REF: IOC/BGR/ENV/REP/MoEF&CC/2017-18/01 **Date: 20.12.2017**

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 April 2017 to 30th September 2017) 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 2017 to 30th September 2017** 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,

(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 "Refinery Expansion Project"

(1st April 2017 to 30thSeptember 2017)

Environmental Clearance for
Refinery Expansion, De-bottlenecking of Reformer and LPG facility
Vide MoEF&CC's 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)
(ENVIRONMENT)
Rec'd on 21.6.91.
Diary No. 135

OFFICE MEMORANDUM

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

contd.....2/-

xv. A separate environmental management cell with suitably qualified people to carry out various functions should be set under the control of senior exective 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.

II. 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 Maida Guwahati-782 021.
3. Chairman, Central Pollution Control Board, Parivesh Bhavan, CBI-cum-office Complex, East Arjun Nagar, Shahdara, Delhi-
4. Chief Conservator of Forests(Central) Regional Office (North East Region) Upland Road, LOITUMKHRAH, SHILLONG-793
5. Adviser(Energy) Planning Commission Yojana Bhavan, New Delh
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.	1. All stipulations by Pollution Control Board of Assam are strictly followed. 2. Copy of comprehensive EIA prepared for the Refinery Expansion was submitted to MOEF, New Delhi and also to MOEF Shillong vide our letter ENV/MIN/94/05 dated 15/06/94.
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.	1. Proposal for expansion of Refinery-2 is submitted to MOEF&CC for Environment Clearance. All expansion activities are dealt as per provision of the EP Act and other applicable acts.
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. Pl. 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 continuous 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 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 inside. Only nominal quantity of effluent is being discharged through Eco park to 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 (Please 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 ISO-14001 in environmentally friendly manner. 2. All hazardous wastes are handled and disposed off as per provisions of the Hazardous Waste (Management, Handling & Trans boundary Movement) Rules, 2008 and as per directions of statutory agencies. 3. 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. 4.A confined bio-remediation plant of 100 m3 capacity was set up in collaboration with IOCL R&D in July 2017 for treatment of oily sludge. 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. The project is under progress
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. 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.

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.
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-13
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. Environment Laboratory of BGR is accredited by NABL and recognized by **C.P.C.B.** 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-A12)**
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. Organogram of HSE Department is attached as Appendix-A11.
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.
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 2017 to 30th September 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	19	277	450
CDU-II		20	309	448
DCU-I		14.89	132.3	448.4
DCU-II		21.18	346.5	449.5
CPP		13.65	272.7	449.9
Reformer		4.83	12.41	101
HO-1		4.62	13.28	79.53
Isomerisation		2.28	12.43	75.67
DHDT		3.32	22.16	152.1
HGU		0.5	5.034	249.7
SRU		53.91	359.8	554
GTG		23.84	55.96	228.1

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	10	53	273
CDU-II		14	108	447
DCU-I		10.44	54.69	180.1
DCU-II		7.25	33.46	89.57
CPP		5.22	178.5	437.4
Reformer		12.59	73.8	106.2
HO-1		13.25	76.25	168.8
Isomerisation		12.79	63.45	71.94
DHDT		7	31.99	426.3
HGU		8.9	31.86	414.3
SRU		No Analyser		
GTG		15.85	41.77	254.3

C. PM Emission (mg/Nm^3)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	0.2	7.0	32
CDU-II		0.7	4.3	35
DCU-I		0.02	4.6	32
DCU-II		0.8	2.8	35
CPP		0.01	15.5	72
Reformer		0.2	1.3	14.2
HO-1/2		0.3	8.4	31
Isomerisation		0.01	3.1	56
DHDT		0.1	2.7	42.0
HGU		0.1	1.6	46.3
SRU		0.03	23.3	82.7
GTG		0.02	5.7	47.2

STACK MONITORING DATA: (1st April 2017 to 30thSeptember 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	1.3	18.4	93
CDU-II		0.3	23.3	90
DCU-I		1.3	18.3	89
DCU-II		0.1	19.7	92
CPP		0.1	28.1	89
Reformer		0.7	20.1	41.4
HO-1/2		2.5	20	78
ISOMERISATION		1.2	19.9	71
DHDT		0.3	31.6	90.5
HGU		0.6	12.8	77.0
SRU		0.02	6.8	72.7
GTG		3.5	4.6	6.0

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
GTG		BDL	BDL	BDL

AMBIENT AIR QUALITY AROUND BGR COMPLEX
(Average of monthly sample Schedule – VII)
(1st April 2017 to 30th September 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	1.6	4.5	4.5	4.5	4.5	BDL
	Average	15.2	4.5	4.6	4.62	5.4	BDL
	Max	59.9	4.5	4.8	4.8	6.5	BDL
	No. of observation	Continuous	52	52	52	52	52
2	NO_2 (Std. 40/80 µg/m^3)						
	Min	9.0	9.2	9.2	9.2	10.2	9.5
	Average	9.1	14.5	14.0	14.0	14.3	15.3
	Max	11.5	18.0	18.0	18.0	18.0	17.0
	No. of observation	Continuous	52	52	52	52	52
3	PM-10 (Std. 60/100 µg/m^3)						
	Min	29.2	10.0	8.0	12.0	12.0	10.0
	Average	29.7	39.6	40.8	43.1	45.1	39.2
	Max	33.7	58.0	58.0	60.0	62.0	58.0
	No. of observation	Continuous	52	52	52	52	52
4	PM-2.5 (Std. 40/60 µg/m^3)						
	Min	1.7	6.0	6.0	6.0	6.0	6.0
	Average	6.0	17.0	18.2	19.3	20.1	17.2
	Max	21.5	25.0	24.0	28.0	28.0	24.0
	No. of observation	Continuous	52	52	52	52	52
5	Ammonia (Std. 100/400 µg/m^3)						
	Min	4.1	7.2	6.5	6.2	7.5	6.2
	Average	4.5	7.6	7.3	7.7	8.2	6.7
	Max	6.4	8.0	8.5	9.2	9.8	7.5
	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
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	0.02	BDL	BDL	BDL	BDL	BDL
	Average	1.01	BDL	BDL	BDL	BDL	BDL
	Max	3.93	BDL	BDL	BDL	BDL	BDL
	No. of observation	Continuous	52	52	52	52	52
10	Ozone (Std.100/180 µg/m^3 for 8 hrs/1 hr)						
	Min	9.5	8.0	6.0	6.0	8.0	6.0
	Average	23.5	8.7	7.6	8.2	8.9	7.2
	Max	43.7	10.0	10.0	10.0	10.0	8.0
	No. of observation	Continuous	52	52	52	52	52
11	Benzene (Std. 5 µg/m^3)						
	Min	0.02	BDL	BDL	BDL	BDL	BDL
	Average	0.06	BDL	BDL	BDL	BDL	BDL
	Max	0.16	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	**$\mu g/m^3$**						**ng/m^3**			**mg/m^3**	**$\mu g/m^3$**	
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	**1.6**	**9.0**	**8.0**	**1.7**	**4.1**	**BDL**	**BDL**	**BDL**	**BDL**	**0.02**	**0.02**	**6.00**
Average	**6.9**	**13.5**	**39.6**	**16.3**	**7.0**	**BDL**	**BDL**	**BDL**	**BDL**	**1.01**	**0.06**	**10.68**
Max	**59.9**	**18.0**	**62.0**	**28.0**	**9.8**	**BDL**	**BDL**	**BDL**	**BDL**	**3.93**	**0.16**	**43.70**

4.0

APPENDIX-A2

Effluent Discharged (Figure in M^3/Hr):(1st April 2017 to 30thSeptember 2017)

A	Industrial Effluent M^3/Hr	180.4
B	Domestic Effluent from BGR Township M^3/Hr	50.8
C	Total Effluent Treated (A + B) M^3/Hr	231.2
D	Treated Effluent Reused M^3/Hr	226.8
E	Effluent Discharged M^3/Hr	4.3
F	M^3 of Effluent discharged for 1000 tons of Crude processed	16.13

1. Treated Effluent Quality

(1st April 2017 to 30thSeptember 2017)

Sl. No	Parameter	Std,2008	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.5	7.2	8.5
2	Oil and Grease, mg/l	5.0	1.0	1.3	2.0
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	3.2	7.3	14.8
4	Chemical Oxygen Demand (COD), mg/l	125.0	40.0	65.2	100.0
5	Suspended solids, mg/l	20.0	3.0	6.0	15.0
6	Phenolic compounds (as C6H5OH), mg/l	0.35	0.01	0.04	0.08
7	Sulphide (as S), mg/l	0.50	0.11	0.21	0.40
8	CN mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N, mg/l	15.0	0.70	1.18	1.80
10	TKN, mg/l	40.0	1.10	3.35	6.20
11	P, mg/l	3.0	0.22	0.60	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	-	0.20	-
17	Ni, mg/l	1.0	-	BDL	-
18	Cu, mg/l	1.0	-	0.10	-
19	V, mg/l	0.20	-	BDL	-
20	Benzene, mg/l	0.10	-	BDL	-
21	Benzo (a) pyrene, mg/l	0.20	-	BDL	-

EFFLUENT QUALITY

2. Final Outlet (From the Complex) Effluent Quality

(1st April 2017 to 30th September 2017)

Sl. No.	Parameter	Std 2008	Min	Avg.	Max
1	p^H value	6.0 - 8.5	6.5	7.3	8.5
2	Oil and Grease, mg/l	5.0	1.0	1.6	2.4
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	3.6	7.5	14.2
4	Chemical Oxygen Demand (COD), mg/l	125.0	40.0	66.7	101.0
5	Suspended Solids, mg/l	20.0	3.0	5.2	12.0
6	Phenolic compounds (as C_6H_5OH), mg/l	0.35	0.01	0.06	0.25
7	Sulphide (as S), mg/l	0.50	0.06	0.27	0.48
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0	0.00	1.38	2.60
10	TKN, mg/l	40.0	0.00	3.80	7.90
11	P, mg/l	3.0	0.00	0.39	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 April 2017 to 30th September 2017)

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 April 2017 to 30st September 2017 BGR has planted 29400 nos. of trees.

NEW GREEN BELT IN OLD DEBRIS YEARD

TOWNSHIP PLANTATION

TOWNSHIP PLANTATION

BIRHANGAON STATE DISPENSARY PLANTATION

APPENDIX – A 4

Additional Information
(1st April 2017 to 30th September 2017)

Effluent reused during the period was around **98.13 %** 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 2017 to 30th September 2017**, **23519** potential leaky points checked and **163** Leaky points detected and rectified. By following LDAR programme in true spirit, the company could not only avoid potential loss of **100.96** MTA (approx.) of light Hydrocarbon to the atmosphere through fugitive sources but also able to keep healthy work environment in the plants.

To ensure work area quality and health of equipments, quarterly noise survey was conducted covering all the operating plants, control rooms and ambient surrounding the BGR. During **1st April 2017 to 30th September 2017,** Noise Survey for two quarters of 2016 -17 has been completed and no abnormality was reported.

As a measure of Hazardous 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.

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.

Bio-remediation facility of BGR

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 April 2017 to 30th September 2017)

FUG EMISSION DATA
1ST QTR 17-18.docx

FUG EMISSION DATA
2ND QTR 17-18.docx

8.0

APPENDIX-A6 (a)

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

9.0

Annexure –A6 (b)

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

Consent under HW Rules 2008.pdf

10.0

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

Location map of disposal arrangement indicating the outlet(s) for sampling.
26.30 N 90.32 E

11.0

ANNEXURE-A8

Quarterly Noise Survey Data

HSE (ENVIRONMENT) DEPARTMENT

NOISE SURVEY DATA
1ST QTR 17-18.docx

NOISE SURVEY DATA
2ND QTR 17-18 - Cop

12.0

ANNEXURE-A9

Rain Water Harvesting Data

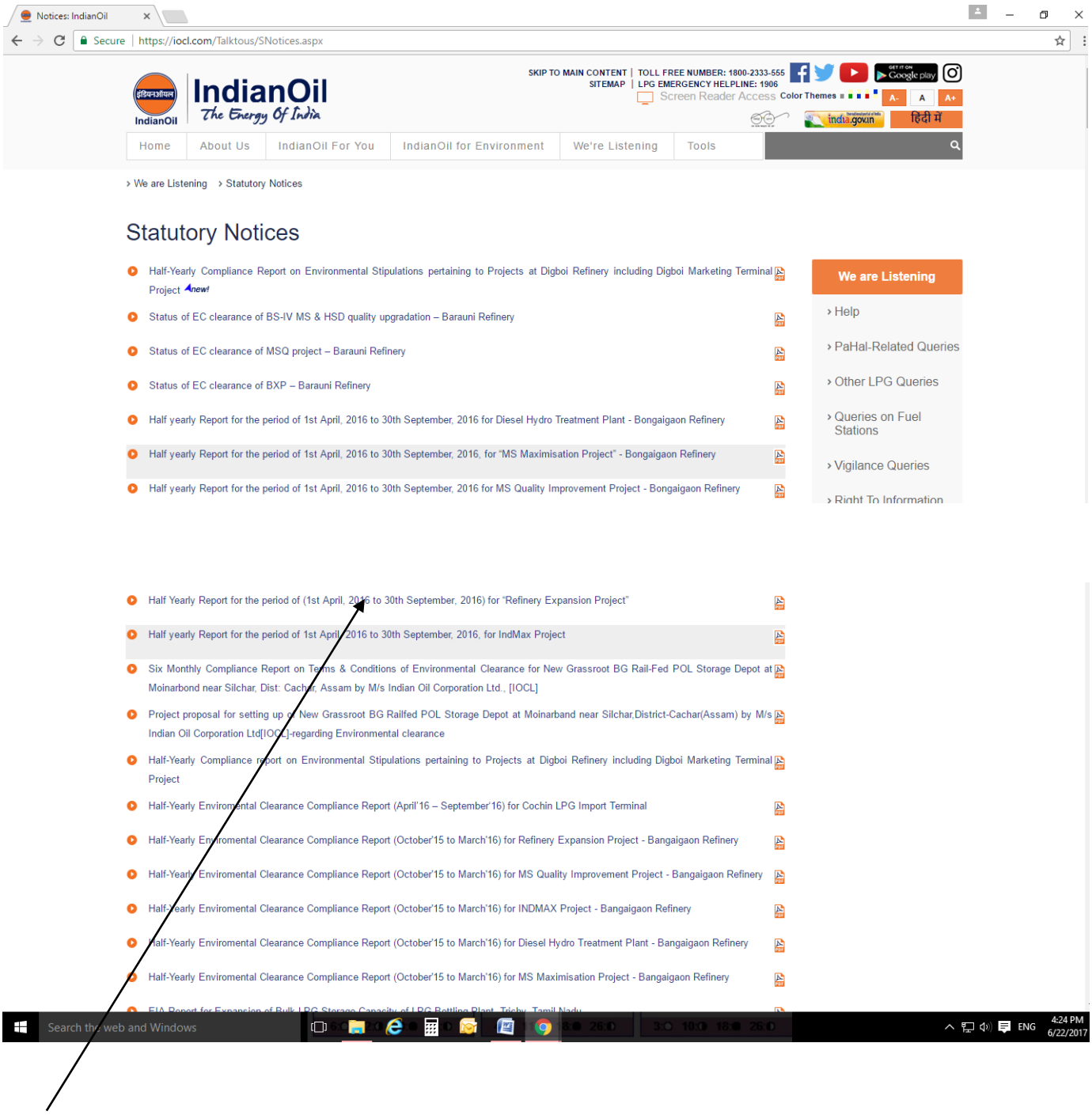
Status of Rainwater Harvesting				
Sl. No	**Location**	**Rooftop Area In M^2**	**Volume of Rainwater harvesting potential (CUM)**	**Year of implementation**
	Implemented			
1	Rainwater Harvesting at Manjeera Guest House	677	1733	2008-09
2	Rainwater Harvesting at Deoshri Guest House	581	1487	2008-09
3	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-A10

Screen Shot of IOCL Website upload of report

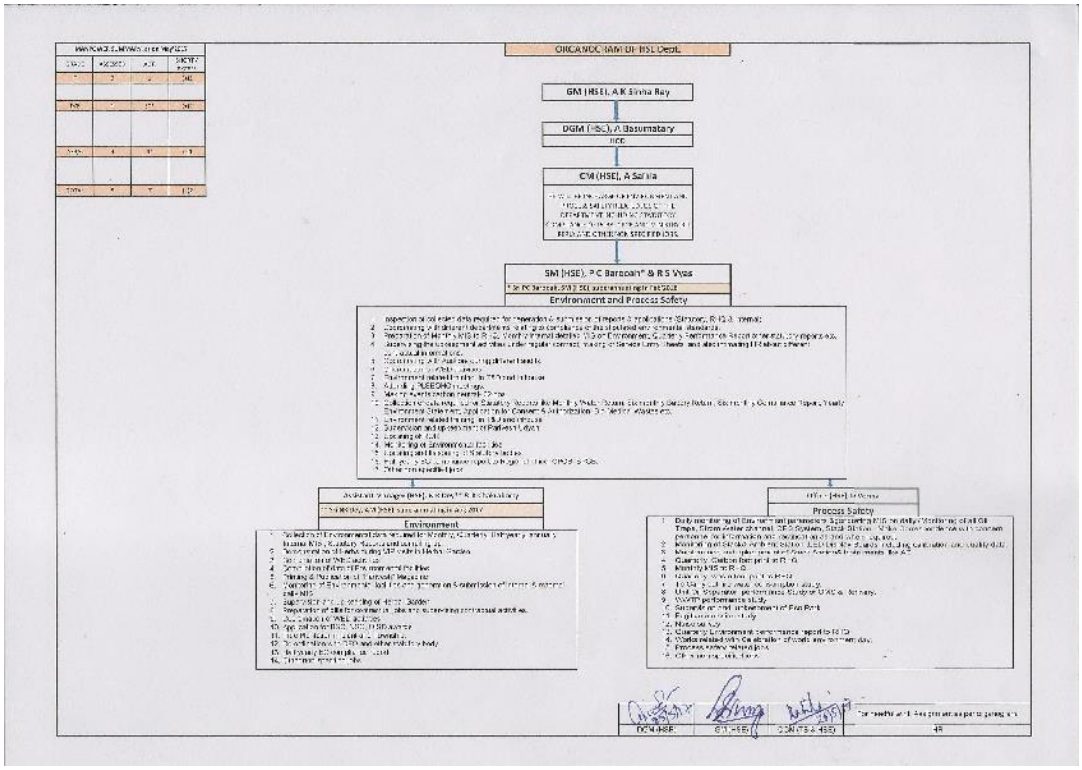
Link: https://iocl.com/Talktous/SNotices.aspx



14.0

APPENDIX-A11

HSE Organogram of IOCL-BGR

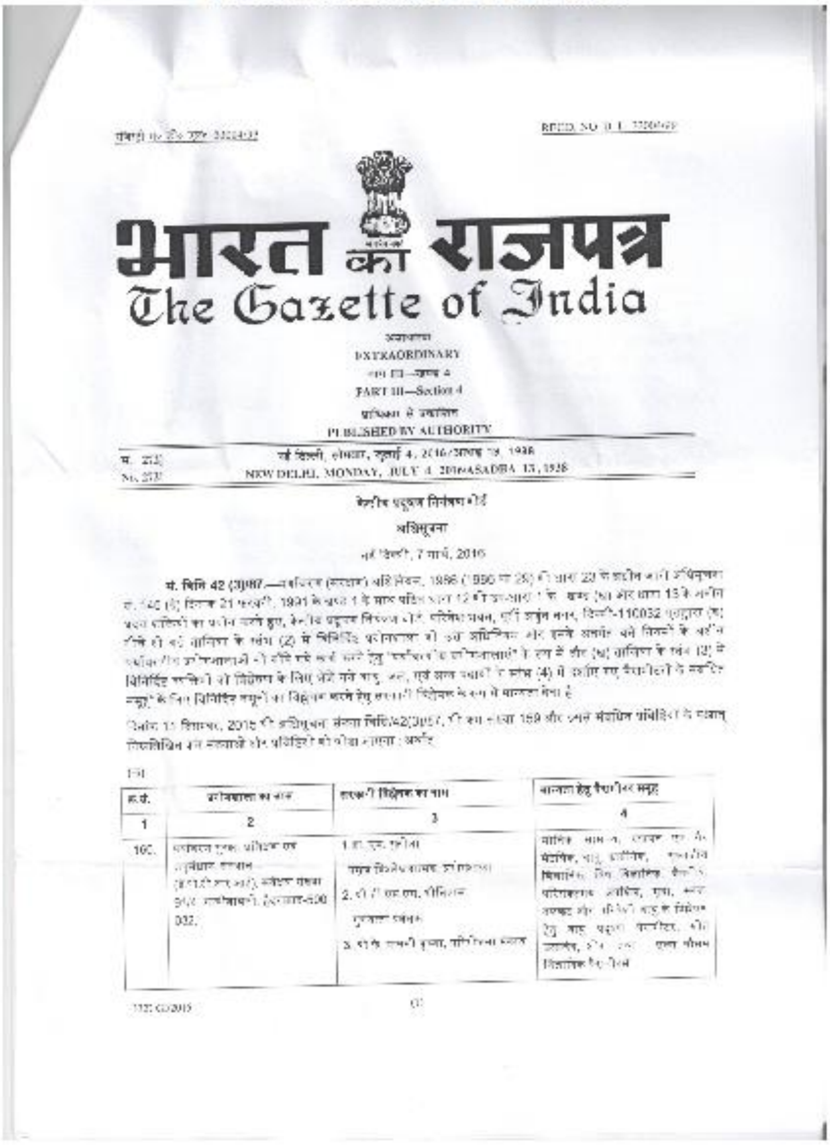


15.0

ANNEXURE-A12

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



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नई दिल्ली, 7 मार्च, 2016

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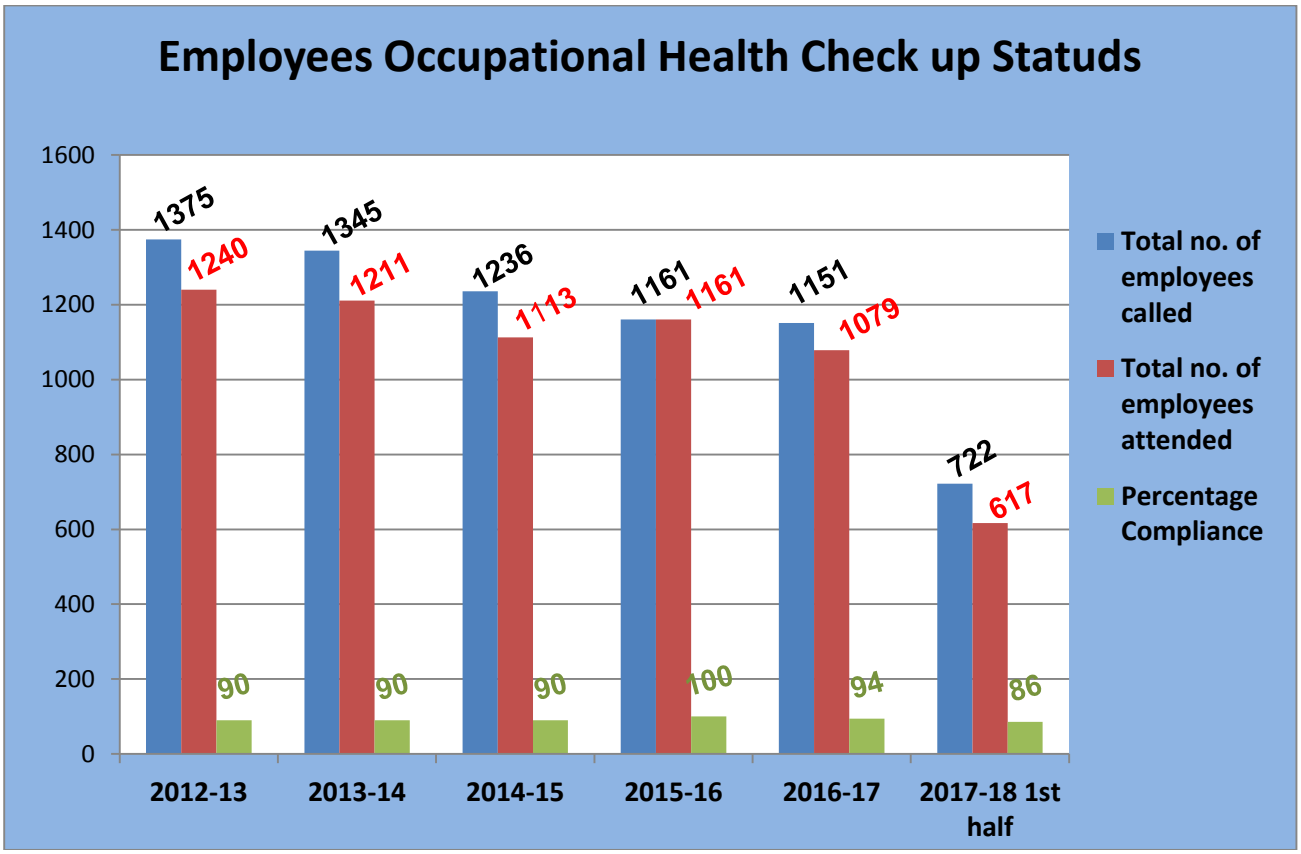
Appendix-A13

Employees Occupational Heath Check up Status



17.0

Appendix-A14

Flare system.