



इंडियन ऑयल कॉर्पोरेशन लिमिटेड
बॉम्बाइगाँव रिफाइनरी
डाकघर : धालीगाँव - 783 385
जिला : चिरांग (असम)
Indian Oil Corporation Limited
Bongaigaon Refinery
P.O. : Dhaligaon - 783 385
Dist. : Chirang (Assam)

रिफाइनरी प्रभाग
Refineries Division

IOC/BGR/ENV/REP/MoEF/2012-13/01

Date: 20.11.2012

To

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

Subject: Half yearly Report for the period of 1st April 2012 to 30th September, 2012 for “Refinery Expansion” project

Dear Sir,

With reference to above, we are enclosing the Six Monthly Report for the period of 1st April 2012 to 30th September, 2012 for your kind perusal. The reports are being sent as per EIA Rules'2006 for the “Environmental Clearances” issued by MoEF to Bongaigaon Refinery, (BGR) for “Refinery Expansion” project.

Thanking you,

Yours faithfully,

(A.K Agarwal)
Senior Manager (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 of 1st April 2012 to 30th September, 2012 for “Refinery Expansion” project

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

Plant Commissioning dates:

1. Crude Distillation Unit - II: 09.05.95
2. Delayed Coker Unit - II: 06.03.96

Sl. No	Clearance Conditions	Status
1.	Six monthly Effluent Quality (Point No. VIII)	Furnished in Appendix-A1
2.	Six monthly Ambient Air Quality/ Stack Monitoring Data	Furnished in Appendix-A2
3.	Tree Plantation Data	Furnished in Appendix-A3
4.	Special Information	Furnished in Appendix-A4

APPENDIX –A1

Effluent Discharged (Figure in M³/Hr)

(1st April 2012 to 30th September, 2012)

A	Industrial Effluent M ³ /Hr	195.67
B	Domestic Effluent from BGR Township M ³ /Hr	86.0
C	Total Effluent Treated (A + B) M ³ /Hr	281.67
D	Treated Effluent Reused M ³ /Hr	271.7
E	Effluent Discharged M ³ /Hr	10.0
F	M ³ of Effluent discharged for 1000 tones of Crude processed	37.52 (Std. 400)

EFFLUENT QUALITY

A. Treated Effluent Quality

(1st April 2012 to 30th September, 2012)

Sl. No	Parameter	MINAS,2008	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	6.0	7.2	8.5
2	Oil and Grease, mg/l	5.0	1.0	1.8	4.4
3	Bio-Chemical Oxygen Demand (3 Day at 27°C), mg/l	15.0	2.0	3.5	6.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	19.0	27.9	44.0
5	Suspended solids, mg/l	20.0	3.0	5.4	15.0
6	Phenolic compounds (as C6H5OH), mg/l	0.35	0.010	0.025	0.10
7	Sulphide (as S), mg/l	0.50	0.01	0.07	0.28
8	CN mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N, mg/l	15.0	0.10	0.12	0.45
10	TKN, mg/l	40.0	1.00	1.02	1.04
11	P, mg/l	3.0	0.50	0.53	0.60
12	Cr (Hexavalent), mg/l	0.10	BDL	BDL	BDL
13	Cr (Total), mg/l	2.0	BDL	BDL	BDL
14	Pb, mg/l	0.10	BDL	BDL	BDL
15	Hg, mg/l	0.01	BDL	BDL	BDL
16	Zn, mg/l	5.0	BDL	BDL	BDL
17	Ni, mg/l	1.0	BDL	BDL	BDL
18	Cu, mg/l	1.0	BDL	BDL	BDL
19	V, mg/l	0.20	BDL	BDL	BDL
20	Benzene, mg/l	0.10	BDL	BDL	BDL
21	Benzo (a) pyrene, mg/l	0.20	BDL	BDL	BDL

EFFLUENT QUALITY

B. Final Outlet (From the Complex) Effluent Quality

(1st April 2012 to 30th September, 2012)

Sl. No.	Parameter	MINAS	Min	Avg.	Max
1	p ^H value	6.0 - 8.5	7.0	7.6	8.5
2	Oil and Grease, mg/l	5.0	1.0	2.2	4.8
3	Bio-Chemical Oxygen Demand (3 Days at 27° C), mg/l	15.0	2.0	3.9	10.0
4	Chemical Oxygen Demand (COD), mg/l	125.0	19.0	32.2	118.0
5	Suspended Solids, mg/l	20.0	3.0	5.7	15.0
6	Phenolic compounds (as C ₆ H ₅ OH), mg/l	0.35	0.02	0.03	0.09
7	Sulphide (as S), mg/l	0.50	0.04	0.11	0.40
8	CN, mg/l	0.20	BDL	BDL	BDL
9	Ammonia as N , mg/l	15.0	0.10	0.25	0.68
10	TKN, mg/l	40.0	1.0	1.1	1.2
11	P, mg/l	3.0	0.35	0.44	0.70
12	Cr (Hexavalent), mg/l	0.10	BDL	BDL	BDL
13	Cr (Total), mg/l	2.0	BDL	BDL	BDL
14	Pb, mg/l	0.10	BDL	BDL	BDL
15	Hg, mg/l	0.01	BDL	BDL	BDL
16	Zn, mg/l	5.0	BDL	BDL	BDL
17	Ni, mg/l	1.0	BDL	BDL	BDL
18	Cu, mg/l	1.0	BDL	BDL	BDL
19	V, mg/l	0.20	BDL	BDL	BDL
20	Benzene, mg/l	0.10	BDL	BDL	BDL
21	Benzo (a) pyrene, mg/l	0.20	BDL	BDL	BDL

STACK MONITORING DATA

(1st April 2012 to 30th September, 2012)

A. SO₂ Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 1700 For F.G. = 50	81	417	993
CDU-II		86	415	972
DCU-I		94	433	984
DCU-II		51	427	999
CPP		102	488	997
Reformer		1	17	100
HO-1		9	37	284
Isomerisation		9	12	28
DHDT		0.01	17	529
HGU		26	56	100

B. NO_x Emission (mg/Nm³):

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 450 For F.G. = 350	59	143	412
CDU-II		50	111	197
DCU-I		19	89	232
DCU-II		28	91	200
CPP		95	211	360
Reformer		23	208	441
HO-1		9	83	214
Isomerisation		BDL	36	184
DHDT		23	122	311
HGU		29	71	250

C: PM Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 100 For F.G. = 10	14	15	17
CDU-II		19	24	30
DCU-I		17	25	38
DCU-II		7	24	36
CPP		22	24	25
Reformer		8	11	17
HO-1/2		6	11	16
Isomerisation		14	15	17
DHDT		19	24	30
HGU		17	25	38

STACK MONITORING DATA
(1st April 2012 to 30th September, 2012)

D. CO Emission (mg/Nm³)

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 200 For F.G. = 150	10	20	37
CDU-II		13	19	27
DCU-I		15	22	29
DCU-II		12	19	27
CPP		46	50	54
Reformer		5	11	19
HO-1/2		1	7	15
ISMERISATION		8	26	51
DHDT		15	21	27
HGU		5	5	5

E. Ni + V Emission (mg/Nm³) :

Stacks	Emission Std.	Observed value		
		Min	Avg.	Max
CDU-I	For F.O. = 5	0.003	0.007	0.017
CDU-II		0.003	0.004	0.007
DCU-I		0.002	0.005	0.009
DCU-II		0.002	0.100	0.390
CPP		0.003	0.004	0.006
Reformer		0.003	0.004	0.004
HO-1/2		0.002	0.003	0.005
ISMERISATION		0.004	0.004	0.004
DHDT		0.002	0.002	0.003
HGU		0.001	0.561	1.679

AMBIENT AIR QUALITY AROUND BGR COMPLEX
(Average of monthly sample Schedule – VII)
(1st April 2012 to 30th September, 2012)

	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	8.6	BDL	BDL	BDL	BDL	BDL
	Average	17.5	BDL	BDL	BDL	BDL	BDL
	Max	32.7	BDL	BDL	BDL	BDL	BDL
	No of observation	Continuous	47	48	48	48	48
2	NO2 (Std. 40/80 µg/m³)						
	Min	6.4	5.0	4.0	5.0	3.0	4.0
	Average	7.2	8.3	7.2	9.0	10.0	7.9
	Max	8.3	14.0	9.0	16.0	15.0	12.0
	No of observation	Continuous	47	48	48	48	48
3	PM-10 (Std. 60/100 µg/m³)						
	Min	3.5	22.0	13.0	25.0	16.0	22.0
	Average	17.2	58.7	47.9	54.1	47.3	58.7
	Max	79.3	98.0	96.0	98.0	98.0	98.0
	No of observation	Continuous	47	48	48	48	48
4	PM-2.5 (Std. 40/60 µg/m³)						
	Min	1.0	59.0	58.0	59.0	50.0	50.0
	Average	5.3	8.0	8.0	10.0	6.0	8.0
	Max	54.2	35.7	33.9	37.1	17.7	32.1
	No of observation	Continuous	47	48	48	48	48
5	Ammonia (Std. 100/400 µg/m³)						
	Min	2.3	BDL	BDL	BDL	BDL	BDL
	Average	2.9	BDL	BDL	BDL	BDL	BDL
	Max	3.6	BDL	BDL	BDL	BDL	BDL
	No of observation	Continuous	47	48	48	48	48
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		47	48	48	48	48
7	Arsenic (As) (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 (20 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
9	CO (STD 2/4 mg/m ³)						
	Min	0.32					
	Average	0.43					
	Max	0.55					
	No of observation	Continuous					
10	Ozone_(Std. -100/180 µg/m ³ for 8hrs./1 hr.)						
	Min	5.1	BDL	BDL	BDL	BDL	BDL
	Average	16.1	BDL	BDL	BDL	BDL	BDL
	Max	49.2	BDL	BDL	BDL	BDL	BDL
	No of observation	Continuous	47	48	48	48	48
11	Benzene(Std. : 5 µg/m ³)						
	Min	0.01	BDL	BDL	BDL	BDL	BDL
	Average	0.07	BDL	BDL	BDL	BDL	BDL
	Max	0.43	0.12	BDL	0.11	0.014	0.196
	No of observation	Continuous	47	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		<1	<1	<1	<1	<1
	No of observation		47	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 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	8.6	3.0	3.5	1.0	2.3	BDL	BDL	BDL	BDL	0.32	BDL	5.1
Average	17.3	8.2	47.3	24.7	2.9	BDL	BDL	BDL	BDL	0.43	0.07	17.2
Max	32.7	16.0	98.0	59.0	3.6	BDL	BDL	BDL	<1	0.55	0.43	49.2

APPENDIX – A3

Tree Plantation (1st April 2012 to 30th September, 2012)

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.

Total number of trees planted inside plant area & township are around 60,000

However tree plantation is a continuous process in Bongaigaon Refinery to compensate the loss due to tree felling and maintain the green balance.

BGR has planted around 500 trees in and around BGR complex during this year.

APPENDIX – A 4

Additional Information (1st April 2012 to 30th September, 2012)

Effluent reused during the period (1st April 2012 to 30th September, 2012) was around 96.5% of the total effluent treated which includes plant effluents as well as Township sewer.

Under the Leak Detection and Repair programme (LDAR), BGR is conducting quarterly Fugitive Emission Survey. During the Last two quarters of this financial year 2012-13, the company could not only avoid potential loss of 32 MTA (approx.) of light Hydrocarbon to the atmosphere through fugitive sources but also able to keep healthy work environment in the plant complex.

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 complex. Noise Survey for the last two quarter of 2012-13 has been completed, and no abnormality was reported.

As a measure of Hazardous Waste Management, M/s Balmer Lowrie & Co. Limited was awarded the contract of Oily Sludge processing along with bio-remediation of solids .The party is carrying out the processing of oily sludge from sludge lagoons. About 485 KL of oily sludge has been processed during the period from 1st April 2012 to 30th September, 2012.

Further two no's of Rain Water Harvesting (ground water recharging) schemes inside BGR complex has been Implemented.