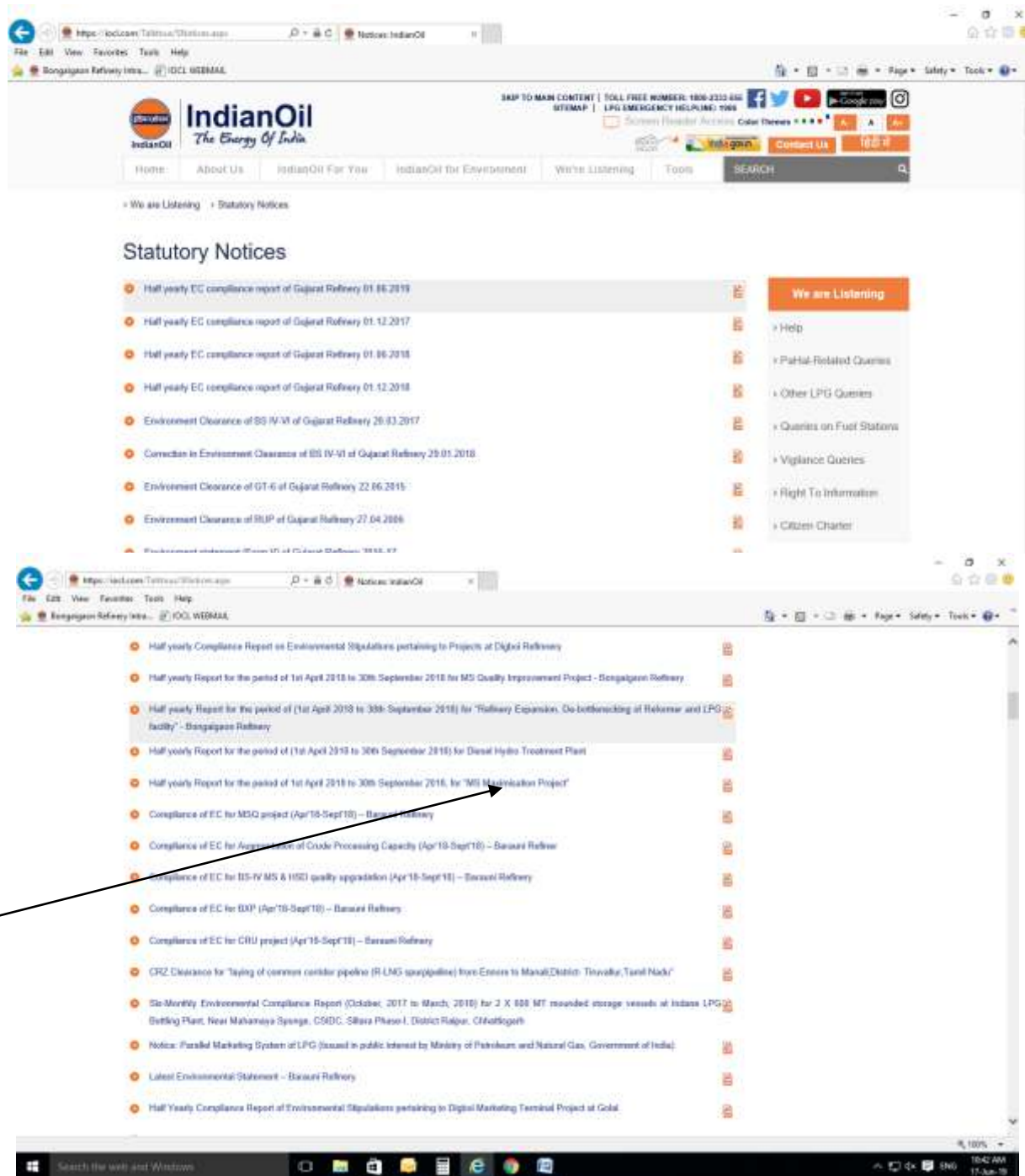


**NOISE SURVEY DATA
4TH QTR 18-19.pdf**

13.0

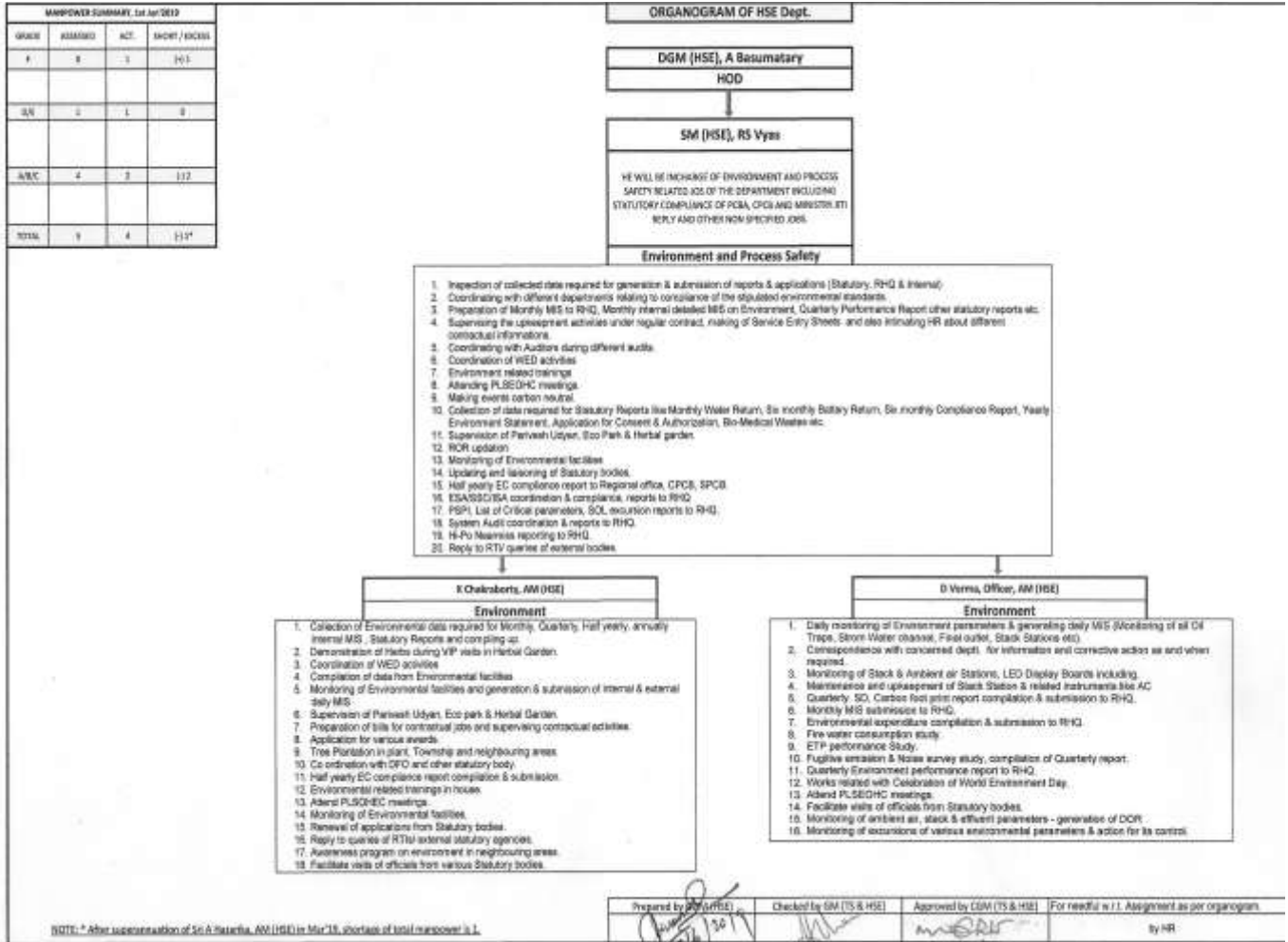
ANNEXURE-A10

Screen Shot of IOCL Website upload of report
Link: <https://iocl.com/Talktous/SNotices.aspx>



APPENDIX-A11

HSE Organogram of IOCL-BGR



ANNEXURE-A12

**Gazette Notification of BGR Quality Control laboratory (QC Lab)
Approval under Environment (Protection) Act 1986**



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

C-11012/90/1986-Tech/

13209

November 29, 2018

Speed Post

To

✓ Sh H.K.Sarma
Quality Control Manager
Quality Control Laboratory
Indian Oil Corporation Limited
Bangaigaon
P.O. Dhaligaon-783385
Dist. Chirang Assam

Sub: Notification of Government Analysts of Quality Control Laboratory of Indian Oil Corporation Limited Bangaigaon P.O. Dhaligaon-783385 Dist. Chirang Assam, in Govt. of India Gazette-rcg.

Ref: Your letter no. Dated 23.04.2018

Our letter no.: C-11012/90/1986 Tech/3268 (Dated 20.07.2016)

Sir,

Adropos above, it is to inform that the proposal of substitution of superannuated/transferred Government Analysts of Quality Control Laboratory of Indian Oil Corporation Limited Bangaigaon P.O. Dhaligaon-783385 Dist. Chirang Assam was approved in the 181st Board Meeting held on June 19, 2018 and afterward notified in the Govt. of India Gazette No. 439 Dated November 20, 2018 vide notification number Lega. 42(3)/8/ dated October 3, 2018. The copy of Gazette Notification is enclosed herewith for your reference and record please.

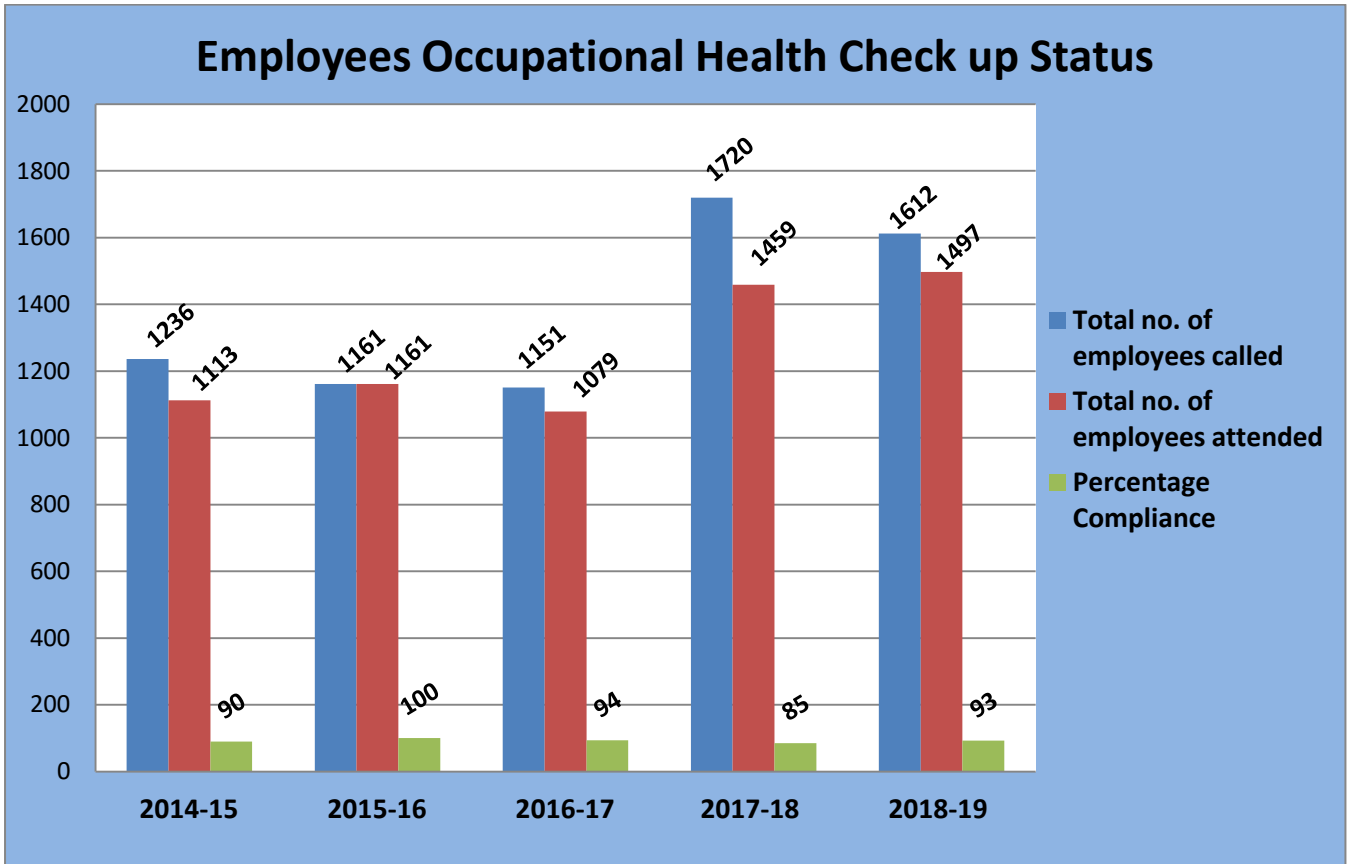
Yours Faithfully

(R.K. Jakhmola)

Scientist-E & Divisional Head
Instrumentation Laboratory

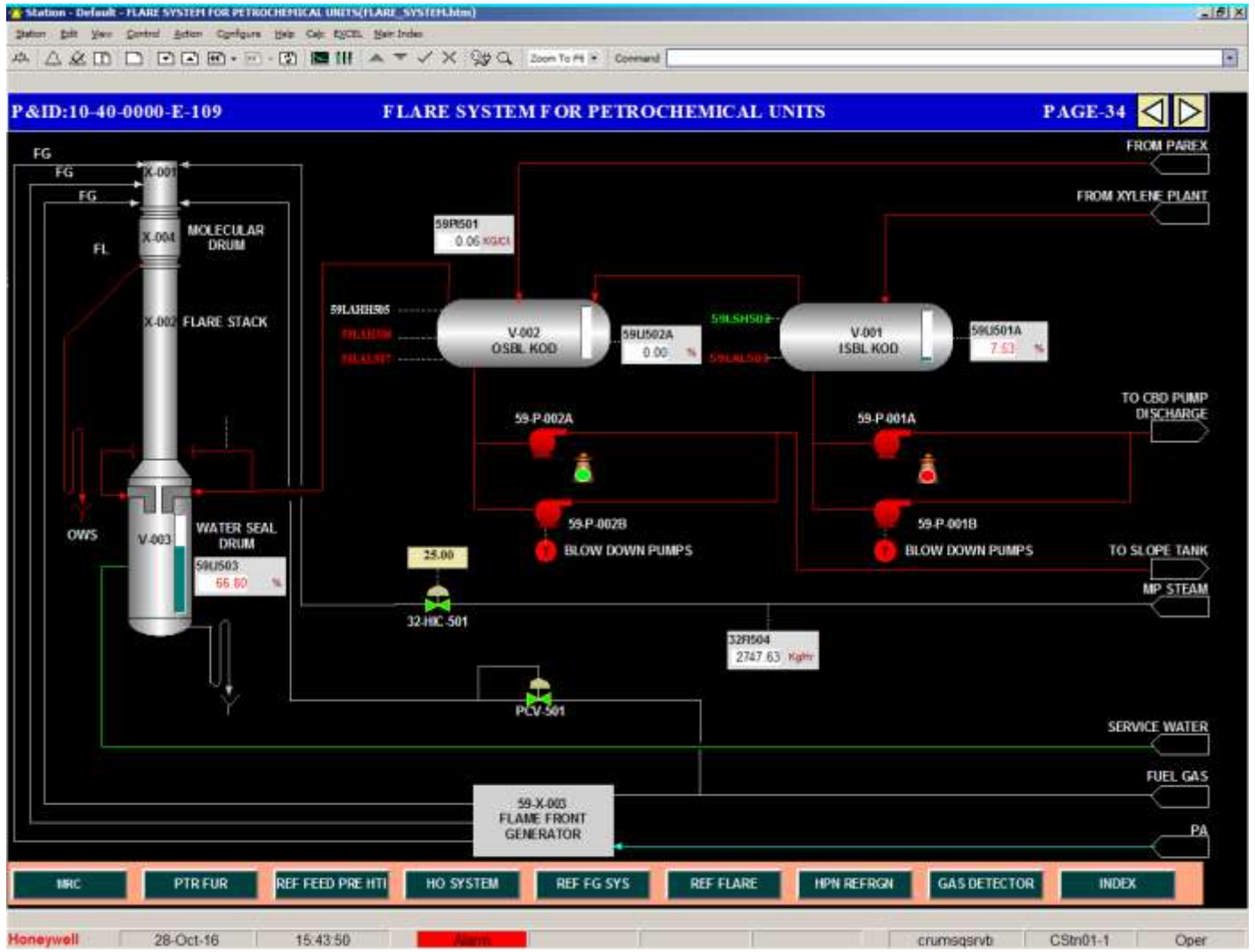
Appendix-A13

Employees Occupational Health Check up Status



Appendix-A14

Flare system.



THANKS