REF: IOC/BGR/ENV/DHDT/MoEF&CC/2016-17 /02 **Date: 28.06. 2017**

To

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

Subject: Half yearly Report for the period of 1st October 2016 to 31st March 2017, for Diesel Hydro Treatment Plant

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of **1st October 2016 to 31st March 2017** 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,

(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 the period for “Diesel Hydro Treatment Plant”

(1st October 2016 to 31st March 2017)

Submitted by:

Indian Oil Corporation Limited

Bongaigaon Refinery.

PO. Dhaligaon. District: Chirang. Assam

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: (1st October 2016 to 31st March 2017)

Sl. No	Conditions	Status
1.	Specific & General conditions Compliance status of Diesel Hydrotreatment 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.	Quarterly Fugitive Emission Reports.	Furnished in Appendix-A5
7.	Report on Phytodiversity in IOCL- Bongaigaon Refinery Campus	Furnished in Appendix-A6
8.	Annual return of hazardous waste	Furnished in Appendix-A7(a)
9.	Authorization from PCBA under Hazardous Wast (Management , Handling and Transboundary Movement Rules 2008)	Furnished in Appendix-A7(b)
10.	Details of Waste water treatment and disposal system	Furnished in Appendix-A8
11.	Quarterly Noise Survey Reports.	Furnished in Appendix-A9
12.	Status of Rainwater Harvesting	Furnished in Appendix-A10
13.	Screen Shot of IOCL Website upload of report	Furnished in Appendix-A11
14.	Organogram of hse Department	Furnished in Appendix-A12
15.	Gazette Notification of BGR Quality Control laboratory (QC Lab) approval under	Furnished in Appendix-A13
16.	Employees Occupational Heath Check up Status	Furnished in Appendix-A14
17.	Flare system.	Furnished in Appendix-A15

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 expansion project vide Ministry's OM No. J-11011/24/90-IA II (I) dated 3rd 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.)
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.	1. Rapid Risk Analysis (RRA) was carried by M/s EIL, New Delhi. Final report was submitted by EIL in September'2006. RRA report is already submitted to your good office vide our letter No. BRPL/ENV/MS-MAX/06-07/03 dated 08.11.2006. **2.** HAZOP study for DHDT, Sulfur Block, HGU & OSBL Utilities & Offsites area completed & report submitted by consultant,(EIL) & HAZOP recommendations implemented.Further HAZOP tudy done in Feb. 2014 by M/S **Asia Pacific Risk Management Services Pvt Ltd.** **3.** Comprehensive Risk Assessment final report conducted by M/s Chilworth Technology Pvt. Ltd. was submitted on 11.10.2010. 4. Fresh CRA was carried out by M/S CGC Converse Technologies and final report is received in June 2016.
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.	M/s Balmer Lawrie & Co. Limited was awarded the contract of mechanized processing of oily sludge.To establish confined bio remediation study is being done in association of IOCL R&D.
iv	The project proponent shall also comply with all the environmental protection measures to mitigate the risks including the following:	Taken care of all the environmental protection measures and safeguards recommended in the EMP and risk analysis report and also revised CPCB guidelines etc. in design stage itself.
v	**a.** Provision of double mechanical seal for the pumps handling H2S to reduce the frequency of failure	Taken care of in design stage & available in process data sheets of respective pumps in BDEPs.
	b. Provision of adequate no. of H_2S 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_2S detectors along with HC/H_2 detectors provided in various process units under DHDT project. DHDT : (HC = 7, H_2S = 5, H_2 = 3) HGU : (HC = 10, CO = 4, H_2 = 4) ARU : (H_2S = 6 & HC=1) SWSU : (H_2S=5 & HC=1) SRU : (H_2S=12, HC=3 & H_2 =2)
	c. Provision of emergency stop button for rich amine group in the control room to stop the pump.	Taken care of in design stage & indicated in respective P&IDs.

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 Kakijana reserved forests as well as residents of Hapachara, Garegaon, Gorapara, Rabhapura and Chitkagaon, so that felling of trees for fuel wood is reduced .A comprehensive Action Taken Repot should be submitted within one year.	BGR requested to MoEF for exemption of these conditions vide letter no. ENV/STAT/01/01 dated 31.07.2002.

Sr. No.	General Conditions	Compliance Status
i	The project authority must adhere to the stipulations made by Assam State Pollution Control Board and State Government.	Stipulations made in the environmental clearance of the project are being addressed during detailed engineering also. The same has been addressed in the Basic Engineering Design Package, wherever applicable.
ii	No expansion or modification of the plant should be carried out without prior approval of this Ministry.	Noted
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 Authorization under Hazardous Waste (Management , Handling & Transboundary Movement Rules 2008) obtained from PCBA and valid upto 28th February 2019.Annual Hazordous waste return is attached as appendix-7(a) **Authorisation attached as Appendix –A7 (b)**
iv	Hazardous wastes, if any, must be handled and disposed as per Hazardous waste (Management and handling) Rules, 2000. Authorization from State Pollution Control Board in this regard must be obtained.	**Complied.** **Authorization from PCBA for Hazardous Waste (Management , Handling and Transboundary Movement Rules 2008) is attached as Appendix – A7 (b)**
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**.**	Infrastructure facilities like water supply, food canteen, sanitation are being provided to construction 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).	(a) Taken care of in design stage and mentioned in process data sheets for various equipments wherever applicable in BDEPs. (b) All precautionary measures are taken at the construction site to control the noise level & present activities do not generate noise of high db. However quarterly noise survey is regularly conducted. (c) Taken care during implementation of the project. Quarterly Noise Survey is being carried out regularly. Quarterly Reports for the period of **1st October 2016 to 31st March 2017 are attached as Appendix A9.**

Sr.No.	General Conditions	Compliance Status
vii	Occupational health Surveillance of the workers should be done on a regular basis and records maintained.	Complied. **Attached as Appendix A14**
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.	BGR is having a separate environmental management cell of HSE department. **Organogram of HSE Department is attached as APPENDIX-A12.** Environment Laboratory of BGR is **CPCB** recognized and **NABL** accredited Quality Control laboratory (QC Lab) as approved under Section 12 & 13 of Environment (Protection) Act 1986 and notified in the Govt. of India Gazette no. 272 dated July 4, 2016 vide notification number Legal 42(3)/ 87 dated 7th March 2016. **(Copy attached as Appendix-A13)**
ix	The funds earmarked for the environmental protection measures should be reported to this Ministry and SPCB.	Noted.
x	Six monthly status report on the project vis-a-vis Implementation of environmental measures should be submitted to this Ministry (Regional Office, Shillong/ CPCB/ SPCB).	Complied Last six monthly compliance report along with soft copy was submitted vide IOC/ BGR/ENV/ DHDT/ MOEF/2015-16/1 dated 21.06.2016. The six monthly compliance report was also displayed on the Website of the Company. **Screen shot attached as Appendix A11**
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 http://envfor.nic.in The advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should 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 DHDT Project is not complete because of some pending issues of GTG package, which is part of DHDT Project, financial closure of DHDT Project is not yet complet

Sr. No	CONDITIONS (As given in concurrence to changes in Env. Clearance dated May 1, 2006)	
i	The total SO_2 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_X emission.	
iii	The total effluent generation shall not exceed 7.9 m^3/hr The fresh water consumption shall not exceed 275 m^3/hr.	
iv	No further modernization of project shall be carried out without prior permission of this Ministry.	Noted. IOCL – Bongaigaon Refinery has applied for Env. Clearance for expansion of DHDT to conform BS- VI standard of fuel.
v	The company shall comply with the conditions stipulated in the clearance order of even no. dated 25th June, 2002.	Noted
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.	M/s. Chilworth Technology Pvt. Ltd., New Delhi submitted Final report of Comprehensive Risk Assessment (CRA) on 11.10.2010. **Fresh CRA study has also been conducted thru' outsourced M/s. CGC Techno Lab Pvt. Ltd, Hyderabad. Final Report received in June, 2016.**

Status of Diesel Hydro-Treatment Project

(1st October 2016 to 31st March 2017)

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-ll0ll/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.

5. **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_2 unloading & Storage facility along with H_2 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) Applied for Env. Clearance for capacity enhancement of DHDT along with other projects.

3.0

APPENDIX –A1

STACK MONITORING DATA: (1st October 2016 to 31st March 2017)

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	36	399	849
CDU-II		45	373	847
DCU-I		22	261	849
DCU-II		24	276	531
CPP		20	119	633
Reformer		9	13	16
HO-1		11	14	20
Isomerisation		10	14	21
DHDT		12	88	313
HGU		1	5	33
SRU		56	326	935
GTG		38	51	84

B. 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	40	75	85
CDU-II		38	107	247
DCU-I		40	75	85
DCU-II		52	65	121
CPP		24	37	55
Reformer		43	68	77
HO-1		42	74	158
Isomerisation		36	63	70
DHDT		2	19	168
HGU		6	53	92
SRU		No Analyser		
GTG		16	35	74

C. PM Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	32.0	35.3	39.0
CDU-II		18.0	20.7	23.0
DCU-I		17.0	18.7	21.0
DCU-II		25.0	27.0	28.0
CPP		16.0	19.0	22.0
Reformer		5.0	9.0	11.0
HO-1/2		BDL	BDL	BDL
Isomerisation		7.0	10.3	13.0
DHDT		19.0	21.0	25.0
HGU		BDL	BDL	BDL
SRU		14.0	14.0	14.0

STACK MONITORING DATA :(1st October 2016 to 31st March 2017)

D. CO Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	24.0	26.0	28.0
CDU-II		27.0	28.3	30.0
DCU-I		27.0	29.0	31.0
DCU-II		22.0	24.7	27.0
CPP		13.3	21.4	28.0
Reformer		7.0	8.3	10.0
HO-1/2		6.0	6.3	7.0
ISOMERISATION		4.0	4.3	5.0
DHDT		5.0	7.0	8.0
HGU		8.0	9.9	11.6
SRU		10.0	11.3	13.0

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

AMBIENT AIR QUALITY AROUND BGR COMPLEX
(Average of monthly sample Schedule – VII)
(1st October 2016 to 31st March 2017)

	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	3.7	BDL	BDL	BDL	BDL	BDL
	Average	15.0	BDL	BDL	BDL	BDL	BDL
	Max	44.2	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	48	48	48	48	48
2	NO_2 (Std. 40/80 µg/m^3)						
	Min	7.9	17.0	17.0	17.0	17.0	17.0
	Average	10.8	18.6	18.4	18.6	18.7	18.4
	Max	49.5	20.0	22.0	20.0	20.0	20.0
	No. of observation	Continuous	48	48	48	48	48
3	PM-10 (Std. 60/100 µg/m^3)						
	Min	11.5	50.0	50.0	52.0	58.0	54.0
	Average	34.5	64.3	63.4	64.5	67.0	64.2
	Max	99.3	72.0	71.0	71.0	74.0	71.0
	No. of observation	Continuous	48	48	48	48	48
4	PM-2.5 (Std. 40/60 µg/m^3)						
	Min	4.0	21.0	21.0	21.0	21.0	21.0
	Average	8.2	28.2	28.2	28.4	29.0	28.4
	Max	24.4	32.0	32.0	32.0	34.0	34.0
	No. of observation	Continuous	48	48	48	48	48
5	Ammonia (Std. 100/400 µg/m^3)						
	Min	2.3	BDL	BDL	BDL	BDL	BDL
	Average	6.3	BDL	BDL	BDL	BDL	BDL
	Max	30.4	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	48	48	48	48	48
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		48	48	48	48	48

7	**Arsenic (As) (Std. 6 ng/m3)**						
	Min		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation		**48**	**48**	**48**	**48**	**48**
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		**48**	**48**	**48**	**48**	**48**
9	**CO (Std. 2/4 mg/m3**						
	Min	**0.02**	**0.29 (Tube well 3 T/S)**			**0.26 (Tube well 7)**	
	Average	**0.72**	**0.30 (Tube well 3 T/S)**			**0.29 (Tube well 7)**	
	Max	**3.48**	**0.31 (Tube well 3 T/S)**			**0.31 (Tube well 7)**	
	No. of observation	**Continuous**	**182**			**182**	
10	**Ozone (Std.100/180 µg/m^3 for 8 hrs/1 hr)**						
	Min	**8.5**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average	**18.4**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max	**44.0**	**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation	**Continuous**	**48**	**48**	**48**	**48**	**48**
11	**Benzene (Std. 5 µg/m^3)**						
	Min	**0.01**	**BDL**	**0.5**	**BDL**	**0.7**	**BDL**
	Average	**0.2**	**BDL**	**0.5**	**BDL**	**1.3**	**BDL**
	Max	**0.3**	**BDL**	**0.6**	**BDL**	**2.5**	**BDL**
	No. of observation	**Continuous**	**48**	**48**	**48**	**48**	**48**
12	**Benzo (a) Pyrene (Std. 1 ng/m^3)**						
	Min		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Average		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	Max		**BDL**	**BDL**	**BDL**	**BDL**	**BDL**
	No. of observation		**48**	**48**	**48**	**48**	**48**

Average of Six Stations												
Parameter	**SO_2**	**NO_2**	**PM-10**	**PM-2.5**	**NH_3**	**Pb**	**As**	**Ni**	**Benzo (a) Pyrene**	**CO**	**C_6H_6**	**O_3**
Unit	**µg/m³**						**ng/m³**			**mg/m³**	**µg/m³**	
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	**3.7**	**7.9**	**11.5**	**4.0**	**2.3**	**BDL**	**BDL**	**BDL**	**BDL**	**0.02**	**0.01**	**8.5**
Average	**15.0**	**17.2**	**59.6**	**25.1**	**6.3**	**BDL**	**BDL**	**BDL**	**BDL**	**0.72**	**0.82**	**18.4**
Max	**44.2**	**49.5**	**99.3**	**34.0**	**30.4**	**BDL**	**BDL**	**BDL**	**BDL**	**3.48**	**2.50**	**44.0**

APPENDIX-A2

Effluent Discharged (Figure in M^3/Hr):(1st October 2016 to 31st March 2017)

A	Industrial Effluent M^3/Hr	170.55
B	Domestic Effluent from BGR Township M^3/Hr	53.54
C	Total Effluent Treated (A + B) M^3/Hr	224.09
D	Treated Effluent Reused M^3/Hr	220.37
E	Effluent Discharged M^3/Hr	3.72
F	M^3 of Effluent discharged for 1000 tons of Crude processed	13.19

1. Treated Effluent Quality

(1st October 2016 to 31st March 2017)

Sl. No	Parameter	MINAS,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	1.0	1.7	2.2
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	4.0	7.3	12.4
4	Chemical Oxygen Demand (COD), mg/l	125.0	40.0	72.2	121.0
5	Suspended solids, mg/l	20.0	0.1	10.7	12.8
6	Phenolic compounds (as C6H5OH), mg/l	0.35	0.020	0.064	0.600
7	Sulphide (as S), mg/l	0.50	0.12	0.33	0.50
8	CN mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N, mg/l	15.0	0.70	0.70	0.70
10	TKN, mg/l	40.0	1.20	1.20	1.20
11	P, mg/l	3.0	0.80	0.80	0.80
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		BDL	
17	Ni, mg/l	1.0		BDL	
18	Cu, mg/l	1.0		BDL	
19	V, mg/l	0.20		BDL	
20	Benzene, mg/l	0.10		BDL	
21	Benzo (a) pyrene, mg/l	0.20		BDL	

EFFLUENT QUALITY

2. Final Outlet (From the Complex) Effluent Quality

(1st October 2016 to 31st March 2017)

Sl. No.	Parameter	MINAS	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.50	7.07	7.50
2	Oil and Grease, mg/l	5.0	1.40	1.89	2.20
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	4.40	6.6	12.00
4	Chemical Oxygen Demand (COD), mg/l	125.0	48.00	63.5	102.00
5	Suspended Solids, mg/l	20.0	10.000	11.0	12.80
6	Phenolic compounds (as C_6H_5OH), mg/l	0.35	0.020	0.055	0.08
7	Sulphide (as S), mg/l	0.50	0.240	0.388	0.50
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0	0.015	0.50	0.80
10	TKN, mg/l	40.0	0.025	0.71	1.10
11	P, mg/l	3.0	0.017	0.51	0.80
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		BDL	
17	Ni, mg/l	1.0		BDL	
18	Cu, mg/l	1.0		BDL	
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 October 2016 to 31st March 2017)

The entire area inside BGR covers 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 2016 to 31st March 2017 BGR has planted 2100 nos. of trees.

APPENDIX – A 4

Additional Information
(1st October 2016 to 31st March 2017)

Effluent reused during the period was around **98.32 %** 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 2016 to 31st March 2017**, **23320** potential leaky points checked and **168** Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **87.33** 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 2016 to 31st March 2017,** Noise Survey for two quarters of 2016 -17 has been completed and no abnormality was reported.

As a measure of Haz. Waste Management, M/s Balmer Lawrie & Co. Limited was awarded the contract of mechanized treatment of tank bottom sludge. Melting pit facility is available for recovering oil from oily sludge.

A pilot project is under installation for confined bio-remediation of remaining oily sludge with IOCL R&D.

Further two more Rain Water Harvesting (Ground Water Recharging) schemes in BGR Township have been implemented during 2016-17.

6.0

APPENDIX –A5

Quarterly Fugitive emission Data 1st October 2016 to 31st March 2017

FUG EMISSION DATA
3RD QTR 16-17.docx

FUG EMISSION DATA
4TH QTR 2016-17.do

7.0

APPENDIX-A6

Tree Census Report by Forest Department

TREE CENSUS
REPORT.pdf

8.0

APPENDIX-A7(a)

Haz Waste Return
FORM-4 (2016-17).d

9.0

Annexure –A7 (b)

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

Consent under HW Rules 2008.pdf

10.0

APPENDIX-A8
Detail of Waste water treatment and disposal system.

EFFLUENT TREATMENT FACILITIES AT BONGAIGAON REFINERY

Bongaigaon Refinery has a separate Waste Water Treatment Plant (WWTP) for treating the wastewater generated from the Refinery and the Petrochemical sections separately. The treated water from the wastewater treatment plant is further taken to a Tertiary Treatment Plant (TTP). The tertiary treated water is reused for cooling water & Fire water make-up of the complex. Surplus effluent is discharged to Eco-park.

The Waste Water Treatment Plants and TTP have the following facilities:

(A) **Refinery Wastewater Treatment Plant:**
The refinery wastewater includes phenol, sulphide, oil and grease, etc. Oil may appear in waste water as free oil, emulsified oil and as a coating on suspended matter. The sanitary sewage coming from plant / Bongaigaon Refinery Township and canteen effluent, is also treated along with the effluent from the refinery WWTP.

The Refinery waste water treatment plant has the following facilities:

(a) Primary (Physical) Treatment System

i. **Surge Ponds.**
ii. **Tilted Plate Interceptors (TPI):** For separation of free floating oil from effluent.
iii. **Dissolved Air Floatation Units (DAF), two no.:** For removal of free & emulsified oil.
iv. **pH Adjustment Section :** To maintain pH within required level.
v. **Chemical (Polyelectrolyte & Alum) Dosing Section:** For coagulation and flocculation to reduce TSS.

(b) Secondary (Bio) Treatment Facilities:

(i) **Trickling filter:** For reduction of BOD load.
(ii) **Aeration Tanks (two no.):** For further reduction of BOD.
(iii) **Clarifiers (two no.):** For settling and separation of Bio- sludge.
(iv) **Guard Ponds (four no.):** Storing of treated effluent for final quality tests prior to sending to the tertiary treatment facilities.

Brief Description:

Oily waste streams from process units, laboratory, process / off-site pumping stations, loading areas, pipe trench drainage, etc. are collected in the main receiving sump and taken to the TPI. After free oil removal the in TPI effluent is collected in surge pond-1/2. After surge pond, the total flow is taken to Dissolve Air Floatation (DAF) section. Before effluent entering to the DAF, pH of the effluent is adjusted by sulphuric acid to about 7.5 to 8.0. The DAF separator removes most of the remaining oil from inlet effluent.

After primary treatment the effluent divided in **two streams**.

One stream goes to the trickling filter along with screened, de-gritted, domestic sewage (from the canteen / toilets etc.). The effluent from the trickling filter is taken to the transfer sump from where a part of it is re-circulated back to the trickling filter and the remaining part is sent to the Aeration tank -1. Nutrients mainly nitrogen and phosphorous in the form of urea and DAP are added to feed chamber of bio-filter as nutrient for the proper bio-oxidation of the organic matter.

11.0

ANNEXURE-A9

Quarterly Noise Survey Data

HSE (ENVIRONMENT) DEPARTMENT

NOISE SURVEY DATA
3RD QTR 16-17.docx

NOISE SURVEY DATA
4TH QTR 16-17.docx

12.0

ANNEXURE-A10

Rain Water Harvesting Data

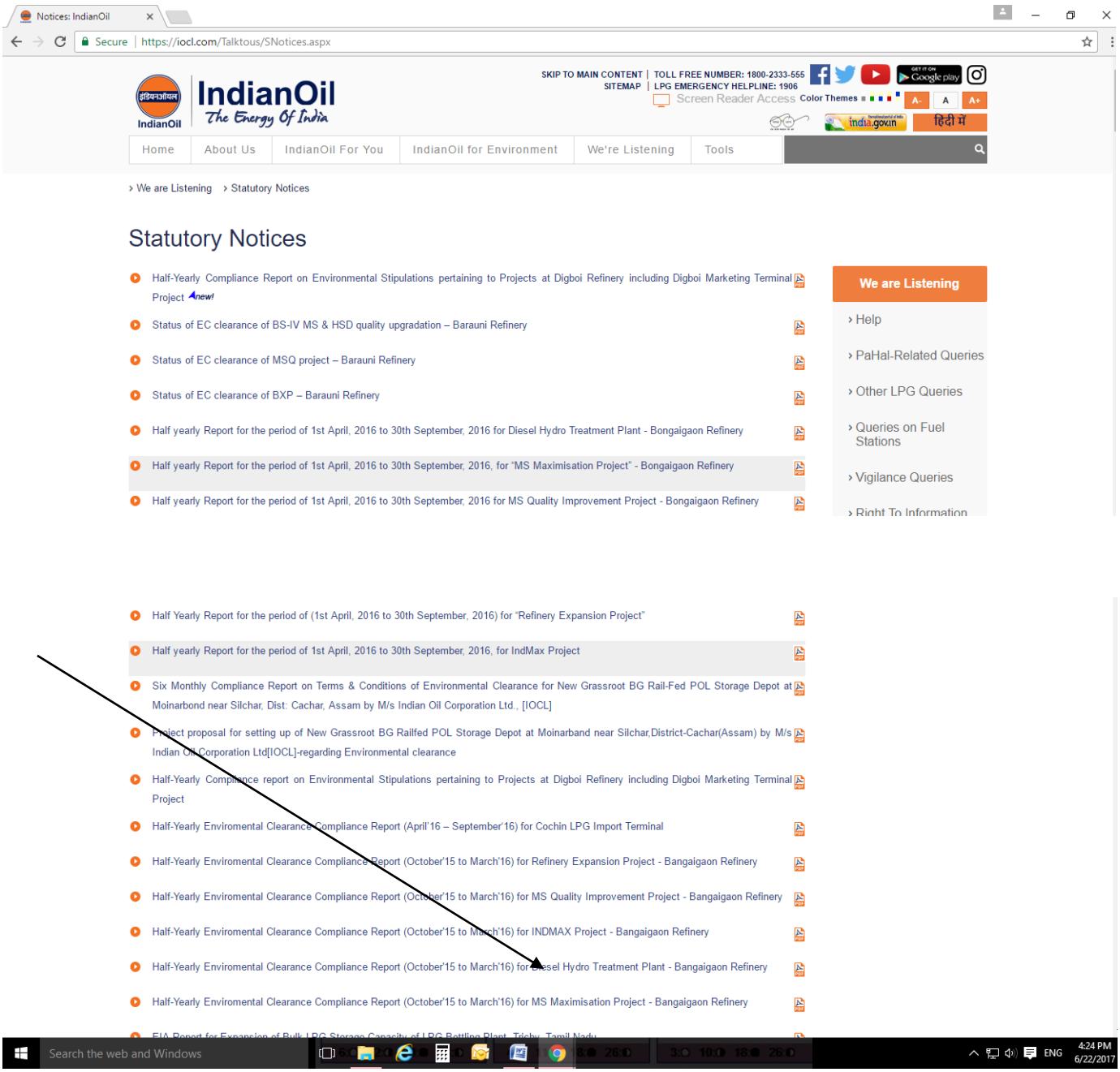
Status of Rainwater Harvesting				
Sl. No	**Location**	**Rooftop Area In M^2**	**Volume of Rainwater harvesting potential (CUM)**	**Year of implementation**
	Implemented			
1	Rainwater Harvesting at Manjeera Guest House	677	1733	2008-09
2	Rainwater Harvesting at Deoshri Guest House	581	1487	2008-09
3	Mandir Complex	833	2132	2011-13
4	MANAS GUEST HOUSE	639	1636	2011-13
5	BRPL VIDYALAYA	1361	3484	2011-13
6	DPS BLOCK-I	704	1802	2011-13
7	DPS BLOCK-II	1810	4634	2011-13
8	Artificial Recharge thru' TW # 3 Roof Top water from Canteen, Cycle/Scooter Shades, CISF bldg. etc.	3134	8023	2011-13
9	Rainwater Harvesting from roof top area of Champa Club	1080	3100	2013-14
10	Rainwater Harvesting from roof top area of Refinery Club Cum Community Centre	2833	8132	2013-14
11	Rain Water Harvesting at CISF ADM Building	825	2368	2014-15
12	Rain Water Harvesting at BGREU Office	275	789	2014-15
13	CISF Barrack	1050	3013	2015-16
14	BGR Community Hall	650	1865	2015-16
15	Gallery of Football Stadium (BGR Township)	988	2529	2016-17
16	Gallery of Volleyball Stadium (BGR Township)			
	Total	17440	46727	

13.0

ANNEXURE-A11

Screen Shot of IOCL Website upload of report

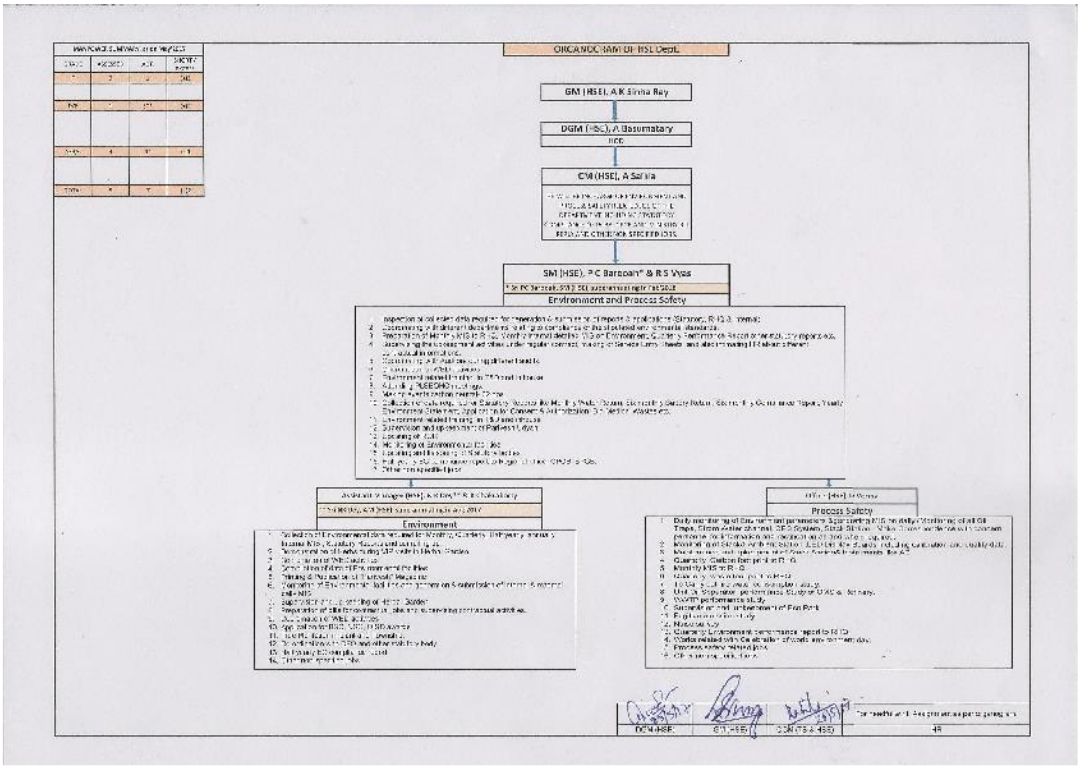
Link: https://iocl.com/Talktous/SNotices.aspx



14.0

APPENDIX-A12

HSE Organogram of IOCL-BGR

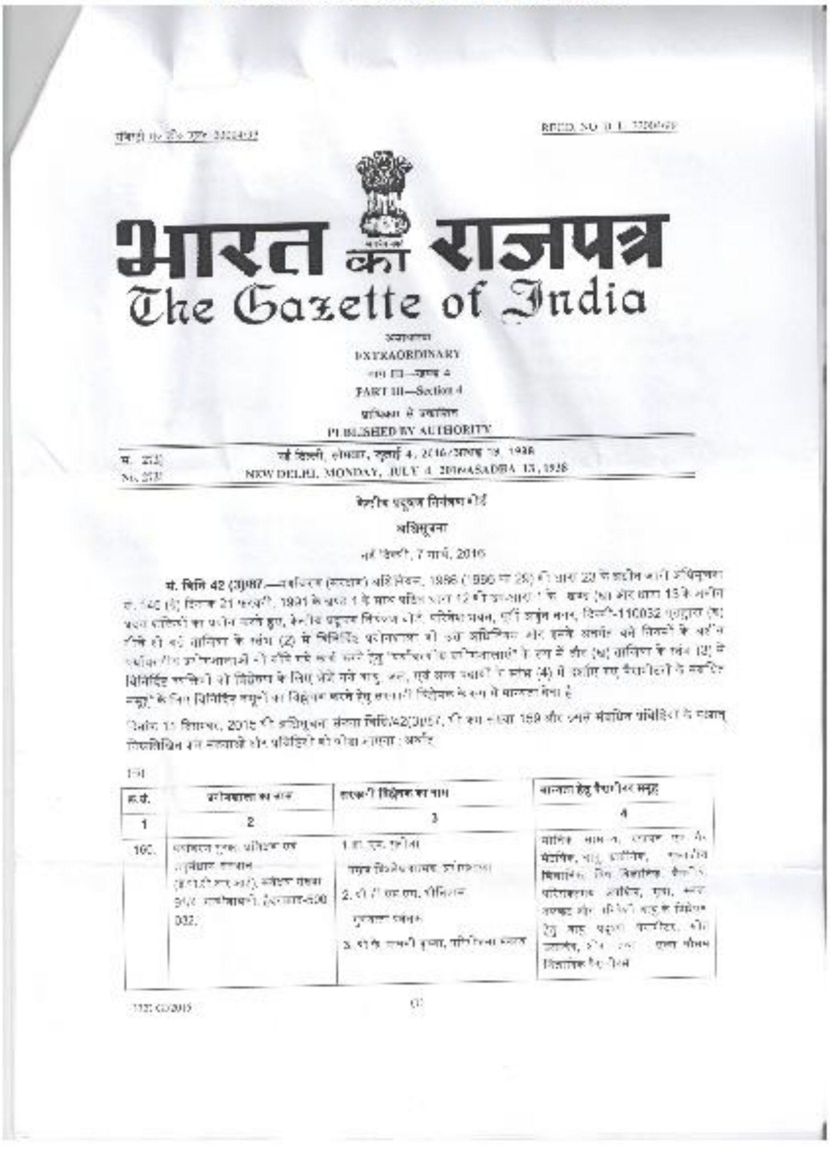


15.0

ANNEXURE-A13

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

Govt. of India Gazette no 272 dt: 4/7/2016



REGD. NO. D. L.-[illegible]

भारत का राजपत्र

The Gazette of India

असाधारण

EXTRAORDINARY

भाग III—खण्ड 4

PART III—Section 4

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 272] नई दिल्ली, सोमवार, जुलाई 4, 2016/आषाढ़ 13, 1938

No. 272] NEW DELHI, MONDAY, JULY 4, 2016/ASADHA 13, 1938

केन्द्रीय प्रदूषण नियंत्रण बोर्ड

अधिसूचना

नई दिल्ली, 7 मार्च, 2016

सं. विधि 42 (3)/87.—पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) ... [illegible]

[illegible]

16.0

Appendix-A14

Employees Occupational Heath Check up Status

17.0

Appendix-A15

Flare system.