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इंडियन ऑयल कॉर्पोरेशन लिमिटेड

रिफाइनरी प्रभाग : गुवाहाटी रिफाइनरी

नूनमाटी, गुवाहाटी-७८१०२० ( असम )

Indian Oil Corporation Limited

Refineries Division : Guwahati Refinery

Noonmati, Guwahati- 781020, Assam.

Fax : 0361-2657250, 2657251

EPABX : 0361-2597000

Internet Site : www.iocl.com



Guwahati Refinery

Ref.No.: GR/HSE/303/2017-18/ISOM/2

Date: 11.07.2017

To,  
Dr. H. Tynsong  
Scientist "C"  
Ministry of Environment & Forest  
North Eastern Regional Office  
Lumbatngen (LAW-U-SIB)  
Shillong-793021

Subject: Submission of Half-Yearly compliance report on Environment Stipulations

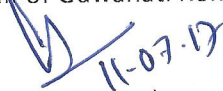
Reference : MoEF LETTER NO: J-11011/215/2007-1A II (I) dated 07.02.2008 for ISOM Unit

Sir,

With reference to above please find enclosed herewith the six monthly compliance report of environmental stipulations for ISOM units of IOCL, Guwahati Refinery for period Dec' 16 to May' 17.

With warm Regards,

Yours sincerely  
For and on behalf of Guwahati Refinery

  
(Monika Das)  
DGM (HSE)

Encl : As above

- Copy to :
- 1) The Director,  
Ministry of Environment, forest & Climate change  
Indira Paryavaran Bhawan  
Jorbagh Road  
New Delhi-110003
  - 2) Member Secretary (i/c) Pollution Control Board Assam, Bamunimaidan, Ghy-21

RECEIVED

  
Pollution Control Board, Assam  
Bamunimaidam, Guwahati-21

**STATUS OF EC CONDITIONS OF PROPOSED ISOM PROJECT vide letter no  
J-11011/215/2007-1A-II (I) dated 7<sup>th</sup> February, 2008**

Sl. No.	Conditions	STATUS on 1 <sup>st</sup> June 2017
<b>SPECIFIC CONDITIONS</b>		
1	The company shall comply with new standards/norms that are being proposed by the CPCB for petrochemical plants and refineries	New norms/standards are complied Guwahati Refinery complies with all the standards/norms under the Environment (Protection) Rules, 1986 vide G.S.R 186(E) dated 18th March, 2008. <b>Complied</b>
2	The company shall comply with all the stipulations of environmental clearance issued vide File No 11011/375/2006-1A.H(I) dated 22nd March 2007	Guwahati Refinery obtained no such environmental clearance.
3	The process emission (SO <sub>2</sub> , NO <sub>x</sub> , HC, VOCs and Benzene) from various units shall conform to the standards prescribed by the Assam State Pollution Control Board from time to time.  At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the units, the units shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	Facilities for On-line stack Monitoring for PM, CO, SO <sub>x</sub> & NO <sub>x</sub> with connectivity to CPCB/APCB are available in all the stack of Guwahati Refinery. Emissions from the process Units are monitored regularly and the results are well within the applicable norms. Monitoring results are attached as Annexure- I. Also, the ambient air quality is monitored on a regular basis. Monitoring results are attached as Annexure- II. Leak Detection and Repair programme (LDAR) carried out quarterly through external agency for control of HC/VOC/Benzene emission from pumps, valves, flanges, pipelines of process units and tank farm area of the Refinery and the report submitted to PCBA. Monthly monitoring of HC/VOC/Benzene is also carried out at work station by MoE&F approved third party. Preventive maintenance schedule for each unit available and adhered to. HC detectors are installed at strategic location of the Refinery  <b>Noted for compliance.</b>
4	The improvement projects shall be installed within the existing premises and no additional land shall be acquired for the project.	The project is installed within the existing premises. <b>Complied</b>
5	Quarterly monitoring of fugitive emissions shall be carried out as per the guidelines of CPCB by fugitive emission detectors (GMI Leak Surveyor) and reports shall be submitted to the Ministry's regional office at Shillong.	Fugitive emission monitoring at work zone is carried out monthly and the reports is attached as Annexure- III. Quarterly monitoring of fugitive emissions from process plant and tank farm area is carried out as per the guidelines of CPCB through external agency. <b>Complied</b>

*Prof. Adar*



6	For control of fugitive emission all unsaturated hydrocarbon will be routed to the flare system and the flare shall be designed for smokeless burning	All uncontrollable Hydrocarbons to flare are routed through FGRS unit for its recovery. Only minimum quantities of Hydrocarbons are allowed to burn in smokeless flare. <b>Complied</b>
7	The company shall strictly follow all the recommendations mention in the charter on corporate responsibility for environmental protection (CREP)	CREP recommendations are followed strictly. <b>Complied</b>
8	Occupational health surveillance of workers' shall be done on a regular basis and records maintained as per the Factory Act.	Regular occupational health checks up done to employees as per the Assam factory rule and record maintained. Surveillance of the workers is done as per schedule. Health Check up for operators working in hazardous area and for other employees of more than 40 years age and above is done once in a year as per normal practices and record maintained. <b>Complied.</b>
9	Greenbelt shall be developed to mitigate the effect of fugitive emission all around the plant in a minimum 30% plant area in consultation with DFO as per CPCB guidelines.	Because of space constraint green belt cannot be expanded inside refinery. However the tree plantation is taken up in and around refinery area.  In the year 2014-15 tree plantation carried out by adopting Japanese Akira Miyawaki Model of Environment Forest Plantation under guidance of CPCB, Shillong. Total 2500 tree sampling planted in township areas in 2014-15 and 1000 tree in 2015-16. Plantation of total 5000 nos of trees within a stretch of 6 KM in NH 31, Amingaon, Ghy was carried out in partnership with NHAI and completed in May'2017. Under Sustainability programme Guwahati Refinery shall continuously keep on planting more and more trees in future.
10	The company shall make suitable arrangement for disposed of catalyst waste and alumina balls. The report of this disposal of this waste shall be submitted to Ministry's regional office at Shillong.	Spent catalyst are disposed by e-auction through M/s MSTC, A Govt. of India Undertaking  MoE&F / APCB kept informed whenever catalyst waste is disposed. <b>Noted for compliance</b>
	The company shall take necessary measured to prevent fire hazards, containing oil spill and soil remediation as needed. At place of ground flaring, the overhead flaring stack with knockout drums shall installed to minimize gaseous emission during flaring.	Guwahati Refinery has installed fire fighting facilities in compliance with OISD 116 standards. There is no ground flaring system followed in the Refinery. The overhead flaring stack with knock out drum already exist to minimize gaseous emission during flaring. <b>Complied</b>
12	To prevent fire and explosion at oil and gas facility, potential ignition sources should be kept to a minimum and adequate separation distance between potential ignition sources and flammable material shall be in place.	All applicable Petroleum Rules & OISD standards are followed for laying out various facilities. <b>Complied</b>
<b>GENERAL CONDITIONS</b>		
1.	The project authority must adhere to the stipulations made by the concerned Assam State Pollution Control Board and the State Government and any other statutory body.	Stipulation of SPCB & State Government and any other statutory body are followed. <b>Complied</b>

*P. J. Jais*



2.	No further expansion or modification in the project shall be carried without prior approval of the Ministry of Environment and Forests. In case of deviation or alteration in the project proposal from those submitted to the Ministry for clearance, fresh reference shall be made to the Ministry	Expansion or modification of ISOM shall not be done without prior approval of Ministry. There is no deviation or alterations in the project from those submitted to the Ministry for clearance. <b>Complied</b>
3.	At no time, the emission should go beyond the prescribed standards. In the event of failure of any pollution control system, the respective well site should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved. Provision of adequate height of stack attached to DG sets & flare is to be done.	Online emission monitoring systems exist to monitor compliance status of prescribed standards. There is no well site or DG sets in the Refinery.  <b>Noted for compliance.</b>
4.	Waste water shall be properly collected and treated so as to conform to the standards prescribed under EP Act & Rules and mentioned in the Consents provided by the relevant SPCB.	Waste water is properly collected and treated in ETP through physical, chemical and biological process to conform to the standards prescribed under EP Act & Rules and mentioned in the Consents provided by the PCB, Assam. Effluent analysis data is from Dec'16 to May'17 is attached as Annexure- IV <b>Complied</b>
5.	The overall noise levels in and around the premises shall be within the prescribed standards (75 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) 70 dBA (night time)	The overall noise levels in and around the plant area is kept well within the standard by providing noise control measures including acoustic hoods, silences, enclosures etc. on all sources of noise generation. Noise monitoring carried out quarterly in and around refinery area. Observations are attached as Annexure-V  <b>Complied</b>
6.	The project authority must strictly comply with the previous made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project, if required. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	Provisions of MSIHC Rules, 1989 and amendments are strictly followed.  <b>The requisite On-site and Off-site Disaster Management Plans are available.</b> <b>Complied</b>
7.	Handling of Hazardous Waste shall be as per the Hazardous Waste (Management and Handling Rules, 2003). Authorization from the State Pollution Control Board must be obtained for collections, treatment, and storage disposal of Hazardous Wastes.	Guwahati Refinery is strictly complying with the rules and regulations under Manufacture Storage and Import of hazardous chemicals rules 1989 and amendments thereafter. Oily sludge details from Dec'16-May'17 is attached as Annexure-VI The refinery has authorization from Pollution Control Board, Assam under Hazardous Waste (Management and Handling) Rules 2008 with validity up to 27.01.2020 and strictly adheres to the terms and conditions of the authorization. <b>Complied</b>
8.	The project authorities will provide adequate funds as non-recurring and recurring expenditures to implement the	Following funds is being utilized during the year 2015-16

*P. S. Saha*



	conditions stipulated by the Ministry of Environment & Forests as well as the State Govt. along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	<p>BIOREMEDIATION : Rs 43.17 lakhs</p> <p>TREE PLANTATION. Rs 79.36 lakhs</p> <p>ENVIRONMENT MONITORING :Rs 14.46 Lakhs</p> <p>No funds diverted.</p> <p><b>Complied.</b></p>
9.	The company shall develop rainwater harvesting structures to harvest the runoff water for replenishment of ground water	<p>Every year 2 (two) nos. rain water harvesting projects are implemented.</p> <p>In 2016-17, Rainwater harvesting schemes were implemented at Community Development Hall (Sector -2) and Training Hall of IOCL, Guwahati Refinery.</p> <p><b>Complied</b></p>
10.	The concerned Regional Office of this Ministry/ Central Pollution Control Board/ State Pollution Control Board will monitor the stipulated conditions. 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.	<p>Stipulated conditions are regularly monitored by State Pollution Control Board and the six monthly reports are submitted to Regional Office, Shillong Ministry of Environment &amp; Forests.</p> <p>It is also updated in the website <a href="http://www.iocl.com">www.iocl.com</a></p> <p><b>Complied</b></p>
11.	The project proponent should inform the public that the project has been accorded environment 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 & Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . This should be advertised within seven days from the date of issue of the clearance letter at least 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.	<p>The copies of the Environment clearance from the Ministry are made available to SPCB. Guwahati Refinery informed the public that the project has been accorded environmental clearance by MoE&amp;F through the daily English Newspaper 'The Sentinel' and the local newspaper the 'Dainik Assam' on 25th March, 2008</p> <p><b>Complied</b></p>
12.	A separate environment management cell with full-fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of Senior Executive.	<p>Separate environment management cell headed by GM exists. Laboratory facility is available in the Refinery.</p> <p><b>Complied</b></p>
13.	The Project Authorities shall inform the Regional Office as well as the Ministry the date of Financial closure and final approval of the project by the concerned authorities and the date of start of the project	<p>The project started in 2010.</p> <p><b>Complied</b></p>

*P. J. J.*

## Annexure-I

## Data on Stack Emission Monitoring at Guwahati Refinery

(Dec'16-May'17)

Stack	Month	Fuel burnt (type with %)	Concentration in mg / Nm3 unless stated					
			SO2		NOX		PM	
			Limit	Actual	Limit	Actual	Limit	Actual
CDU	Dec-16	FO/FG	1360	345	429	185	81	26
	Jan-17	FO/FG	1024	390	409	219	63	38
	Feb-17	FO/FG	1042	413	410	230	64	43
	Mar-17	FO/FG	1332	458	428	263	79	29
	Apr-17	FO/FG	1526	558	439	226	91	52
	May-17	FO/FG	1295	235	425	164	78	60
DCU	Dec-16	FO/FG	371	226	369	131	45	30
	Jan-17	FO/FG	443	195	374	159	34	30
	Feb-17	FO/FG	404	233	371	174	36	28
	Mar-17	FO/FG	401	208	371	144	35	29
	Apr-17	FO/FG	439	213	374	171	31	29
	May-17	FO/FG	345	277	368	143	26	24
HDT	Dec-16	FG	50	11	350	78	10	8
	Jan-17	FG	50	9	350	82	10	9
	Feb-17	FG	50	14	350	85	10	8
	Mar-17	FG	50	10	350	57	10	8
	Apr-17	FG	50	24	350	85	10	9

*Refinery*



	May-17	FG	50	12	350	129	10	8
HGU	Dec-16	Naphta/FG	1400	19	432	57	84	11
	Jan-17	Naphta	1700	23	450	88	100	14
	Feb-17	Naphta	1700	17	450	83	100	17
	Mar-17	Naphta	1700	35	450	58	100	22
	Apr-17	Naphta	1700	53	450	99	100	19
	May-17	Naphta	1700	28	450	46	100	21
	ISOM	Dec-16	FG	50	10	350	33	10
Jan-17		FG	50	10	350	33	10	8
Feb-17		FG	50	12	350	40	10	8
Mar-17		FG	50	13	350	42	10	7
Apr-17		FG	50	13	350	35	10	8
May-17		FG	50	11	350	26	10	5
INDM AX	Dec-16	FO	1700	93	450	75	100	62
	Jan-17	FO	1700	108	450	97	100	74
	Feb-17	FO	1700	60	450	104	100	73
	Mar-17	FO	Shutdown					
	Apr-17	FO	1700	45	450	116	100	57
	May-17	FO	1700	20	450	46	100	48

*P. J. ...*

Blr-6&7	Dec-16	FO/FG	1219	474	421	193	74	71	
	Jan-17	FO/FG	1394	413	431	180	83	65	
	Feb-17	FO/FG	1168	421	430	215	71	68.9	
	Mar-17	FO/FG	1276	512	424	142	77	58	
	Apr-17	FO/FG	998	467	407	218	62	60	
	May-17	FO/FG	1134	272	416	127	69	58	
Blr-5	Dec-16	FO/FG	1700	279	450	141	100	42	
	Feb-17	FO/FG	1091	375	413	195	67	57	
	Mar-17	FO/FG	Shutdown						
	Apr-17	FO/FG	596	384	383	199	40	37	
	May-17	FO/FG	1366	229	430	140	82	37	

Stack	Month	Fuel burnt (type with %)	Concentration in mg / Nm3 unless stated					
			CO (ppm)		Ni+V		S in Liq. Fuel, % wt	
			Limit	Actual	Limit	Actual	Limit	Actual
CDU	Dec-16	FO/FG	190	16	5	0.0271/BDL	1	0.44
	Jan-17	FO/FG	180	14	5	0.0366/BDL	1	0.43
	Feb-17	FO/FG	180	12	5	0.0477/BDL	1	0.43
	Mar-17	FO/FG	189	20	5	0.0266/BDL	1	0.50
	Apr-17	FO/FG	195	19	5	0.0471/BDL	1	0.45
	May-17	FO/FG	188	19	5	BDL/BDL	1	0.43
DCU	Dec-16	FO/FG	160	6	5	0.0124/BDL	1	0.44

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	Jan-17	FO/FG	162	6	5	0.0189/BDL	1	0.43
	Feb-17	FO/FG	161	8	5	0.027/BDL	1	0.43
	Mar-17	FO/FG	161	9	5	0.0285/BDL	1	0.50
	Apr-17	FO/FG	162	8	5	0.0202/BDL	1	0.45
	May-17	FO/FG	159	8	5	0.0242/BDL	1	0.43
HDT	Dec-16	FG	150	2	5	BDL/BDL	1	0.44
	Jan-17	FG	150	3	5	BDL/BDL	1	0.43
	Feb-17	FG	150	4	5	BDL/BDL	1	0.43
	Mar-17	FG	150	4	5	BDL/BDL	1	0.50
	Apr-17	FG	150	2	5	BDL/BDL	1	0.45
	May-17	FG	150	7	5	BDL/BDL	1	0.43
HGU	Dec-16	Napht ha/FG	191	4	5	BDL/BDL	1	0.44
	Jan-17	Napht ha	200	3	5	BDL/BDL	1	0.43
	Feb-17	Napht ha	200	3	5	BDL/BDL	1	0.43
	Mar-17	Napht ha	200	5	5	BDL/BDL	1	0.50
	Apr-17	Napht ha	200	4	5	BDL/BDL	1	0.45
	May-17	Napht ha	200	3	5	BDL/BDL	1	0.43
ISOM	Dec-16	FG	150	5	5	BDL/BDL	1	0.44
	Jan-17	FG	150	4	5	BDL/BDL	1	0.43

*P. Infanti*

	Feb-17	FG	150	4	5	BDL/BDL	1	0.43
	Mar-17	FG	150	6	5	BDL/BDL	1	0.50
	Apr-17	FG	150	4	5	BDL/BDL	1	0.45
	May-17	FG	150	5	5	BDL/BDL	1	0.43
INDM AX	Dec-16	FO	400	5	5	0.023/BDL	1	0.44
	Jan-17	FO	400	4	5	0.027/BDL	1	0.43
	Feb-17	FO	400	7	5	0.021/BDL	1	0.43
	Mar-17	FO	Shutdown					
	Apr-17	FO	400	8	5	0.0295/BDL	1	0.45
	May-17	FO	400	8	5	0.0175/BDL	1	0.43
Blr- 6&7	Dec-16	FO/FG	185	7	5	0.0266/BDL	1	0.44
	Jan-17	FO/FG	191	7	5	0.0332/BDL	1	0.43
	Feb-17	FO/FG	184	8	5	0.0417/BDL	1	0.43
	Mar-17	FO/FG	187	10	5	0.0255/BDL	1	0.50
	Apr-17	FO/FG	179	6	5	0.0375/BDL	1	0.45
	May-17	FO/FG	183	10	5	0.0122/BDL	1	0.43
Blr-5	Dec-16	FO/FG	200	5	5	0.0132/BDL	1	0.44
	Feb-17	FO/FG	182	6	5	0.0282/BDL	1	0.43
	Mar-17	Shutdown						
	Apr-17	FO/FG	167	5	5	0.0214/BDL	1	0.45
	May-17	FO/FG	190	12	5	0.0185/BDL	1	0.43

- H2S in fuel gas is present in traces
- Opacity of INDMAX unit is 29% (limit 30%)

*P. S. S.*



SRUData:

Parameters	Limit for Existing SRU	Actual Values
Sulfur Recovery %	94	94.1
NO <sub>x</sub> , mg/Nm <sup>3</sup>	350	134.2
CO, ppm	150	7.7

\*BDL- Below Detectable Limit

\*FO- Fuel Oil

\*FG- Fuel Gas

*Luigi*

**Annexure-II**

**Data on Ambient Air Monitoring at Guwahati Refinery**

AMBIENT AIR MONITORING REPORT						Dec'16-May-17						
AMBIENT AIR QUALITY MONITORING REPORT												
	SO2	NO2	PM 10	PM 2.5	Ozo ne (O3)	Lead (Pb)	CO	Amm onia (NH3)	Benze ne (C6H6 )	Ben zo(O ) Pyre ne	Arse nic (As)	Nickel (Ni)
<b>Concentration of Pollutants</b>												
	µg/ m3	µg/ m3	µg/ m3	µg/ m3	µg/ m3	µg/m3	mg/ m3	µg/m 3	µg/m 3	ng/ m3	ng/ m3	ng/m 3
<b>Limit</b>	<b>80</b>	<b>80</b>	<b>100</b>	<b>60</b>	<b>100</b>	<b>1</b>	<b>2</b>	<b>400</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>20</b>
<b>Location : Adm Building</b>												
<b>Max</b>	16.3	48.6	98.0	58.0	42.6	0.09	0.96	26.00	3.95	0.98	1.96	13.66
<b>Min</b>	5.8	21.2	61.0	28.0	<10.0	<0.02	0.45	<10.0	<2.08	<0.4	<1.0	<4.0
<b>Avg.</b>	9.9	35.2	85.0	45.3	26.6	0.04	0.72	17.56	2.64	0.64	1.34	8.33
<b>Location : Guest House</b>												
<b>Max</b>	14.7	47.3	97.0	57.0	37.4	0.08	0.96	23.40	3.96	0.98	2.03	12.87
<b>Min</b>	4.9	20.2	46.0	17.0	<10.0	<0.02	0.44	<10.0	<2.08	<0.4	<1.0	<4.0
<b>Avg.</b>	8.6	34.5	82.7	44.3	24.6	0.04	0.71	15.49	2.53	0.58	1.31	7.55
<b>Location : Sector II</b>												
<b>Max</b>	16.5	52.6	97.0	59.0	35.5	0.09	0.95	31.2	3.96	0.97	2.36	13.4
<b>Min</b>	4.2	18.5	48.0	21.0	<10.0	<0.02	0.32	<10.0	<2.08	<0.4	<1.0	<4.0
<b>Avg.</b>	8.5	34.7	83.7	43.8	24.2	0.04	0.68	15.6	2.62	0.66	1.36	7.4

*P. J. Jaisankar*



Location : WTP												
<b>Max</b>	17.3	46.5	97.0	58.0	34.2	0.04	0.86	18.6	2.38	0.99	1.7	10.4
<b>Min</b>	4.2	12.2	30.0	12.0	<10.0	<0.02	0.25	<10.0	<2.08	<0.4	<1.0	<4.0
<b>Avg.</b>	5.8	25.0	63.2	34.3	17.1	0.02	0.45	11.7	2.09	0.4	1.0	5.4
<b>Note :</b>	BDL= Below Detections Limit											

*Prof. J. S. ...*

**Annexure-III**

**Fugitive Emissions**

Fugitive Emission (Dec'16-May'17)						
		In between H2U & HDT	Near Indmax	Near CDU	Near Unit No. 6 & 7	Near DCU
<b>Dec-16</b>	<b>Total HC(ppm)/Benz ene(MG/NM3)</b>	11.77/0.272	9.77/0.251	10.45/0.233	12.57/0.364	12.5/0.371
<b>Jan-17</b>	<b>Total HC(ppm)/Benz ene(MG/NM3)</b>	12.35/0.321	9.91/0.249	10.45/0.249	12.57/0.467	12.50/0.323
<b>Feb-17</b>	<b>Total HC(ppm)/Benz ene(MG/NM3)</b>	11.95/0.286	11.57/0.363	14.75/0.410	11.94/0.312	12.24/0.319
<b>Mar-17</b>	<b>Total HC(ppm)/Benz ene(MG/NM3)</b>	17.06/0.355	16.38/0.364	15.69/0.505	13.06/0.292	14.52/0.324
<b>Apr-17</b>	<b>Total HC(ppm)/Benz ene(MG/NM3)</b>	16.00/0.379	13.94/0.385	14.76/0.329	14.28/0.407	11.89/0.314
<b>May-17</b>	<b>Total HC(ppm)/Benz ene(MG/NM3)</b>	10.70/0.233	11.42/0.312	17.75/0.475	14.16/0.370	10.0/0.306

*Signature*



Annexure-IV

Data on Discharged Effluent Analysis at Guwahati Refinery

Dec'16-May'17		
<u>PARAMETER</u>	<u>LIMIT (mg/m3 except PH)</u>	<u>AVERAGE</u>
pH	6.0 - 8.5	7.2
Oil & Grease	5.0	3.4
BOD	15.0	9
COD	125.0	76
TSS	20.0	14
Phenols	0.35	0.28
Sulphides	0.5	0.02
CN	0.20	0.011
Ammonia as N	15.0	5.63
TKN	40.0	10.8
P	3.0	0.05
Cr (Hexavalent)	0.1	0.01
Cr (Total)	2.0	0.01
Pb	0.1	0.01
Hg	0.01	0.001
Zn	5.0	0.09
Ni	1.0	0.02
Cu	1.0	0.02
V	0.2	0.2

*Signature*

Benzene	0.1	0.005
Benzo (a) -Pyrene	0.2	0.0001

*Ref: 101*



Benzene	0.1	0.005
Benzo (a) -Pyrene	0.2	0.0001

*Refactor*

Annexure – V

NOISE LEVEL MONITORING

BATTERY AREA

NOISE LEVEL MONITORING

BATTERY AREA

GUWAHATI REFINERY (Dec'16-May'17)

SL. NO.	AREA	LOCATION	AVERAGE EXPOSURE FOR AN EMPLOYEE PER SHIFT (HRS)	READING IN dBA
1	TPS	Boiler - 3	1.30 hrs	OFF
		Boiler - 4	1.30 hrs	85.0
		Boiler - 5	1.30 hrs	92.0
		Boiler - 6	1.30 hrs	91.0
		Boiler - 7	1.30 hrs	88.0
		Boiler Control Room	8.0 hrs	67.0
		TG - 3	1.30 hrs	OFF
		TG - 4	1.30 hrs	98.0
		TG - 5	1.30 hrs	92.0
		Turbine Control Room	8.0 hrs	65.0
		DM Plant Pump Area	1.30 hrs	94.0
		DM Plant Control Room	8.0 hrs	66.0

*Signature*



2	CDU	Model Pump House	1.30 hrs	95.0
		Cold Pump House	1.30 hrs	94.0
		Hot Pump House	1.30 hrs	95.0
		NSF Area	1.30 hrs	94.0
		CDU Field Control Room	8.0 hrs	66.0
3	DCU	Cold Pump House	1.30 hrs	94.0
		Hot Pump House	1.30 hrs	96.0
		Air Compressor Area	1.30 hrs	93.0
		DCU Field Control Room	8.0 hrs	67.0
4	NITROGEN	Air Compressor 013-K-01A	1.00 hr	97.0
		Air Compressor 013-K-01B	1.00 hr	98.0
		Air Compressor 013-K-01C	1.00 hr	98.0
5	INDMAX	Main Air Blower Area	1.00 hr	94.0

*Indmax*

		INDMAX Field Control Room	8.0 hrs	67.0
6	SRU	Main Air Blower 51A-K-01A	1.30 hrs	96.0
		Main Air Blower 51A-K-01B	1.30 hrs	OFF
		SRU Field Control Room	8.0 hrs	64.0
7	HDT	Pump Area	1.00 hr	90.0
		HDT/HGU Field Control Room	8.0 hrs	65.0
8	HGU	Pump Area	1.00 hr	93.0
		HDT/HGU Field Control Room	8.0 hrs	65.0
9	MSQU	Pump Area	1.00 hr	92.0
		MSQU Field Control Room	8.0 hrs	64.0
10	ETP	Air Blower Area	1.00 hr	97.0
		ETP Control Room	8.0 hrs	68.0

*Prof. J. J. J.*