

STATUS OF ENVIRONMENTAL CLEARANCE CONDITIONS
AS ON 30.09.2012

Ref: **MOEF LETTER NO. J-11011/1/2000-1A II(I) dt.24/04/2000**

Sl. No	Conditions	Status as on 30.09.12
	SPECIFIC CONDITIONS	
1.	The gaseous emission (SO ₂ and NO _x , HC) from the various process units should conform to the standards prescribed under Environment (Protection) Rules, 1986 or norms stipulated by the SPCB whichever is more stringent. At no time, the emission level should go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.	Complied. Emissions from the process Units are monitored every month and the results are well within the applicable norms. Monitoring results Annex- I .
2.	Adequate ambient air quality monitoring stations ((SO ₂ and NO _x , HC) should be set up in the refinery area in consultation with SPCB, based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs. Continuous on-line stack monitoring equipment should be installed for measurement of SO ₂ and NO _x , HC.	Complied. Already 4 nos. of Ambient Air Monitoring stations based on down wind GLC contour and discussions with APCB are in regular operation. One CAAQM station is commissioned in Dec.2008. Stack Monitoring is done once a month with Stack Monitoring kit. Avg. data for last six months is enclosed as Annexure-I On line analysers are operating in CDU, Indmax, DCU, TPS Blrs, HGU, HDT.
3.	Data on ambient air quality and stack emissions as well as fugitive emissions of HC from product	Complied. Ambient Air and stack emissions are regularly monitored and data

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	storage tank yard, crude oil tanks etc. must be regularly monitored and submitted to CPCB/ SPCB once in 3 months and to Ministry (Regional Office Shillong) once in 6 months.	submitted to SPCB as per schedule. Data on last six months enclosed as Annexure-II . Fugitive emission data collected is enclosed as Annexure -III
4.	<p>Liquid effluent generated from the refinery should be treated comprehensively to conform to the load based standards and concentration limits prescribed under EPA rules (MINAS Standards). In consultation with SPCB, adequate number of influent and effluent quality monitoring stations has to be planned.</p> <p>Regular monitoring of the effluent (industrial/domestic and others) quality should be carried out and monitored data submitted quarterly to CPCB/SPCB and half yearly to Ministry (Regional Office, Shillong). The Company must undertake maximum recycling/reusing of the treated effluent for process purposes in addition to green belt development and also adopt adequate water conservation measures.</p> <p>The effluent quality must also be monitored periodically by an independent agency authorized by CPCB and report of the independent agency submitted to Ministry/ CPCB/Assam.</p>	<p>Complied. Liquid effluent is treated in ETP through physical, chemical and Biological process to conform to standards.</p> <p>Complied. Well identified sampling points are available and being used by refinery as well as APCB. The locations are within refinery as well as at the out-fall near Saraighat in river Brahmaputra</p> <p>Complied. Monitored data are being submitted to SPCB/CPCB and MoEF six monthly. Monitored Data enclosed as Annexure-IV.</p> <p>At present around 90% of treated effluent water is reused as coke cutting water, Fire fighting, Cooling water make up and Horticulture.</p> <p>Complied. M/S Mitra SK pvt. Ltd. Kolkata.</p>
5.	Guard ponds of sufficient holding capacity should be provided to	Complied. Besides 2 nos. of guard ponds having capacity of

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	contain the effluent during process disturbances and or ETP failure. The concerned units must be shutdown in cases of effluent quality exceeding the prescribed limits.	more than 6000 M ³ , emergency reservoir having equal capacity is also available to contain effluent during process disturbances.
6.	<p>The Company must adopt mounded storage for LPG.</p> <p>The recommendations made in the Risk Assessment Report must be incorporated while firming up the plant layout and equipment design.</p> <p>The Company must prepare a comprehensive risk assessment/ Analysis of the Refinery and associated facilities once the engineering design and lay out is frozen. Based on this, on-site and off-site emergency preparedness plan must be prepared.</p> <p>Approval from the nodal agency must be obtained before commissioning the project.</p>	<p>2 nos. of mounded LPG storage of 750 MT capacity commissioned in Dec.'03.</p> <p>Complied. All recommendations of RA report have implemented. Major recommendations were decommissioning of KTU, installation of mounded bullets for LPG.</p> <p>Complied. Risk Assessment was conducted through M/S KLG-TNO in March '02. It has again carried out by M/S DNV in Oct.'10. On-site and Offsite Emergency Preparedness Plan prepared accordingly and updated periodically.</p> <p>Complied. CCE approval was obtained.</p>
7.	The Company should explore the feasibility of increasing the density of green belt within the refinery.	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 1550 tree saplings planted in 2011-12. Fresh initiative have been undertaken to further expand this green belt in 2012-13.

Sl. No	Conditions	Status as on 30.09.12
GENERAL CONDITIONS		
1.	The project authority must adhere to the stipulations made by the Assam State Pollution Control Board and State Government.	Complied. Stipulations of SPCB are complied.
2.	No expansion or modification of the plant should be carried out without prior approval of this Ministry.	Being Complied. Expansion of ISOSIV, Indmax unit shall not be done without approval of Ministry.
3.	Handling, manufacturing, storage and transportation of hazardous chemicals should be carried out in accordance with the Manufacture, Storage and Import of Hazardous chemicals Rules, 1989, as amended in 1991. Permissions from State and Central nodal agencies in this regard must be obtained.	Complied.
4.	Hazardous wastes, if any, must be handled and disposed as per Hazardous waste (Management and Handling) Rules, 1989. Authorization from State Pollution Control Board in this regard must be obtained.	Complied. Present authorization is valid up to 31 st March '14.
5.	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 surroundings.	Complied. Facilities viz. Water, shelter sanitation etc. were provided to construction workers while implementing the project.
6.	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,	Complied. Regular monitoring is done results are well within the prescribed limits.

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	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 (daytime) and 70 dBA (nighttime).	Complied. Regular monitoring is done. Results are well within the prescribed limits.
7.	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained.	Complied. Surveillance of the workers is done as per schedule. Health Check up for operators working in hazardous area is done yearly and for other employees of more than 40 years age and above are done once in a year as per normal practices and record maintained.
8.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP.	Complied. Recommendations of EIA & EMP are complied.
9.	A separate environmental management cell with full fledged laboratory facilities to carryout various management and monitoring functions should be set up under the control of Senior Executive.	Complied. Separate environment management cell headed by DGM (HSE) exists. Full Fledged Pollution Control Lab. Facilities already available.
10.	The funds earmarked for the environmental protection measures should not be diverted for any other purpose. Year-wise expenditure should be reported to this Ministry and SPCB.	Complied. Following funds is being utilized Environment monitoring – Rs 22 Lakhs. Bioremediation: Rs 43.4 lakhs No funds diverted.
11.	Six monthly status report on the project vis-à-vis implementation of environmental measures should be submitted to this Ministry (Regional Office, Shillong/CPCB/SPCB).	Complied. Reports are being sent as per recommended schedule.

Sl. No	Conditions	Status as on 30.09.12
12.	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 and Forests at http://WWW.envfor.nic.in . This should be advertised in 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.	Complied. Publication in Local Dailies Assamese and English has been done on 10.6.2000.
13.	The Project Authorities should 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 land development work.	Complied. Approval by IOCL Board ISOSIV : 02.01.98, INDMAX : 19.8.98 The date of start of land development work is not applicable as the Project works started within the existing refinery land

Annexure -I

**Data on Stack Emission Monitoring at Guwahati Refinery
(June'12 – Sept'12)**

Stack	Concentration (mg/NM3) *		
	PM	SO2	NOX
CDU	32-48	110-306	95-166
DCU	50	419	210
TPS Boiler			
Blr 5	138	188	155
Blr 6 & 7	48-55	139-202	97-163
HDT	22-25	45-48	69-77
HGU	32-35	48-74	88-93
SRU	163	1858	95
Indmax	46-94	88-110	77-86

Annexure-II

**Data on Ambient Air Monitoring at Guwahati Refinery
(June'12 – Sept'12)- 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.	65	34.5	13.15	31.5	29	BDL	463	0.055	11.6	BDL	4	BDL
Min.	59	34	7	31	27.6	BDL	416	0.033	6	BDL	3.67	BDL
Avg.	62	34	10	31	28	BDL	440	0.04	9	BDL	4	BDL

Location : Guest House												
Max.	54	29	5	30	29	BDL	412	0.035	7.3	BDL	BDL	BDL
Min.	51	27	4.4	28.3	22.1	BDL	356.5	0.03	6	BDL	BDL	BDL
Avg.	53	28	5	29	26	BDL	384	0.03	7	BDL	BDL	BDL
Location : Sector II												
Max.	75	40	8.95	32	28.05	BDL	725	0.031	6.565	BDL	5	BDL
Min.	58	33.5	7	30.5	28	BDL	344	0.025	5.94	BDL	3.34	BDL
Avg.	67	37	8	31	28	BDL	535	0.028	6	BDL	4	BDL
Location : WTP												
Max.	50	28	5	27	25	BDL	366	0.035	6.1	BDL	BDL	BDL
Min.	45	24	4	26	23	BDL	263	0.025	5.89	BDL	BDL	BDL
Avg.	48	26	5	27	24	BDL	315	0.03	6	BDL	BDL	BDL
Note : BDL= Below Detections Limit : Detection Limit of O3 : 19.62 µg/m3, Ni: 1.0 ng/m3 As : 2 ng/ m3 , C6H6: 2.8 µg/m3 , Benzo(a)pyrene : 0.2 ng/m3 .												

Annexure III
RESULTS OF FUGITIVE EMISSION MONITORING
 AT GUWAHATI REFINERY FOR (June'12 – Sept'12)

Location of Sampling	Total Hydrocarbons ppm	Benzene, ppm,
CDU	4.5	0.07
SRU	6.4	0.12
HDT	7.8	0.2
INDMAX	4.2	0.06
TPS- BL-6	3	0.06
TPS- BL-7	3	0.06

Annexure-IV

**Data on Discharged Effluent Analysis at Guwahati Refinery
(June'12 – Sept'12)**

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	7.0	100
2	Oil & Grease,ppm	5	3	100
3	BOD,ppm	15	9	100
4	COD,ppm	125	41	100
5	Suspended Solids	20	17	100
6	Phenols	0.35	0.1	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	0.1	100
14	Pb	0.1	0.01	100
15	Hg	0.01	0.01	100
16	Zn	5	0.02	100
17	Ni	1	0.01	100
18	Cu	1	0.02	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	11
3	BOD,ppm	6	45
4	COD,ppm	50	208
5	Suspended Solids	8	77
6	Phenols	0.14	0.4
7	Sulphides	0.2	0.05
8	CN	0.08	0.05
9	Ammonia as N	6	0.5
10	TKN	16	1.5
11	P	1.2	1
12	Cr (Hexavalent)	0.04	0.47
13	Cr (Total)	0.8	0.5
14	Pb	0.04	0.08
15	Hg	0.004	0.025
16	Zn	2	0.1
17	Ni	0.4	0.05
18	Cu	0.4	0.1
19	V	0.8	1.0
20	Benzene	0.04	0.25
21	Benzo (a) - Pyrene	0.08	0.025
	Effluent discharge,M3/TMT of crude processed	400/700	4906

NB:- The limit for the above quantum values could not be achieved due to low crude through put during M&I shut down of refinery in Aug'12

Annexure - V

**NOISE LEVEL MONITORING
BATTERY AREA
GUWAHATI REFINERY
(June'12 – Sept'12)**

SL. NO.	AREA	LOCATION	AVERAGE EXPOSURE FOR AN EMPLOYEE PER SHIFT (HRS)	READING IN dBA
1	TPS	Boiler - 3	1.30 hrs	92.0
		Boiler - 4	1.30 hrs	93.0
		Boiler - 6	1.30 hrs	92.0
		Boiler - 7	1.30 hrs	91.0
		Boiler Control Room	8.0 hrs	66.0
		TG - 4	1.30 hrs	102.0
		TG - 5	1.30 hrs	97.0
		Turbine Control Room	8.0 hrs	64.0
		DM Plant Pump Area	1.30 hrs	95.0
		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	92.0
		NSF Area	1.30 hrs	93.0
		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	94.0
		Air Compressor Area	1.30 hrs	93.0
		DCU Field Control Room	8.0 hrs	66.0
4	NITROGEN	Air Compressor 013-K-01A	1.00 hr	102.0
		Nitrogen Field Control Room	8.0 hrs	63.0
5	INDMAX	Main Air Blower Area	1.00 hr	95.0
		INDMAX Field Control Room	8.0 hrs	63.0
6	SRU	Main Air Blower 51A-K-01B	1.30 hrs	97.0
		SRU Field Control Room	8.0 hrs	64.0
7	HDT	Pump Area	1.00 hr	92.0

		HDT/HGU Field Control Room	8.0 hrs	66.0
8	HGU	Pump Area	1.00 hr	93.0
		HDT/HGU Field Control Room	8.0 hrs	66.0
9	MSQU	Pump Area	1.00 hr	93.0
		MSQU Field Control Room	8.0 hrs	66.0
10	ETP	Air Blower Area	1.00 hr	98.0
		ETP Control Room	8.0 hrs	67.0

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

NOTE : ALLOWABLE NOISE LEVEL AS PER FACTORY ACT : 90 dB FOR 8 HOURS CONTINOUS EXPOSURE

**STATUS OF ENVIRONMENTAL CLEARANCE CONDITIONS AS
ON 30.09.2012**

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

S. No	Conditions	Status as on 30.09.2012
	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	Complied. (Attached as Annx-III)

S. No	Conditions	Status as on 30.09.2012
	Surveyor) and reports shall be 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 1550 tree saplings planted in 2011-12. Fresh initiative have been undertaken to further expand this green belt 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	Refinery has install fire fighting facilities in compliance with OISD standards. However, there is no ground flaring system followed in the

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	ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during flaring.	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 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.

S. No	Conditions	Status as on 30.09.2012
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 obtained for collections, treatment, and storage disposal of hazardous	Complied. Present authorization is valid up to 31 st March '14.

S. No	Conditions	Status as on 30.09.2012
	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.
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	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.

S. No	Conditions	Status as on 30.09.2012
	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.	
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. Full fledged Pollution Control Lab. Facilities already 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
(June'12 – Sept'12)**

Stack	Concentration (mg/NM3) *		
	PM	SO2	NOX
CDU	32-48	110-306	95-166
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Blr 6 & 7	48-55	139-202	97-163
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HGU	32-35	48-74	88-93
SRU	163	1858	95
Indmax	46-94	88-110	77-86

Annexure-II

**Data on Ambient Air Monitoring at Guwahati Refinery
(June'12 – Sept'12)- 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.	65	34.5	13.15	31.5	29	BDL	463	0.055	11.6	BDL	4	BDL
Min.	59	34	7	31	27.6	BDL	416	0.033	6	BDL	3.67	BDL
Avg.	62	34	10	31	28	BDL	440	0.04	9	BDL	4	BDL
Location : Guest House												
Max.	54	29	5	30	29	BDL	412	0.035	7.3	BDL	BDL	BDL
Min.	51	27	4.4	28.3	22.1	BDL	356.5	0.03	6	BDL	BDL	BDL
Avg.	53	28	5	29	26	BDL	384	0.03	7	BDL	BDL	BDL

Location : Sector II												
Max.	75	40	8.95	32	28.05	BDL	725	0.031	6.565	BDL	5	BDL
Min.	58	33.5	7	30.5	28	BDL	344	0.025	5.94	BDL	3.34	BDL
Avg.	67	37	8	31	28	BDL	535	0.028	6	BDL	4	BDL
Location : WTP												
Max.	50	28	5	27	25	BDL	366	0.035	6.1	BDL	BDL	BDL
Min.	45	24	4	26	23	BDL	263	0.025	5.89	BDL	BDL	BDL
Avg.	48	26	5	27	24	BDL	315	0.03	6	BDL	BDL	BDL
Note : BDL= Below Detections Limit : Detection Limit of O3 : 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 (June'12 – Sept'12)

Location of Sampling	Total Hydrocarbons ppm	Benzene, ppm,
CDU	4.5	0.07
SRU	6.4	0.12
HDT	7.8	0.2
INDMAX	4.2	0.06
TPS- BL-6	3	0.06
TPS- BL-7	3	0.06

Annexure-IV

**Data on Discharged Effluent Analysis at Guwahati Refinery
(June'12 – Sept'12)**

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	7.0	100
2	Oil & Grease,ppm	5	3	100
3	BOD,ppm	15	9	100
4	COD,ppm	125	41	100
5	Suspended Solids	20	17	100
6	Phenols	0.35	0.1	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	0.1	100
14	Pb	0.1	0.01	100
15	Hg	0.01	0.01	100
16	Zn	5	0.02	100
17	Ni	1	0.01	100
18	Cu	1	0.02	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	11
3	BOD,ppm	6	45
4	COD,ppm	50	208
5	Suspended Solids	8	77
6	Phenols	0.14	0.4
7	Sulphides	0.2	0.05
8	CN	0.08	0.05
9	Ammonia as N	6	0.5
10	TKN	16	1.5
11	P	1.2	1
12	Cr (Hexavalent)	0.04	0.47
13	Cr (Total)	0.8	0.5
14	Pb	0.04	0.08
15	Hg	0.004	0.025
16	Zn	2	0.1
17	Ni	0.4	0.05
18	Cu	0.4	0.1
19	V	0.8	1.0
20	Benzene	0.04	0.25
21	Benzo (a) - Pyrene	0.08	0.025
	Effluent discharge, M3/TMT of crude processed	400/700	4906

NB:- The limit for the above quantum values could not be achieved due to low crude through put during M&I shut down of refinery in Aug'12

Annexure - V

**NOISE LEVEL MONITORING
BATTERY AREA
GUWAHATI REFINERY
(June'12 – Sept'12)**

SL. NO.	AREA	LOCATION	AVERAGE EXPOSURE FOR AN EMPLOYEE PER SHIFT (HRS)	READING IN dBA
1	TPS	Boiler - 3	1.30 hrs	92.0
		Boiler - 4	1.30 hrs	93.0
		Boiler - 6	1.30 hrs	92.0
		Boiler - 7	1.30 hrs	91.0
		Boiler Control Room	8.0 hrs	66.0
		TG - 4	1.30 hrs	102.0
		TG - 5	1.30 hrs	97.0
		Turbine Control Room	8.0 hrs	64.0
		DM Plant Pump Area	1.30 hrs	95.0
		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	92.0
		NSF Area	1.30 hrs	93.0
		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	94.0
		Air Compressor Area	1.30 hrs	93.0
		DCU Field Control Room	8.0 hrs	66.0
4	NITROGEN	Air Compressor 013-K-01A	1.00 hr	102.0
		Nitrogen Field Control Room	8.0 hrs	63.0
5	INDMAX	Main Air Blower Area	1.00 hr	95.0
		INDMAX Field Control Room	8.0 hrs	63.0
6	SRU	Main Air Blower 51A-K-01B	1.30 hrs	97.0
		SRU Field Control Room	8.0 hrs	64.0
7	HDT	Pump Area	1.00 hr	92.0

		HDT/HGU Field Control Room	8.0 hrs	66.0
8	HGU	Pump Area	1.00 hr	93.0
		HDT/HGU Field Control Room	8.0 hrs	66.0
9	MSQU	Pump Area	1.00 hr	93.0
		MSQU Field Control Room	8.0 hrs	66.0
10	ETP	Air Blower Area	1.00 hr	98.0
		ETP Control Room	8.0 hrs	67.0

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

NOTE : ALLOWABLE NOISE LEVEL AS PER FACTORY ACT : 90 dB FOR 8 HOURS CONTINOUS EXPOSURE