

**STATUS OF ENVIRONMENTAL CLEARANCE CONDITIONS AS
ON 31.03.2013**

Ref: MOEF LETTER NO. 1-11011/215/2007-1A-H(I) Dt. 7th Feb.2008.

S. No	Conditions	Status as on 31.03.2013
	SPECIFIC CONDITIONS	
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 being complied.
2.	The company shall comply with all the stipulations of environmental clearance issued vide File No.11011/375/2006-IA.H(I) dated 22 nd March 2007	Guwahati Refinery obtained no such environmental clearance.
3.	The process emission (SO ₂ , Nox, 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 unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	Complied. Emissions from the process Units are monitored every month and the results are well within the applicable norms. Data for the last months enclosed as Annexure-I&II . Fugitive emission data collected is enclosed as Annexure -III
4.	The improvement project shall be installed within the existing premises and no additional land shall be acquired for the project.	Complied. The proposed project shall be installed within the existing premises.
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	Complied. (Attached as Annx-III)

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	submitted to the Ministry's regional office at Shillong.	
6.	For control of fugitive emission all unsaturated hydrocarbon will be routed to the flare system and the flare system shall be designed for smokeless burning.	Complied. All uncontrolled hydrocarbon from flare are routed through FGRS unit for its recovery. Only minimum quantity of hydrocarbon is allowed to burn in smokeless flare.
7.	The Company shall strictly follow all the recommendation mention in the charter on corporate responsibility for environmental protection (CREP).	Complied. Is being followed strictly.
8.	Occupational health surveillance of worker shall be done on a regular basis and records maintained as per the Factory Act.	Complied. Regular health checks up done to employees as per the factory and report send to APCB regularly.
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.	Complied. Because of space constraint & safety reason green belt cannot be expanded in the refinery. However the plantation is taken up in township areas. About 250 tree saplings planted in 2012-13.
10.	The company shall make suitable arrangement for disposed of catalyst waste and alumina balls. The report of disposal of this waste shall be submitted to Ministry's regional office at Shillong.	Provisions of MSIHC Rules, 1989 and amendments are followed. MoE&F shall be kept informed whenever catalyst waste is disposed.
11.	The company shall take necessary measures 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 be installed to minimize gaseous	Refinery has install fire fighting facilities in compliance with OISD standards. However, there is no ground flaring system followed in the Refinery.

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	emissions during flaring.	
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.	Complied. All applicable Petroleum rules & OISD standards are followed for laying out various facilities.
	GENERAL CONDITIONS	
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.	Stipulations of SPCB & state Govt. and any other statutory shall be complied.
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 alterations in the project proposal from those submitted to the Ministry for clearance, a fresh reference shall be made to the Ministry.	Complied. Is being complied.
3.	At no time, the emissions 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.	Complied. To meet the prescribed standards, online and manual monitoring systems are set. There are no well sites in the Refinery.
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	Complied. Wastewater is properly collected and treated in ETP through physical, chemical and biological process to

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	Consents provided by the relevant SPCB.	conform to the standards.
5.	<p>The overall noise levels in and around the premises shall be limited within the prescribed standards (75 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation.</p> <p>The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz 75 dBA (day time) 70 dBA (night time)</p>	<p>Complied. Regular noise level monitoring is done and observations are within the prescribed limits. Observations are attached as Annx-V.</p> <p>Complied. Regular ambient noise level monitoring is done and observations are within the prescribed limits</p>
6.	<p>The project authorities must strictly comply with the provisions 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.</p> <p>Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.</p>	<p>Complied. Provisions of MSIHC rules, 1989 and amendments are strictly followed.</p> <p>Requisite On-site and Off-site Disaster Management Plans are prepared and followed.</p>
7.	<p>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.</p>	<p>Complied. Present authorization is valid up to 31st March '14.</p>
8.	<p>The project authorities will provide adequate funds as non-recurring and recurring expenditures to implement</p>	<p>Complied.</p>

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	the conditions stipulated by the Ministry of Environment and 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..	
9.	The company shall develop rainwater-harvesting structures to harvest the runoff water for replacement of ground water.	Complied.
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.	Stipulations are being complied & updated in the website www.iocl.com .
11.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://WWW.envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter at least 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	Complied. Guwahati Refinery informed the public that the project has been accorded environmental clearance by MoE&F through the daily English paper 'The Sentinel' and the local language paper the 'Dainik Assam' on 25 th March'08.

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	Regional Office of this Ministry.	
12.	A separate environment management cell with full-fledged laboratory facilities to carryout various management and monitoring functions shall be set up under the control of Senior Executive.	Complied. Separate environment management cell headed by DGM(HSE) exists. Laboratory facility is available in the refinery.
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.	Is being complied

Annexure -I

**Data on Stack Emission Monitoring at Guwahati Refinery
(Oct'12 – March'13)**

Stack	Concentration (mg/NM3)		
	PM	SO2	NOX
CDU	52-59	428-611	170-221
DCU	41-52	319-586	184-211
TPS Boiler:			
Blr 5	98-124	229-375	138-173
Blr 6 & 7	98-113	269-407	169-190
HDT	60-63	85-103	86-149
HGU	39-41	143-163	103-123
SRU	83-135	1791-1904	92-98
Indmax	82-92	61-199	85-140
ISOM	39-41	89-158	91-119

Annexure-II

**Data on Ambient Air Monitoring at Guwahati Refinery
(Oct'12 – Mar'13)- Values in ug/m3**

Sampling and analysis done by M/S Mitrask pvt. Ltd.

AMBIENT AIR QUALITY MONITORING REPORT

	Concentration of Pollutants											
	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	CO (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a)pyrene (ng/m ³)
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality	100	60	80	80	400	180	2000	1	20	6	5	1
Location : Adm Building												
Max.	95	59	12	56	52	BDL	842	0.12	13	BDL	4	BDL
Min.	65	34	6	30	24	BDL	388	0.03	3	BDL	3.7	BDL
Avg.	80	47	9	43	38	BDL	615	0.08	8	BDL	4	BDL

Location : Guest House												
Max.	95	57	8	49	42	BDL	620	0.08	12.8	BDL	BDL	BDL
Min.	56	27	6	26	22	BDL	320	0.02	3.8	BDL	BDL	BDL
Avg.	76	42	7	38	32	BDL	470	0.05	8	BDL	BDL	BDL
Location : Sector II												
Max.	99	65	11.9	56	53	BDL	824	0.04	5	BDL	7.7	BDL
Min.	57	30	5	27	27	BDL	338	0.02	4	BDL	3.9	BDL
Avg.	88	48	8	41	40	BDL	581	0.03	5	BDL	6	BDL
Location : WTP												
Max.	91	47	8.4	38	29	BDL	429	0.05	6.59	BDL	BDL	BDL
Min.	46	22	4.3	35	27	BDL	321	0.03	3.9	BDL	BDL	BDL
Avg.	69	35	6	36	28	BDL	375	0.04	5	BDL	BDL	BDL
Note :	BDL= Below Detections Limit :											
Detection Limit of O ₃ : 19.62 µg/m ³ , Ni: 1.0 ng/m ³ As : 2 ng/ m ³ , C ₆ H ₆ : 2.8 µg/m ³ , Benzo(a)pyrene : 0.2 ng/m ³ .												

Annexure III
RESULTS OF FUGITIVE EMISSION MONITORING
AT GUWAHATI REFINERY FOR (Oct'12 – March'13)

Location of Sampling	Total Hydrocarbons ppm	Benzene, mg/m ³
CDU	1.3-1.5	0.08-0.1
SRU	0.7-0.8	0.07-0.08
HGU & HDT	0.85-1.35	0.06-0.14
DCU	1.26-1.29	0.14-0.15
TPS- BL-6&7	0.68-0.94	0.1-0.14

Annexure-IV

**Data on Discharged Effluent Analysis at Guwahati Refinery
(Oct'12 – March'13)**

Sl. No.	Parameter	Concentration value (mg/l except pH)	Concentration value (mg/l except pH)	%age Compliance
		National Limit	Average	
1	pH	6.0 – 8.5	6.5-7.5	100
2	Oil & Grease,ppm	5	2	100
3	BOD,ppm	15	6	100
4	COD,ppm	125	27	100
5	Suspended Solids	20	14	100
6	Phenols	0.35	0.09	100
7	Sulphides	0.5	0.01	100
8	CN	0.2	0.01	100
9	Ammonia as N	15	0.1	100
10	TKN	40	0.3	100
11	P	3	0.2	100
12	Cr (Hexavalent)	0.1	0.08	100
13	Cr (Total)	2	0.12	100
14	Pb	0.1	0.02	100
15	Hg	0.01	0.01	100
16	Zn	5	0.03	100
17	Ni	1	0.01	100
18	Cu	1	0.05	100
19	V	0.2	0.2	100
20	Benzene	0.1	0.05	100
21	Benzo (a) - Pyrene	0.2	0.01	100

Load Mass Based Effluent data

Figs in Kg/1000 tonnes crude

Sl. No.	Parameter	Quantum value (kg/TMT of Crude processed)	Quantum value (kg/TMT of Crude processed)
		National Limit	Average
1	pH	--	--
2	Oil & Grease	2	0.3
3	BOD,ppm	6	0.8
4	COD,ppm	50	3
5	Suspended Solids	8	2
6	Phenols	0.14	0.012
7	Sulphides	0.2	0.001
8	CN	0.08	0.001
9	Ammonia as N	6	0.01
10	TKN	16	0.04
11	P	1.2	0.02
12	Cr (Hexavalent)	0.04	0.009
13	Cr (Total)	0.8	0.01
14	Pb	0.04	0.002
15	Hg	0.004	0.001
16	Zn	2	0.003
17	Ni	0.4	0.001
18	Cu	0.4	0.005
19	V	0.8	0.025
20	Benzene	0.04	0.006
21	Benzo (a) - Pyrene	0.08	0.001
	Effluent discharge,M3/TMT of crude processed	400/700	127

Annexure - V

**NOISE LEVEL MONITORING
BATTERY AREA
GUWAHATI REFINERY
(Oct'12 – March'13)**

SL. NO.	AREA	LOCATION	AVERAGE EXPOSURE FOR AN EMPLOYEE PER SHIFT (HRS)	READING IN dBA
1	TPS	Boiler - 3	1.30 hrs	Stand-by
		Boiler - 4	1.30 hrs	Stand-by
		Boiler - 5	1.30 hrs	93.0
		Boiler - 6	1.30 hrs	93.0
		Boiler - 7	1.30 hrs	92.0
		Boiler Control Room	8.0 hrs	62.0
		TG-3	1.30 hrs.	97.0
		TG - 4	1.30 hrs	Stand-by
		TG - 5	1.30 hrs	97.0
		Turbine Control Room	8.0 hrs	67.0
		DM Plant Pump Area	1.30 hrs	94.0
		DM Plant Control Room	8.0 hrs	64.0
2	CDU	Model Pump House	1.30 hrs	93.0
		Cold Pump House	1.30 hrs	92.0
		Hot Pump House	1.30 hrs	91.0
		NSF Area	1.30 hrs	95.0
		CDU Field Control Room	8.0 hrs	67.0
3	DCU	Cold Pump House	1.30 hrs	95.0
		Hot Pump House	1.30 hrs	95.0
		Air Compressor Area	1.30 hrs	96.0
		DCU Field Control Room	8.0 hrs	72.0
4	NITROGEN	Air Compressor 013-K-01A	1.00 hr	Stand-by
		Air Compressor 013-K-01B	1.00 hr	99.0
		Air Compressor 013-K-01C	1.00 hr	Stand-by
		Nitrogen Field Control Room	8.0 hrs	63.0
5	INDMAX	Main Air Blower Area	1.00 hr	95.0
		INDMAX Field Control	8.0 hrs	61.0

		Room		
6	SRU	Main Air Blower 51A-K-01A	1.30 hrs	Stand-by
		Main Air Blower 51A-K-01B	1.30 hrs	97.0
		SRU Field Control Room	8.0 hrs	63.0
7	HDT	Pump Area	1.00 hr	94.0
		HDT/HGU Field Control Room	8.0 hrs	66.0
8	HGU	Pump Area	1.00 hr	94.0
		HDT/HGU Field Control Room	8.0 hrs	66.0
9	MSQU	Pump Area	1.00 hr	95.0
		MSQU Field Control Room	8.0 hrs	65.0
10	ETP	Air Blower Area	1.00 hr	97.0
		ETP Control Room	8.0 hrs	68.0

Permissible Noise Level For Continuous Exposure (OISD-GDN-166, JULY 1997)

Duration per day (hour)	Sound level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25 or less	115

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	SPECIFIC CONDITIONS	
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 being complied.
2.	The company shall comply with all the stipulations of environmental clearance issued vide File No.11011/375/2006-IA.H(I) dated 22 nd March 2007	Guwahati Refinery obtained no such environmental clearance.
3.	The process emission (SO ₂ , Nox, HC, VOCs and Benzene) from various units shall confirm 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 unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	Complied. Emissions from the process Units are monitored every month and the results are well within the applicable norms. Data for the last six months enclosed as Annexure-I&II . Fugitive emission data collected quarterly is enclosed as Annexure -III
4.	The improvement project shall be installed within the existing premises and no additional land shall be acquired for the project.	Complied. The proposed project shall be Installed within the existing premises.
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.	Complied. (Attached as Annx-III)
6.	For control of fugitive emission all unsaturated hydrocarbon will be routed to the flare system and the flare system shall be designed for smokeless burning.	Complied. All uncontrolled hydrocarbon from flare are routed through FGRS unit for its recovery. Only minimum quantity of hydrocarbon is allowed to

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		burn in smokeless flare.
7.	The Company shall strictly follow all the recommendation mention in the charter on corporate responsibility for environmental protection (CREP).	Complied. Is being followed strictly.
8.	Occupational health surveillance of worker shall be done on a regular basis and records maintained as per the Factory Act.	Complied. Regular health checks up done to employees as per the factory and report send to APCB regularly.
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.	Complied. Because of space constraint & safety reason green belt cannot be expanded in the refinery. However the plantation is taken up in township areas. About 250 tree saplings planted in 2012-13.
10.	The company shall make suitable arrangement for disposed of catalyst waste and alumina balls. The report of disposal of this waste shall be submitted to Ministry's regional office at Shillong.	Provisions of MSIHC Rules, 1989 and amendments are followed. MoE&F shall be kept informed whenever catalyst waste is disposed.
11.	The company shall take necessary measures 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 be installed to minimize gaseous emissions during flaring.	Refinery has install fire fighting facilities in compliance with OISD standards. However, there is no ground flaring system followed in the Refinery.
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.	Complied. All applicable Petroleum rules & OISD standards are followed for laying out various facilities.
	GENERAL CONDITIONS	
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.	Stipulations of SPCB &state Govt. and any other statutory shall be complied.
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 alterations in the project proposal from those submitted to the Ministry for clearance, a fresh reference	Complied. Is being complied.

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	shall be made to the Ministry.	
3.	At no time, the emissions 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.	Complied. To meet the prescribed standards, online and manual monitoring systems are set. There are no well sites in the Refinery.
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.	Complied. Wastewater is properly collected and treated in ETP through physical, chemical and biological process to conform to the standards.
5.	The overall noise levels in and around the premises shall be limited 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)	Complied. Regular noise level monitoring is done and observations are within the prescribed limits. Observations are attached as Annx-V . Complied. Regular ambient noise level monitoring is done and observations are within the prescribed limits
6.	The project authorities must strictly comply with the provisions 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.	Complied. Provisions of MSIHC rules, 1989 and amendments are strictly followed. Requisite On-site and Off-site Disaster Management Plans are prepared and followed.
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	Complied. Present authorization is valid up to 31 st March '14.

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	obtained for collections, treatment, and storage disposal of hazardous wastes.	
8.	The project authorities will provide adequate funds as non-recurring and recurring expenditures to implement the conditions stipulated by the Ministry of Environment and 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.	Complied.
9.	The company shall develop rainwater-harvesting structures to harvest the runoff water for replacement of ground water.	Complied.
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.	Stipulations are being complied & updated in the website www.iocl.com .
11.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://WWW.envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter at least two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional Office of This Ministry.	Complied. Guwahati Refinery informed the public that the project has been accorded environmental clearance by MoE&F through the daily English paper 'The Sentinel' and the local language paper the 'Dainik Assam' on 25 th March '08.
12.	A separate environment management cell with full-fledged laboratory facilities to carryout various management and monitoring functions shall be set up under the control of Senior Executive.	Complied. Separate environment management cell headed by CTSM exists. Laboratory Facilities are available in the refinery.

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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.	Is being complied

Annexure -I

**Data on Stack Emission Monitoring at Guwahati Refinery
(Oct'12 – March'13)**

Stack	Concentration (mg/NM3)		
	PM	SO2	NOX
CDU	52-59	428-611	170-221
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Annexure-II

**Data on Ambient Air Monitoring at Guwahati Refinery
(Oct'12 – Mar'13)- Values in ug/m3**

Sampling and analysis done by M/S Mitrask pvt. Ltd.

AMBIENT AIR QUALITY MONITORING REPORT

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Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality	100	60	80	80	400	180	2000	1	20	6	5	1
Location : Adm Building												
Max.	95	59	12	56	52	BDL	842	0.12	13	BDL	4	BDL
Min.	65	34	6	30	24	BDL	388	0.03	3	BDL	3.7	BDL
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Location : Guest House												
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Avg.	76	42	7	38	32	BDL	470	0.05	8	BDL	BDL	BDL
Location : Sector II												
Max.	99	65	11.9	56	53	BDL	824	0.04	5	BDL	7.7	BDL
Min.	57	30	5	27	27	BDL	338	0.02	4	BDL	3.9	BDL
Avg.	88	48	8	41	40	BDL	581	0.03	5	BDL	6	BDL
Location : WTP												
Max.	91	47	8.4	38	29	BDL	429	0.05	6.59	BDL	BDL	BDL
Min.	46	22	4.3	35	27	BDL	321	0.03	3.9	BDL	BDL	BDL
Avg.	69	35	6	36	28	BDL	375	0.04	5	BDL	BDL	BDL
BDL= Below Detections Limit : Note : Detection Limit of O ₃ : 19.62 µg/m ³ , Ni: 1.0 ng/m ³ As : 2 ng/ m ³ , C ₆ H ₆ : 2.8 µg/m ³ , Benzo(a)pyrene : 0.2 ng/m ³ .												

Annexure III

RESULTS OF FUGITIVE EMISSION MONITORING

AT GUWAHATI REFINERY FOR (Oct'12 – March'13)

Location of Sampling	Total Hydrocarbons ppm	Benzene, mg/m ³
CDU	1.3-1.5	0.08-0.1
SRU	0.7-0.8	0.07-0.08
HGU & HDT	0.85-1.35	0.06-0.14
DCU	1.26-1.29	0.14-0.15
TPS- BL-6&7	0.68-0.94	0.1-0.14

Annexure-IV

**Data on Discharged Effluent Analysis at Guwahati Refinery
(Oct'12 – March'13)**

Sl. No.	Parameter	Concentration value (mg/l except pH)	Concentration value (mg/l except pH)	%age Compliance
		National Limit	Average	
1	pH	6.0 – 8.5	6.5-7.5	100
2	Oil & Grease,ppm	5	2	100
3	BOD,ppm	15	6	100
4	COD,ppm	125	27	100
5	Suspended Solids	20	14	100
6	Phenols	0.35	0.09	100
7	Sulphides	0.5	0.01	100
8	CN	0.2	0.01	100
9	Ammonia as N	15	0.1	100
10	TKN	40	0.3	100
11	P	3	0.2	100
12	Cr (Hexavalent)	0.1	0.08	100
13	Cr (Total)	2	0.12	100
14	Pb	0.1	0.02	100
15	Hg	0.01	0.01	100
16	Zn	5	0.03	100
17	Ni	1	0.01	100
18	Cu	1	0.05	100
19	V	0.2	0.2	100
20	Benzene	0.1	0.05	100
21	Benzo (a) - Pyrene	0.2	0.01	100

Load Mass Based Effluent data

Figs in Kg/1000 tonnes crude

Sl. No.	Parameter	Quantum value (kg/TMT of Crude processed)	Quantum value (kg/TMT of Crude processed)
		National Limit	Average
1	pH	--	--
2	Oil & Grease	2	0.3
3	BOD,ppm	6	0.8
4	COD,ppm	50	3
5	Suspended Solids	8	2
6	Phenols	0.14	0.012
7	Sulphides	0.2	0.001
8	CN	0.08	0.001
9	Ammonia as N	6	0.01
10	TKN	16	0.04
11	P	1.2	0.02
12	Cr (Hexavalent)	0.04	0.009
13	Cr (Total)	0.8	0.01
14	Pb	0.04	0.002
15	Hg	0.004	0.001
16	Zn	2	0.003
17	Ni	0.4	0.001
18	Cu	0.4	0.005
19	V	0.8	0.025
20	Benzene	0.04	0.006
21	Benzo (a) - Pyrene	0.08	0.001
	Effluent discharge, M3/TMT of crude processed	400/700	127

Annexure - V

**NOISE LEVEL MONITORING
BATTERY AREA
GUWAHATI REFINERY
(Oct'12 – March'13)**

SL. NO.	AREA	LOCATION	AVERAGE EXPOSURE FOR AN EMPLOYEE PER SHIFT (HRS)	READING IN dBA
1	TPS	Boiler - 3	1.30 hrs	Stand-by
		Boiler - 4	1.30 hrs	Stand-by
		Boiler - 5	1.30 hrs	93.0
		Boiler - 6	1.30 hrs	93.0
		Boiler - 7	1.30 hrs	92.0
		Boiler Control Room	8.0 hrs	62.0
		TG-3	1.30 hrs.	97.0
		TG - 4	1.30 hrs	Stand-by
		TG - 5	1.30 hrs	97.0
		Turbine Control Room	8.0 hrs	67.0
		DM Plant Pump Area	1.30 hrs	94.0
		DM Plant Control Room	8.0 hrs	64.0
2	CDU	Model Pump House	1.30 hrs	93.0
		Cold Pump House	1.30 hrs	92.0
		Hot Pump House	1.30 hrs	91.0
		NSF Area	1.30 hrs	95.0
		CDU Field Control Room	8.0 hrs	67.0
3	DCU	Cold Pump House	1.30 hrs	95.0
		Hot Pump House	1.30 hrs	95.0
		Air Compressor Area	1.30 hrs	96.0
		DCU Field Control Room	8.0 hrs	72.0
4	NITROGEN	Air Compressor 013-K-01A	1.00 hr	Stand-by
		Air Compressor 013-K-01B	1.00 hr	99.0
		Air Compressor 013-K-01C	1.00 hr	Stand-by
		Nitrogen Field Control Room	8.0 hrs	63.0
5	INDMAX	Main Air Blower Area	1.00 hr	95.0
		INDMAX Field Control	8.0 hrs	61.0

		Room		
6	SRU	Main Air Blower 51A-K-01A	1.30 hrs	Stand-by
		Main Air Blower 51A-K-01B	1.30 hrs	97.0
		SRU Field Control Room	8.0 hrs	63.0
7	HDT	Pump Area	1.00 hr	94.0
		HDT/HGU Field Control Room	8.0 hrs	66.0
8	HGU	Pump Area	1.00 hr	94.0
		HDT/HGU Field Control Room	8.0 hrs	66.0
9	MSQU	Pump Area	1.00 hr	95.0
		MSQU Field Control Room	8.0 hrs	65.0
10	ETP	Air Blower Area	1.00 hr	97.0
		ETP Control Room	8.0 hrs	68.0

Permissible Noise Level For Continuous Exposure (OISD-GDN-166, JULY 1997)

Duration per day (hour)	Sound level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25 or less	115