



## इंडियन ऑयल कॉर्पोरेशन लिमिटेड

हल्दिया रिफ़ाइनरी, डाकघर : हल्दिया ऑयल रिफ़ाइनरी -721606  
जिला : पूर्व मेदिनीपुर (पो बॉ)

Indian Oil Corporation Limited

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रिफ़ाइनरीज़ प्रभाग

Refineries Division

Ref : HR/HSE/8B/2018-19(2)

Date:16/11/2018

To  
The Joint Director(S)  
Government of India  
Ministry of Environment, Forests & Climate Change,  
Eastern Regional Office, A/3 Chandrasekharpur,  
Bhubaneswar – 751023

Sub: Half yearly compliance reports in respect of the stipulated conditions under Environmental Clearance for existing Projects at Haldia Refinery, IOCL for the period 01-04- 2018 to 30-09-2018

Sir,

We enclose herewith the half yearly compliance reports in respect of the stipulated terms and condition under Environment Clearance for existing projects at Haldia Refinery for the period 01-04-2018 to 30-09-2018.

- 1) Environmental Clearance of Lube oil Block
- 2) Installation of Diesel Hydro desulphurisation unit at Crude processing level for 4.6 MTPA at Haldia refinery at IOC.
- 3) Fluidised Catalytic Cracking unit (FCCU) at Haldia Refinery of IOC- ENV Clearance
- 4) 2nd Vacuum Distillation Unit (capacity 2 MMTPA) and Catalytic ISO dewaxing unit (capacity 0.2 MMTPA) at 7.5 MMTPA Crude processing level at Haldia Refinery by M/S IOCL at village Haldia , District Midnapore, WB- EC reg.
- 5) Installation of facilities for improvement of HSD Quality and Distillate Yield (OHCU) and MS Quality Improvement ( MSQI) at Haldia Refinery, IOCL, Midnapore, WB.
- 6) 3rd Gas turbine ( GT-3) with heat recovery steam generation (HRSG) at Haldia refinery by M/S IOCL- EC reg
- 7) Environmental Clearance for expansion of Crude oil Refining capacity by revamping of RFCCU from 0.7 MMTPA to 1.0 MMTPA at Haldia Refinery, Purba Medinipur, WB by M/s IOCL

- 8) Installation of Delayed Coking unit (DCU) at Haldia refinery Haldia WB by IOCL- EC (Now clubbed to DYIP project)
- 9) Capacity expansion from 7.5 MMTPA to 8.0 MMTPA along with Distillate Yield Improvement Project (DYIP) and Feed Processing Unit (FPU) at IOCL Haldia Refinery, Purba Medinipur, WB - EC reg
- 10) BS-VI Fuel Quality Up-gradation Project Phase-I at Haldia Refinery, West Bengal by M/s IOCL.

We are also enclosing Annexure-1 to Annexure-7a & 7b as Environmental Quality Monitoring data here with this report.


Thanking you.

Yours faithfully,

(P S Goswami)

Deputy General Manager (HSE)

IOCL, Haldia Refinery

  
P. S. Goswami  
14/11/2018

पी.एस. गोस्वामी, डी. महाप्रबंधक (एच.एस.एंड ई.)  
P. S. Goswami, Dy. General Manager (H, S&E)  
इंडियन ऑयल कॉर्पोरेशन लि., हल्दिया रिफ़ाइनरी  
Indian Oil Corporation Ltd., Haldia Refinery

Encl: Half yearly compliance reports in respect of the stipulated condition under Environmental Clearance.



**Indian Oil Corporation Limited**

**Haldia Refinery**

Report  
On

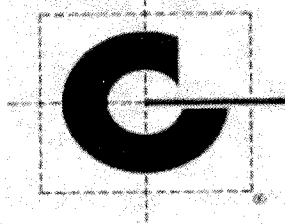
**Six Monthly Compliance Status on  
Conditions Stipulated under Environmental Clearance  
For existing Projects at Haldia Refinery**

**Status as on 1<sup>st</sup> Dec, 2018**

ISO 9001:2008/14001:2004/OHSAS 18001:2007  
Reg. No.: RI91/9022



**JAS-ANZ**



**Index on Status of Compliance on past Environmental Clearance**

<b>Sl. No.</b>	<b>EC Ref No, Issue Date</b>	<b>Description of EC</b>	<b>Present Status</b>	<b>Page No</b>
1	J-11011/34/88-IA, Date 16-Mar-1989	Environmental Clearance of Lube oil Block	EC Compliance status enclosed.	1-4
2	J.11011/39/96- IA II (I) Date 18-Dec-1996	Installation of Diesel Hydro desulphurisation unit at Crude processing level for 4.6 MTPA at Haldia refinery at IOC	EC Compliance status enclosed.	5-6
3	J.11011/99/96-IA II (I) Date 1-Oct-1997	Fluidized Catalytic Cracking unit (FCCU) at Haldia Refinery of IOC- ENV Clearance	EC Compliance status enclosed.	7
4	J. 11011/28/2000-IA II Date 21-Aug-2000	2nd Vacuum Distillation Unit (capacity 2 MMTPA) and Catalytic ISO dewaxing unit (capacity 0.2 MMTPA) at 7.5 MMTPA Crude processing level at Haldia Refinery by M/S IOCL at village Haldia , District Midnapore, WB- EC reg.	EC Compliance status enclosed.	8-10
5	J-11011/5/2002-IA II(I) Date 1-May-2002	Installation of facilities for improvement of HSD Quality and Distillate Yield (OHCU) and MS Quality Improvement ( MSQI) at Haldia Refinery, IOCL, Midnapore,WB	EC Compliance status enclosed.	11-13
6	J-13011/14/2006-IA II (T) Date 5-Jan-2007	3rd Gas turbine ( GT-3) with heat recovery steam generation (HRSG) at Haldia refinery by M/S IOCL- EC reg	EC Compliance status enclosed.	14-15
7	J-11011/422/2006-IA II(I) Date 06-Mar-2007	Environmental clearance for expansion of Crude oil Refining capacity by revamping of RFCCU from 0.7 MMTPA to 1.0 MMTPA at Haldia Refinery, Haldia, Purba Medinipur, WB, by M/S IOCL	The revamping of RFCCU job was not pursued due to economic reasons. EC Compliance status enclosed.	16-22
8	J-11011/904/2007-IA II (I) Date 17-Mar-2009	Installation of Delayed Coking unit (DCU) at Haldia refinery Haldia WB by IOCL- EC.	Applied for EC validity extension before expiry of validity. As per directives of MoEF & CC, this project was clubbed with the next project and name of the project was changed as Distillate Yield Improvement Project (DYIP). EC was received on	23

			4 <sup>th</sup> March 2016.	
9	J-11011/299/2013- IA II(I) Date 4-Mar-2016	Capacity expansion from 7.5 MMTPA to 8.0 MMTPA along with Distillate Yield Improvement Project (DYIP) and Feed Processing Unit (FPU) at IOCL Haldia Refinery, Purba Medinipur, WB - EC reg	Status as on date: FPU Project is commissioned. DYIP project installation job in progress. Commissioning planned at the end of 2018.	23
10	J-11011/175/2016- IA-II(I)	BS-VI Fuel Quality Up-gradation Project (Phase-I) at Haldia Refinery, Haldia West Bengal by M/s IOCL.	Status as on date: Project completion in 2019. Commission planned at the end of 2019.	23

<b>Annexure</b>	<b>Description</b>
<b>Annexure-1</b>	Month wise actual average data of Ambient Air Quality Monitoring (Apr'18 to Sep'18)
<b>Annexure-2</b>	Monthly average data for six months of the Final Treated Effluent discharge to River Hooghly
<b>Annexure-3</b>	Expenditure incurred by Haldia Refinery to implement the condition stipulated by MoEF&CC for year 2017-18
<b>Annexure-4</b>	Noise level at Boundary Area of Haldia Refinery
<b>Annexure-5</b>	Half Yearly data of SO2 Stack Emission Monitoring for year 2018-19
<b>Annexure-6</b>	Typical data of Continuous Ambient Air Quality Monitoring Station
<b>Annexure-7a &amp; 7b</b>	Record on Occupational health Check up for the period from 1 <sup>st</sup> Apr'18 to 30 <sup>th</sup> Sep'18

## Haldia Refinery

**SUB : SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.12.2018**

**1.0 EC Reference No. & Issue date: J11011/34/88-IA ; 16<sup>th</sup> MARCH, 1989**

**Status of Conditions Imposed With Respect To Environmental Clearance: For Lube Oil Block at Haldia Refinery**

Sl. No.	STIPULATION BY MoEF & CC	STATUS
i)	The project proponent must strictly adhere to the stipulations made by West Bengal Pollution Control Board.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control Board and submitting necessary compliance Reports as per schedule.
ii)	The project authority will explore the possibility of either increasing the stack height or sulphur recovery or desulphurisation of flue gases or use of LSHS to achieve total amount emission of SO <sub>2</sub> at 1.5 tonnes / hour. The quarterly report of the progress in this regard should be submitted to this Ministry till the installation of the unit. Efforts being made to obtain the necessary approvals should be clearly indicated.	Low sulphur fuel gas & fuel oil are used in heaters. Sulphur Recovery Units (SRU) commissioned in April/May'94. New SRUs are commissioned in 2010. The emissions from stacks are well within the prescribed limits. Online monitoring system and up-linking of data to CPCB server have been completed. The half yearly average of SO <sub>2</sub> emission from heater stacks of all Process Units during Apr'18 to Sep'18 was 770.4 Kg/hr.
iii)	Air quality monitoring network design should be made on the basis of model exercise and submitted to this Department within three months for review. A minimum of three air quality monitoring stations should be set up.	The ambient air quality within refinery is monitored twice every week at 5 nos of locations. Also a Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the Refinery battery gate whose data is linked and transmitted to CPCB and WBPCB server. Six-monthly ambient air quality monitored data is being submitted to the MoEF&CC Regional Office. Refer Annexure-1 for six months data.
iv)	All the stacks should be provided with continuous stack monitoring facilities. The data should be furnished quarterly to State Pollution Control Board and half yearly to this Ministry.	Continuous stack monitoring facilities with SO <sub>2</sub> , PM <sub>10</sub> , NO <sub>x</sub> and CO analyzers are installed to the furnaces having > 10 MM Kcal /Hr heat duty which is linked to CPCB server. West Bengal Pollution Control Board also checks the stack emission by sampling on quarterly basis.

Sl. No.	STIPULATION BY MoE&F & CC	STATUS
v)	The project authority should prepare a plan for implementation of disposal of solid waste generated during various process operations or in the treatment plant provided. They should ensure that no leaching of pollutants like sulphides take place from the solid wastes. The plan for disposal and management of solid wastes should be submitted to the competent authority for scrutiny and approval within six months.	Plan for disposal of solid waste submitted and Hazardous waste Authorization obtained from WBPCB. WBPCB periodically visits the site for verification. Yearly Hazardous Waste return is submitted to WBPCB in the month of June every year.
vi)	No change in design of stack should be made without the prior approval of State Pollution Control Board. Alternate pollution control system and/or proper design (steam injection system) of the stack should be made to minimize hydrocarbon emission due to failure in the flare system in the plant.	No change in design of stack has been made.  The emissions from stacks are within the stipulated limits.
vii)	Additional area under the control of project which is not being used for the plant utilities should be afforested and funds for this purpose should be suitably provided.	Space has been earmarked in the newly acquired land for Distillate Yield Improvement Project (DYIP) for development of green belt.
viii)	Tree plantation programme in the plant premises and in the periphery of the plant should be undertaken in consultation with State Forest Department. Plant species which are sensitive as well as resistant to sulphur-dioxide emissions should be chosen for plantation purposes.	Haldia refinery has so far planted more than 61,800 saplings in and around Refinery which have flourished and maintained greenery as well as eco-balance in Haldia region.  Around 65 nos of new tree saplings are planted at Refinery and at Township on World Environment day-2018. Total 700 nos of tree saplings are distributed to township residence during Van Mahotsav in Aug 2018.
ix)	Project authority must set up laboratory facilities in the existing premises for testing air emissions and water quality.	Haldia Refinery has its own NABL accredited laboratory and all water quality is being tested daily.  The ambient air quality within refinery is monitored twice every week at 5 nos locations through authorized agency M/s Envirotech East (P) Ltd. Also a Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the refinery battery gate whose data is transmitted to CPCB and WBPCB server.
x)	The clearance of Chief Inspector of Explosives must be taken before starting construction of the proposed plant and a copy of consent letter should be made available to this Ministry.	PESO approval obtained before starting construction of every Project.



Sl. No.	STIPULATION BY MoEF & CC	STATUS
xi)	<p>Project authority will establish five water quality monitoring stations in consultation with State Pollution Control Board to monitor the quality of stream water and to study the impact of treated effluent discharge and will submit its report quarterly to state Pollution Control Board and half yearly to this Ministry. Ground water quality also should be monitored.</p>	<p>All effluent water quality is monitored daily at IOCL own NABL accredited laboratory. The treated effluents comply with the prescribed standards (MINAS).</p> <p>The concept of 5 nos water quality monitoring station at refinery discharge was an old stipulation and now not valid. Presently, all surface drain water is routed to the storm water pond near ETP. Thereafter this water is pumped to covered floating roof holding tanks 103 &amp; 104. Next it is processed in ETP-1 and ETP-2. Water quality is monitored at the outlet of ETP-1, ETP-2 and TTP/RO outlet. Online analyzers are also installed at these three locations to monitor pH, TSS, COD &amp; BOD. Refer monthly average data for six months of the final treated effluent discharged to Hooghly river is enclosed as Annexure-2.</p> <p>Ground water quality is monitored quarterly. WBPCB also does half yearly monitoring of ground water.</p>
xii)	<p>The project authority will explore the possibility of water recycling to the maximum possible extent. A plan in this regard should be prepared within the next one year and furnished to this Ministry.</p>	<p>As a part of resource conservation, recycling of treated effluent has been implemented to above 92.0%.</p>
xiii)	<p>The liquid effluent coming out of the plant premises should strictly conform to MINAS.</p>	<p>The liquid treated effluent coming out of the ETP premises conform to MINAS and being monitored by Online Effluent monitoring system.</p>
xiv)	<p>The project authority will submit a Disaster Management Plan duly approved by nodal agency.</p>	<p>ERDMP is approved by M/s TQ Services (A division of Tata Projects Ltd. ) as per PNGRB guidelines, 2010 and is valid up to 31.01.2019. Job in progress for updation of ERDMP document followed by recertification by authorized agency in Jan'19.</p>
xv)	<p>A separate environmental management cell with suitably qualified people to carry out various functions related to environmental management should be set up under the control of a Senior Technical personnel who will report direct to the head of organization.</p>	<p>Health Safety Environment (HSE) department exists in Haldia Refinery with several qualified personnel with 15 - 35 years experience in Refineries &amp; Petrochemicals industries. Also all activities are monitored by Refinery Head quarter HSE department. For any professional help such as Risk Assessment &amp; EIA/ EMP study, Haldia Refinery is always appointing competent</p>

		professional agency. Regular Environmental monitoring and Ambient air quality monitoring is done by authorized agency M/S Envirotech East Pvt limited.
<b>Sl. No.</b>	<b>STIPULATION BY MOE&amp;F &amp; CC</b>	<b>STATUS</b>
xvi)	The fund provision of Rs.10 Crores which has been made should be utilized for implementation of all conditions stipulated herein and the budget so provided will not be delivered for any other purpose. The conditions stipulated above needs additional funds it should be so provided either from non-recurring or recurring budget of the unit.	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Expenditure for the period Apr-18 to Sep-18 on Environment monitoring, Waste disposal, Tree plantation, Awareness program, ETP treated water recycle, Sludge oil recovery, EIA study job and RA study job and ETP operation cost etc are shown in Annexure-3.

## Haldia Refinery

**SUB: SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.12.2018**

**2.0 EC Reference No. & Issue date: 11011/39/96-IA II (I) ; 18/12/1996**

**Status of Conditions Imposed With Respect To Environmental Clearance For DHDS unit at Crude Processing level for 4.6 MMTPA at Haldia Refinery , IOC**

Sl. No.	STIPULATION BY MoEF & CC	STATUS
i)	The project authority must strictly adhere to the stipulations laid down by the West Bengal State Pollution Control Board and the State Govt.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control Board and submitting necessary compliance Reports as per schedule.
ii)	No expansion or modernization of the plant should be carried out without approval of the Ministry of Environment and Forest.	Environmental clearance from MoEF & CC is always taken before any expansion or modernization in the plant.
iii)	The total SO <sub>2</sub> emission from Haldia Refinery including DHDS project should not exceed norms of 850 Kg/hr. after installing the new Crude Distillation unit (CDU).	Low sulphur fuel gas & fuel oil are used in heaters. The emissions from stacks are well within the prescribed limits. The six monthly average of total SO <sub>2</sub> emission rate from heater stacks of all Process Units is 770.4 Kg/hr.
iv)	The existing ETP should be adequately augmented (if required) to accommodate the additional effluent from the DHDS project before commissioning the project so as ensure that the treated effluent meets the MINAS.	Old ETP revamped capacity is 650 m <sup>3</sup> /hr since 2003-04 and new ETP of capacity 600 m <sup>3</sup> /hr commissioned in 2010. The combined capacity of the two ETPs caters to the effluent load of the entire refinery.
v)	Time bound Action Plan for disposal of oily sludge / recovery of oil & design details of the solid waste disposal pit should be furnished to the Ministry within a period of three months. Hazardous waste should be handled as per Hazardous Waste (Management & Handling) rules, 1989 and necessary approval from SPCB must be obtained for its safe collection, treatment, storage and disposal.	Haldia refinery has Hazardous Waste Authorization from WBPCB with validity up to 31-12-2020. Yearly Hazardous Waste return is being submitted to WBPCB in the month of June every year.
vi)	SRU having an efficiency of more than 99% should be installed.	SRU having efficiency >99.5% has been installed and commissioned.

Sl. No.	STIPULATION BY MoEF & CC	STATUS
vii)	Location of riverine outfall point showing the alignment of pipeline and outfall point with reference to the HTL and LTL should be submitted to this Ministry. IOC should also obtain the expert opinion of NIO or any other expert body on the best possible location of the outfall point and IOC should abide by the changes if any recommended by the expert body.	<p>The job was carried out by National Institute of Oceanography (NIO), Goa. As per the study, the existing location of outfall point of treated effluent to river Hoogly is suitable and does not require change.</p> <p>The copy of final report sent to Joint Director (S), MOE&amp;F, Bhubaneswar in Aug-99. The sketch on location of riverine outfall point has already been included in that report.</p>
viii)	The IOC should commission a study by a competent technical expert to evaluate the effects of the existing effluents on aquatic life and on mangrove and submit to the Ministry the results of the study within one year.	A study was carried out by National Institute of Oceanography (NIO), Goa to evaluate the effects of effluents on aquatic life and on mangroves. As per the study report, the effect of treated effluent is insignificant. The copy of final report was sent to Joint Director (S), MOE&F, Eastern Regional Office, Bhubaneswar in Aug-99.
ix)	<p>A detailed risk analysis study board on maximum credible accident analysis (MCA) and HAZOP study should be done to the Refinery including DHDS project facilities and submitted to this Ministry Board.</p> <p>On this, a Disaster Management Plan and off site plan be prepared and submitted after approval has been obtained from nodal agency.</p>	<p>- Risk Analysis Report submitted to Ministry.</p> <p>- Offsite Disaster Management Plan of Haldia Refinery : The present ERDMP is approved by M/s TQ Services (A division of Tata Projects Ltd. ) as per PNGRB guidelines, 2010 and is valid up to 31.01.2019 .</p> <p>Agency lining up in progress for updation of ERDMP document before recertification in Jan'19.</p>
x)	<p>The project authority must strictly comply with the provisions made in MSIHC Rules, 1989 as amended in October, 1994 for handling of hazardous chemicals etc.</p> <p>Necessary approvals from Chief Controller of Explosives must be obtained before commission the project.</p>	<p>Safety Audit under MSIHC Rules done in April 2018 in Haldia Refinery.</p> <p>PESO approval obtained before commissioning of all Projects.</p>

## Haldia Refinery

**SUB: SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.06.2018**

**3.0 EC Reference No. & Issue Date : J.11011/99/96-IA II (I) ; 01/10/1997**

**STATUS OF CONDITIONS IMPOSED WITH RESPECT TO ENVIRONMENTAL CLEARANCE OF "FLUIDISED CATALYTIC CRACKING UNIT (FCCU) AT HALDIA REFINERY OF IOC"**

Sl. No.	CONDITIONS	STATUS
i)	The project authority must strictly adhere to the stipulations laid down by the West Bengal State Pollution Control Board and the State Govt.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control board and submitting necessary compliance Reports as per schedule.
ii)	No expansion or modernization of the plant should be carried out without approval of the Ministry of Environment and Forest	Environmental clearance from MoEF & CC is taken before any expansion or modernization in the plant.
iii)	The total SO <sub>2</sub> emission from the FCCU project should not exceed 390 kg/hr. Maximum SO <sub>2</sub> emission from the Refinery complex should be below 1500 kg/hr. (letter dated 16.03.89). However, efforts may be made to peg the SO <sub>2</sub> values at 1240 kg/hr. in the post DHDS and FCCU phase.	Low sulphur fuel gas & fuel oil are used in Furnace/heater. Sulphur Recovery Units commissioned in April / May'94. New SRUs are commissioned in 2010. The emissions from stacks are well within the prescribed limits. Online monitoring system and uplinking of data to CPCB server have been completed. The emissions from stacks are well within the prescribed limits. The six monthly average of SO <sub>2</sub> emission rate from heater stacks of all Process Units is 770.4 Kg/hr. The average data of SO <sub>2</sub> emission from all heater stacks of all process units is shown as Annexure-5.
iv)	The studies on aquatic life and marine outfall for discharge of treated effluent into the river should be expedited. A time bound action plan to implement the conditions stipulated by the Ministry while according approval for the DHDS unit vide letter dated 18/12/96 should be submitted to the Ministry for review within a period of one month.	A study was carried out by National Institute of Oceanography (NIO), Goa on aquatic life & marine outfall for discharge of treated effluent into the river Hooghly. As per the study report, effect of treated effluent on aquatic life and marine outfall into the river Hooghly is insignificant.  The copy of final report sent to joint Director (S), MoE&F, Eastern Regional Office, Bhubaneswar in Aug.-99.

## Haldia Refinery

**SUB : SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.12.2018**

**4.0 EC Reference No. & Issue date : J.11011/28/2000-IA II ; 21/08/2000**

**Status of Conditions Imposed With Respect To Environmental Clearance Of "2nd Vacuum Distillation Unit (Capacity 2 MMMTPA) And Catalytic ISO-Dewaxing Unit (Capacity 0.2 MMMTPA) At 7.5 MMMTPA Crude Processing Level At Haldia Refinery of IOC"**

**SPECIFIC CONDITIONS:**

Sl. No	STIPULATION BY MoE&F & CC	STATUS
1	The SO <sub>2</sub> emission from the refinery unit including the proposed 2nd VDU and CIDW should not exceed 1340 kg/hr.	<p>Low sulphur fuel gas &amp; fuel oil are used in Furnace/heater.</p> <p>Sulphur Recovery Units (SRU) commissioned in April / May'94. New SRUs are commissioned in 2010.</p> <p>The emissions from stacks are well within the prescribed limits. Online monitoring system and uplinking of data to CPCB server have been completed.</p> <p>The six monthly average of SO<sub>2</sub> emission rate from heater stacks of all Process Units is 770.4 Kg/hr.</p> <p>The average data of SO<sub>2</sub> emission from all heater stacks of all process units is shown as Annexure-5.</p>
2	The ETP load should be within the design capacity of 540 m <sup>3</sup> /hr. The total quantity of effluent generation should not exceed 414 m <sup>3</sup> /hr as indicated in the EMP of which 150 m <sup>3</sup> /hr treated effluent should be recycled and rest 264 m <sup>3</sup> /hr should be discharged after proper treatment. The treated effluent should comply with the prescribed standards.	<p>Present ETP-1 revamped capacity is 650 m<sup>3</sup>/hr and New ETP-2 capacity is 600 m<sup>3</sup>/hr. The combined ETP load remains 900-1000 m<sup>3</sup>/hr. The treated water from ETP-1 &amp; ETP-2 is reused in TTP-RO feed, Fire water &amp; Cooling water. TTP-RO reject is being discharged to Hoogly river.</p> <p>The monthly average data for six months of the Final treated effluent discharged to river Hoogly is attached as Annexure-2.</p>
3	<p>The oily sludge generated from the refinery operation should be subjected to melting pit treatment for recovery of oil. The recovered oil should be recycled. The residual oily sludge should be disposed off in the HDPE lined pits.</p> <p>The spent catalyst from CIDW unit should be sent to supplier for metal recovery.</p>	<p>The methodology for recovery of oil as indicated is practiced.</p> <p>The tank bottom sludge is reprocessed using mechanized process for recovery of slop oil and recovered oil is recycled.</p> <p>The residual sludge after oil recovery is being disposed to authorized agency approved by WBPCB.</p> <p>The spent catalyst discharged from CIDW Unit after run life is sent to the supplier for metal recovery whenever requirement arises.</p>

Sl. No	STIPULATION BY MoE&F & CC	STATUS
4	Oil spill response facilities should be in place, in accordance with OISD guidelines with regard to the likely risks associated with transportation of finished products by Hooghly-Sea route.	Facilities are in place to combat Tier-I spill situation in line with the guidelines of OISD & Coast Guard.
5	Green belt of adequate width and density should be provided to mitigate the effects of fugitive emission all around the plant in consultation with the local DFO.  The bio-sludge from biotreater should be used as manure in the green belt development.	Haldia refinery has so far planted more than 61,800 saplings in and around Refinery which have flourished and maintained greenery as well as eco-balance in Haldia region. Space has been earmarked in the newly acquired land for Distillate Yield Improvement Project (DYIP) for development of green belt.  Residual sludge is presently disposed through authorized Co-processing agency.
6.	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act and the West Bengal Factories Rules.	Haldia Refinery has Occupational Health centre with all facilities. Periodical health checkup schedule is being followed for target employees as per Factories Act and WB Factory Rules and records are being maintained. The OHC record from Apr'18 to Sep'18 is shown in Annexure-7a &7b.

**GENERAL CONDITIONS:**

Sl. No	STIPULATION BY MOE&F & CC	STATUS
1	The project authorities must strictly adhere to the stipulations made by the West Bengal State Pollution Control Board and the State Government.	Haldia Refinery has been adhering to the stipulations made by the WBPCB and submitting necessary compliance Reports as per schedule.
2	No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Environmental clearance from MoEF & CC is taken before any expansion or modernization in the plant.
3	At no time, the emissions should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	Low sulphur fuel gas & fuel oil are used in Furnace/heater. Sulphur Recovery Units (SRU) commissioned in April / May'94. New SRUs are commissioned in 2010. The emissions from stacks are well within the prescribed limits. Online monitoring system and uplinking of data to CPCB server have been completed. The average data of SO2 emission from all heater stacks of all process units is shown as Annexure-5.
4	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in

	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) and 70 dBA (night time).	day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-4. Persons if working in any high noise area use proper PPE.
5	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in October, 1994 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the project.	Safety Audit under MSIHC Rules done in April 2018 in Haldia Refinery.  PESO approval obtained before commissioning of the Project.
6	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Expenditure for the period Apr-18 to Sep-18 on Environment monitoring, Waste disposal, Tree plantation, Awareness program, ETP treated water recycle, Sludge oil recovery, EIA study job and RA study job and ETP operation cost etc are shown in Annexure-3.
7	The stipulated conditions will be monitored by the Regional of this Ministry at Bhubaneswar/ Central Pollution Control Board / State Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly.	The compliance status is submitted to the MoEF & CC, Regional Office, Bhubaneswar, Central Pollution Control Board & State Pollution Control Board every six months. Last report sent in May 2018.
8	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 <a href="http://WWW.envfor.nic.in">http://WWW.envfor.nic.in</a> . 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.	After receipt of Environmental clearance, application is being placed before State pollution control board to obtain consent to establish. Also the news of EC is being published in two local news papers.
9.	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 commencing the land development work.	2 <sup>nd</sup> VDU & CIDW unit commissioned on 15 <sup>th</sup> March, 2002 and 25 <sup>th</sup> March, 2003 respectively and the same was communicated to the authorities in time.



## Haldia Refinery

**SUB : SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.12.2018**

**5.0 EC Reference No. & Issue Date: J11011/5/2002 IA II(I) ; 1<sup>st</sup> May 2002**

**Status of conditions imposed with respect to environmental clearance of installation of facilities for improvement of HSD quality and distillate yield (OHCU) and MS quality improvement (MSQI) at Haldia refinery of M/S. IOCL in district Midnapore (E), West Bengal.**

### **A. SPECIFIC CONDITIONS:**

Sl. No	STIPULATION BY MOE&F & CC	STATUS
i	The company shall ensure strict implementations / compliance of the terms and conditions mentioned vide Ministry's letters No. J-11011/39/96-IA.II(1) dated 18/12/96, J-11011/99/96-IA.II(1) dated 01/10/1997 AND J-11011/28/2000-IA.II(1) dated 21 <sup>st</sup> August, 2000.	Terms and conditions as described in the respective letters are complied.
ii	The company shall also ensure that the total SO <sub>2</sub> emission from the Haldia Refinery (including expansion of OHCU & MS Quality Improvement Project) will not exceed 1466 kg/hr.	Low sulphur fuel gas & fuel oil are used in heaters. Sulphur Recovery Units (SRU) commissioned in April/ May'94. New SRUs are commissioned in 2010. The emissions from stacks are well within the prescribed limits. Online monitoring system and uplinking of data to CPCB server have been completed. The average SO <sub>2</sub> emission from all Process Units heater stacks from Apr'18 to Sep'18 is 770.4 Kg/hr. The average data of SO <sub>2</sub> emission from all heater stacks is shown as Annexure-5.
iii	Additional water requirement should be met from the Geonkhali Water Supply Scheme. There should be no further draw from ground.	No new tube well has been made for withdrawal of water from ground. Additional water requirement is met from Geonkhali Water Supply of Haldia development authority.
iv	The ETP load should be within the design capacity of 540m <sup>3</sup> /hr. The total quantity of effluent generation should not exceed 446 m <sup>3</sup> /hr as indicated in the EMP of which 150m <sup>3</sup> /hr treated effluent should be recycled and rest 296 m <sup>3</sup> /hr should be discharged after proper treatment. The treated effluent should comply with the prescribed standards.	At present, ETP-1 revamped capacity is 650 m <sup>3</sup> /hr and New ETP-2 capacity is 600 m <sup>3</sup> /hr. But the combined ETP load remains 900-1000 m <sup>3</sup> /hr. The treated water from ETP-1 & ETP-2 is reused in TTP-RO feed, Fire water & Cooling water. Only TTP-RO reject is being discharged to Hoogly river. All effluent water quality is monitored daily at IOCL owned NABL accredited laboratory. The treated effluents comply with the prescribed standards (MINAS).

Sl. No	STIPULATION BY MOE&F	STATUS
v	<p>The oily Sludge generated from the refinery operation should be subjected to melting pit treatment for recovery of oil. The recovered oil should be recycled. The residual oily sludge should be disposed off in the HDPE lined pits.</p> <p>The spent catalyst should be sent to supplier for metal recovery.</p>	<p>The methodology for recovery of oil as indicated is practiced.</p> <p>The tank bottom sludge is reprocessed using mechanized process for recovery of slop oil and recovered oil is recycled.</p> <p>The residual sludge is stored in HDPE lined pits and is disposed off to the WBPCB approved TSDF agency at Haldia and also to Co-processing agency in Cement plant located at Chattisgarh.</p> <p>The spent catalyst from hydro-processing units containing metals is sold through e-auction.</p> <p>The catalysts containing noble metals are sent to recyclers for metal recovery.</p>
vi	<p>Oil spill response facilities should be in place, in accordance with OISD guidelines with regard to the likely risks associated with transportation of finished products by Hoogly-Sea route.</p>	<p>Facilities are in place to combat Tier-I spill situation in line with the guidelines of OISD &amp; Coast Guard.</p>
vii	<p>Green belt of adequate width and density should be provided to mitigate the effects of fugitive emission all around the plant in consultation with the local DFO.</p> <p>The bio-sludge should be used as manure in the green belt development.</p>	<p>Haldia refinery has so far planted more than 61,800 saplings in and around refinery which have flourished and maintained greenery as well as eco-balance in Haldia region.</p> <p>Space has been earmarked in the newly acquired land for Distillate Yield Improvement Project (DYIP) for development of green belt.</p> <p>The residual sludge is being disposed to authorized Co-processing agency approved by WBPCB/ SPCB.</p>
viii	<p>Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act and the West Bengal Factories Rules.</p>	<p>Haldia Refinery has Occupational Health center with all facilities. Periodical health checkup schedule is being followed for target employees as per Factories Act and WB Factory Rules and records are being maintained.</p> <p>The health check up record of Haldia Refinery OHC from Apr'18 to Sep'18 is shown in Annexure-7a &amp;7b.</p>

**B. GENERAL CONDITIONS:**

Sl. No	STIPULATION BY MOE&F & CC	STATUS
i	The project authorities must strictly adhere to the stipulations made by the West Bengal State Pollution Control Board and the State Government.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control Board and State Govt. and submitting necessary compliance Reports as per schedule.
ii	No further expansion or modernization in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Environmental clearance from MoEF & CC is always taken before any expansion or modernization in the plant.
iii	The company shall implement all recommendations made in the EMP and risk Analysis reports.	Recommendations from the EMP and Risk analysis reports are implemented at Haldia Refinery.
iv.	At no time, the emissions should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the Units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	Low sulphur fuel gas & fuel oil are used in heaters. Sulphur Recovery Units (SRU) commissioned in April / May'94. New SRUs are commissioned in 2010. The emissions from stacks are well within the prescribed limits. Online monitoring system and uplinking of data to CPCB server have been completed. The average of SO2 emission rate from heater stacks of all Process Units during Apr'18 to Sep'18 is 770.4 Kg/hr.
v.	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, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 vis. 75 dBA (day time) and 70 dBA (night time).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-4. Persons if working in any high noise area use proper PPE.
vi	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous chemicals Rules, 1989 as amended in 1994 and 2000. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained.	Safety Audit under MSIHC Rules done in April 2018 in Haldia Refinery.  PESO approval obtained before commissioning of the Project.

## Haldia Refinery

**SUB: SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.12.2018**

**6.0 EC Reference No. & Issue Date: J13011/14/2006 IA.II (T); 5<sup>TH</sup> JAN, 2007**

**Status Of Conditions Imposed With Respect To Environmental Clearance Of Installation Of 3<sup>rd</sup> Gas Turbine (GT-3) With Heat Recovery Steam Generation (HRSG) At Haldia Refinery By M/S Indian Oil Corporation Ltd.**

### **A. SPECIFIC CONDITIONS**

Sl. No.	STIPULATION BY MOE&F &CC	STATUS
i	All the conditions stipulated by West Bengal Pollution Control Board vide their letter no. 334-2N-295/2005 dated 28 <sup>th</sup> June 2006 shall be strictly implemented.	All the conditions stipulated by West Bengal Pollution Control Board have been taken care of during implementation of GT-3.
ii	No additional land shall be acquired for any activity/facility of the power project.	GT-3 is installed inside the existing Refinery premises.
iii	Water requirement will be met from existing water supply system. No additional facilities will be created as part of this project.	Water requirement is being met from existing water supply system.
iv	Sulphur content in the Naphtha to be used in the project shall not exceed 0.025%.	Sulphur content in Naphtha is less than 0.025%.
v	A single stack of 60 m with exit velocity of 20 m/sec shall be provided with continuous online monitoring equipments.	Stack height is 60 M. Online monitoring system with SO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> and CO analyzers has been provided.
vi	NO <sub>x</sub> emission shall not exceed 100 ppm.	NO <sub>x</sub> emission level for GT/HRSG is in the range of 10-15 ppm.
vii	The treated effluents conforming to the prescribed standards shall only be discharged in the river Hooghly.	Effluent water quality is monitored daily at IOCL owned NABL accredited laboratory. The treated effluents comply with the prescribed standards (MINAS). Only TTP-RO reject effluent is being discharged to river Hooghly.
viii	Adequate measures shall be taken to avoid fire and explosion hazard.	Adequate measures taken to avoid fire and explosion hazard by complying with OISD, PESO and other statutory norms.
ix	A greenbelt shall be developed all along the plant.	Haldia refinery has so far planted more than 61,800 plants in and around Refinery which have flourished and maintained greenery as well as eco-balance in Haldia region. Space has been earmarked in the newly acquired land for Distillate Yield Improvement Project (DYIP) for development of green belt. Around 65 nos of new tree saplings were planted at Refinery and at Township on World Environment day-2018. Total 700 nos of tree saplings were distributed to township residence during Van Mahotsav in Aug'18.

Sl. No.	STIPULATION BY MOE&F & CC	STATUS
x	First aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	First Aid and sanitation arrangements are provided at worksite and are a part of the Contract Document.
xi	Leq of Noise level should be limited to 75 dBA and regular maintenance of equipment be undertaken. For people working in the high noise areas, personal protection devices should be provided.	Leq of noise level along boundary wall is conforming to limits of <75 DBA in day time and <70 dBA in night time. Persons if working in any high noise area use proper PPE.
xii	Regular monitoring of the ambient air quality shall be carried out in and around the power plant and records maintained. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry.	The ambient air quality within refinery is monitored twice every week at 5 nos locations. Month wise actual average data of Ambient Air Quality monitoring data is being submitted to the MoEF & CC Regional Office as per schedule. Also a Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the refinery battery gate whose data is linked and transmitted to CPCB and WBPCB server. The typical data of Continuous Ambient air quality monitoring station is enclosed as Annexure- 6.
xiii	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards should be submitted to this Ministry/ Regional Office/CPCB/SPCB.	Six monthly data are being submitted in the month of June and Dec every year to the MoEF&CC Regional Office & WBPCB. Last report sent in the month of May-2018.
xiv	Regional Office of the Ministry of Environment & Forests located at Bhubaneswar will monitor the implementation of the stipulated conditions. Complete set of Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring.	Regional Office of the Ministry of Environment & Forests located at Bhubaneswar visits Haldia Refinery to monitor the implementation status of the stipulated conditions. As per the requirement, additional information is also submitted during the visit.
xv	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. This cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. Expenditure for the period Apr'18 to Sep'18 on Environment monitoring, Waste disposal, Tree plantation, Awareness program, ETP treated water recycle, Sludge oil recovery, EIA study job and RA study job and ETP operation cost etc are shown in Annexure-3.
xvi	Full cooperation should be extended to the Scientists/Officers from the Ministry/ Regional Office of the Ministry at Bhubaneswar/the CPCB/the SPCB who would be monitoring the compliance of environmental status.	Haldia Refinery is always extending full co-operation to the Scientists / Officers visiting the Refinery from the statutory bodies.

**Haldia Refinery**

**SUB: SIX MONTHLY STATUS REPORT for the period Apr'18 – Sep'18 dt.01.12.2018**

**7.0 EC Reference No & Issue date; J11011/422/200 IA II(I): 6<sup>th</sup> March 2007**

**Status of conditions imposed with respect to environmental clearance for Crude Oil Refining Capacity by Revamping of RFCCU from 0.7 MMTPA to 1.0 MMTPA and installing a Gas Turbine of 20 MW capacity at Haldia refinery of M/S. IOCL in district Purba Medinipure (E), West Bengal.**

**A. SPECIFIC CONDITIONS:**

<b>Sl.No</b>	<b>STIPULATION BY MOE&amp;F &amp; CC</b>	<b>STATUS</b>
I	The gaseous emissions (SO <sub>2</sub> , NO <sub>x</sub> , HC, VOC and Benzene) from various process units shall be kept within limit as per standard prescribed by the concerned SPCB. All the measures detailed in the EMP shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, RFCCU, process and storage units etc. for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration levels and shall not exceed for the worst scenario predicted for SO <sub>2</sub> (15.7 Micro gram/m <sup>3</sup> ).	The revamping job of RFCCU was not pursued due to economic reasons. The emission level of SO <sub>2</sub> remains unchanged.
II	There will be no increase in the pollution load of SO <sub>2</sub> emission as augmentation of Flue Gas Scrubbing section will be undertaken to keep the SO <sub>2</sub> emission levels within the existing levels. A new Sulphur Recovery Unit (SRU) with more than 99% of efficiency shall be installed under once through hydro-Cracker Unit to keep SO <sub>2</sub> emission levels within the existing levels.	Sulphur Recovery Unit (SRU) having efficiency >99.5%, has been commissioned along with Once through Hydrocracking unit. The month wise data of SO <sub>2</sub> emission from heater stacks of all process units is provided in Annexure-5 for the period of Apr 18 to Sep 18.
III	No additional stack is envisaged for the revamp of RFCCU. There will be no increase in emission levels of SO <sub>2</sub> from the existing two stacks in the RFCCU of 100 and 60M attached to the regenerator and the heater.	There is no change in emission levels of SO <sub>2</sub> from existing RFCCU as revamping job was not done.
IV	The emission levels of the other pollutants shall also remain within the existing levels.	Emission level is remains within limit and stack emission parameters is being monitored online.
V	Low sulphur internal fuel oil will be fired in process heaters and boilers.	Low sulphur fuel gas & low Sulphur fuel oil are used in heaters and boilers.

Sl.No	STIPULATION BY MOE&F & CC	STATUS
VI	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing monitoring stations will be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required. It will be ensured that at least one monitoring station is set up in up-wind and in down-wind direction along with those in other directions.	The ambient air quality within Refinery is monitored twice every week at 5 nos of locations. Six-monthly ambient air quality data is being submitted to MoEF&CC Regional Office. Monthly average of ambient air quality monitoring data from Apr'18 to Sep'18 is enclosed as Annexure-1.
VII	On-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters.	A Continuous Ambient Air Quality Monitoring Station (CAAQMS) is provided near the Refinery battery gate whose data is linked and transmitted to CPCB and WBPCB server. The analyzers are calibrated at regular interval. CAAQMS data for the month of Sep'18 is shown as Annexure-6.
VIII	The practice of acoustic plant design shall be adapted to limit noise exposure for personnel to an 8 hr time weighted average of 90 db(A).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-4. Persons if working in any high noise area use proper PPEs.
IX	For control of fugitive emissions, all unsaturated hydrocarbons will be routed to the flare system. The flare system shall be designed for smokeless burning.	Gaseous hydrocarbons are recovered in flare gas recovery system and recycled to fuel gas system. Refinery flare is designed for smoke less burning.
X	All the pumps and other equipment's where there is a likelihood of HC leakages shall be provided with LEL indicators. Provision for immediate isolation of such equipment, in case of a leakage will also be made. The company shall adopt Leak Detection and Repair (LDAR) program for quantification and control of fugitive emissions.	HC gas detectors are provided at specific locations within process units and it raises alarms at DCS in case if any HC leaks. Calibration of the HC detectors is being done at regular interval.
XI	The product loading gantry shall be connected to the product sphere in closed circuit through the vapour arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records will be maintained.	The vapour line from tank trucks is connected to the product storage system during LPG loading to collect vapour.  Fugitive emission is being monitored and recorded through authorize agency within units and offsite area.

Sl.No	STIPULATION BY MOE&F & CC	STATUS
XII	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present than the respective streams may be incinerated, if there are no technically feasible or economically viable reduction/ recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.	Flare gas recovery system is already in use to recover gases from flare header and reuse as fuel. There is a separate flare system to incinerate if any acid gas is generated.
XIII	All new standards/ norms that are being proposed by the CPCB for petrochemical plants shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e. TOCs standard and process vent standards for top priority chemicals. The company shall install online monitors for VOC measurements. Regular monitoring will be carried out for VOC and HC.	The VOC and HC monitoring is carried out once in a quarter by authorized agency approved by WBPCB.
XIV	No additional fresh water will be used for the expansion project. The requirement of 40 m <sup>3</sup> /hr of additional fresh water will be met from the existing facilities.	The revamping of RFCCU job was not done and fresh water consumption remains same.
XV	Additional waste water generation from the expansion project will be around 5 m <sup>3</sup> /hr which will be treated in the existing ETP. Part of the treated effluent shall be recycled and remaining shall be disposed into the river Hoogly through closed pipeline.	The revamping of RFCCU job was not done and effluent generation rate remain unchanged.
XVI	An additional generation of 1.5 T/day of Spent Catalyst (including filter cake), will be disposed off through the common hazardous waste disposal site of WBIDC at Haldia. Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE line pit for disposal through bio-remediation inside the 'refinery premises. Bio sludge will be stored in drying pit for natural weathering and then used as manure inside refinery premises. Remaining sludge will be incinerated in their own incinerator.	The spent catalyst generated from existing RFCCU is being disposed to authorized TSDF agency approved by WBPCB.  Oily sludge is processed thru centrifuge to recover oil and the recovered oil is recycled.  The residual sludge after oil recovery is being disposed to authorized TSDF and Co-processing agency approved by WBPCB .



SI.No	STIPULATION BY MOE&F & CC	STATUS
XVII	Green belt shall be provided to mitigate the effects of fugitive emissions all around the plant in a minimum of 33% of the plant area in consultation with DFO as per CPCB guidelines.	Haldia refinery has so far planted more than 61,800 saplings in and around Refinery which have flourished and maintained greenery as well as eco-balance in Haldia region.  Around 65 nos of new tree saplings are planted at Refinery and at Township on World Environment day-2018. Total 700 nos of tree saplings are distributed to township residence during Van Mahotsav in Aug'18.
XVIII	The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	All recommendations mentioned in Charter on CREP are being followed by Haldia Refinery.
XIX	The Company must harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	At Haldia Refinery, 8 nos. rainwater harvesting projects installed since 2011-12 either for storage of rain water or for re-charging the ground water. The total catchment area for rain water harvesting is developed up to 11,930 Square meters.
XX	Occupational Health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Occupational Health check up for the employees is being carried out at periodic interval and records maintained at Occupational health centre. The record of Haldia Refinery OHC check up done from Apr'18 to Sep'18 is enclosed as <b>Annexure-7 &amp; Annexure-7A</b> .
XXI	The company shall implement all the recommendations made in the EIA / EMP report and risk assessment report.	Recommendations made in the EIA, EMP and risk assessment report are implemented.

#### GENERAL CONDITIONS:

SI.No	STIPULATION BY MOE&F & CC	STATUS
I	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Haldia Refinery has been adhering to the stipulations made by the West Bengal Pollution Control board and submitting necessary compliance Reports as per schedule.
II	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests .	Environmental clearance from MoEF & CC shall be taken before any expansion or modernization in the plant.
III	At no time, the emissions should go beyond the	The emissions from stacks are well within the

	prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	prescribed limits. Online monitoring system and uplinking of data to CPCB server have been completed. The last six months average data of SO <sub>2</sub> emission from heater stacks of all Process Units during Apr'18 to Sep'18 is 770.4 Kg/hr (Refer Annexure-5).
IV	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters.	Water quality is monitored at the outlet of ETP-1, ETP-2 and TTP/RO outlet. Online analyzers are also installed at these three locations to monitor pH, TSS, COD & BOD. Real time data of these analyzers are connected to CPCB & SPCB server.
V	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422(E) dated 19 <sup>th</sup> May 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Waste effluent water generated from process units are collected into Influent sump through Oily Water Sewer (OWS). This waste effluent water is treated in ETP-1 & ETP-2. The treated water from ETP-1 & ETP-2 is being used in Tertiary Treatment plant, Cooling water and Fire water service.
VI	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85 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 ) and 70 dBA (night time).	Leq of noise level along refinery boundary wall is conforming to limits of <75 dBA in day time and <70 dBA in night time. The noise level data at boundary area of Haldia Refinery is enclosed as Annexure-4. Persons if working in any high noise area use proper PPE.
VII	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.	Safety Audit under MSIHC Rules done in April 2018 in Haldia Refinery.  Prior approval is always taken from PESO before commissioning of any new project at Haldia refinery.
VIII	Authorization from the SPCB must be obtained for collections/ treatment/ storage /disposal of hazardous wastes.	Hazardous Waste authorization for handling and disposal of hazardous wastes is obtained from WBPCB with validity up to 31-12-2020.
IX	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Adequate funds are allocated every year for implementation of all conditions stipulated for Environmental protection to meet the requirements. The expenditure for Environment monitoring, Chemical treatment of treated water to reuse for fire water & cooling water make up, Hazardous waste disposal, Tree plantation, WED program, ETP treated water

		recycle, Sludge oil recovery, EIA study job and RA study job and ETP & TTP operation cost are shown in Annexure-3.
X	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards should be submitted to this Ministry/ Regional Office/CPCB/SPCB.	Six monthly data are being submitted in the month of June and Dec every year to the MoEF&CC Regional Office & WBPCB. Last report sent in the month of May 2018.
XI	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 SPCB/ Committee and may also be seen at Website of the Ministry of Environment and 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 in 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.	After receipt of Environmental clearance, application is being placed before State pollution control board to obtain Consent to Establish (NOC). Also the news of EC is being published in two local news papers.
XII	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project will be informed to the Ministry and its Regional Office.	The revamping job of RFCCU was not pursued due to economic reasons.
XIII	Proper Housekeeping and adequate occupational health programs shall be taken up. Regular Occupational Health Surveillance Program for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	Proper housekeeping is done within refinery to maintain cleanliness.  There is a dedicated Occupational health check up centre at Haldia refinery and periodical OHC check up is done for employees and records are maintained. The record of OHC check up done from Apr'18 to Sep'18 is enclosed as <b>Annexure-7a &amp; Annexure-7b</b> .  Fugitive emission monitoring is being carried out by authorize agency and exposure to emission and other hydrocarbons is utmost avoided.
XIV	A separate environment management cell with full fledge laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	Health Safety Environment (HSE) department exists in Haldia Refinery with several qualified personnel with 15 - 35 years experience in Refineries & Petrochemicals industries. Also all activities are monitored by Refinery Head quarter HSE department. For any professional help such as Risk

		<p>Assessment &amp; EIA/ EMP study, Haldia Refinery is always appointing competent professional agency.</p> <p>Regular Environmental monitoring and Ambient air quality monitoring is done by authorized agency M/S Envirotech East Pvt limited.</p> <p>A separate OHC centre also exists for periodic occupational health check up for employees.</p>
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### Haldia Refinery

**SUB : SIX MONTHLY STATUS REPORT for Apr'18 – Sep'18 dt.01.12.2018**

<b>Sl No</b>	<b>EC Reference No and Date</b>	<b>Project name</b>	<b>Status</b>
8.0	J-11011/904/2007-IA II (I) Dated 17 <sup>TH</sup> MARCH,2009	Installation of Delayed Coking unit (DCU) at Haldia refinery Haldia WB by IOCL.	This project was clubbed with the next FPU & Capacity expansion projects and a fresh EC was granted. Name of 'DCU' project was changed as Distillate Yield Improvement Project (DYIP).
9.0	J-11011/299/2013-IA II(I) DATED 4 <sup>TH</sup> MARCH,2016	Capacity expansion from 7.5 MTPA to 8 MTPA along with distillate yield improvement project (DYIP) and Feed processing unit (FPU) at IOCL Haldia refinery, Purba Medinipur, WB.	As on 1st Oct 2018: DYIP project is under construction stage and expected to be commissioned in Jan 2019. Capacity expansion job shall also be completed in the year 2019-20.
10.0	J-11011/175/2016-IA-II(I)	BS-VI Fuel Quality Up-gradation Project (Phase-I) at Haldia refinery, Haldia West Bengal by M/S IOCL.	Status as On 1 <sup>st</sup> Oct 2018: Project completion in 2019-20. Commission of BS-VI project planned at the end of 2019.



## Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data

Haldia Refinery

Period: 1st to 30th Apr-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic (As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
<b>NO. OF SAMPLES</b>	8	8	8	8	8	8	8	8	8	8	8	8
<b>*Annual Target</b>	<b>60</b>	<b>40</b>	<b>50</b>	<b>40</b>	<b>100 (8 hours)</b>	<b>0.5</b>	<b>2 (8 hours)</b>	<b>100</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>20</b>
<b>Location: Near LABORATORY</b>												
<b>**Actual Average</b>	47.0	21.22	11.33	31.7	19.7	0.06	0.68	17.22	0.18	BDL	BDL	BDL
<b>Location: Near TUBEWELL 4A</b>												
<b>**Actual Average</b>	49.5	22.3	12.0	32.5	20.1	0.1	0.8	18.6	0.2	BDL	BDL	BDL
<b>Location: Near MAIN GATE</b>												
<b>**Actual Average</b>	55.7	25.1	13.3	36.3	23.1	0.1	0.8	20.7	0.3	BDL	BDL	BDL
<b>Location: Near BITUMEN BUILDING</b>												
<b>**Actual Average</b>	45.6	21.0	10.4	28.9	18.8	0.1	0.6	17.5	0.2	BDL	BDL	BDL
<b>Location: Near OM&amp;S BUILDING</b>												
<b>**Actual Average</b>	50.6	23.0	12.0	33.3	20.3	0.1	0.7	18.4	0.2	BDL	BDL	BDL

BDL- Below Detectable Limit

\* Annual Target - Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

## Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data

Haldia Refinery

Period: 1st to 31st May-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
<b>NO. OF SAMPLES</b>	9	9	9	9	9	9	9	9	9	9	9	9
<b>*Annual Target</b>	<b>60</b>	<b>40</b>	<b>50</b>	<b>40</b>	<b>100 (8 hours)</b>	<b>0.5</b>	<b>2 (8 hours)</b>	<b>100</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>20</b>
<b>Location: Near LABORATORY</b>												
<b>**Actual Average</b>	44.6	20.3	11.3	29.0	17.9	0.06	0.7	16.2	0.2	BDL	BDL	BDL
<b>Location: NEAR TUBEWELL 4A</b>												
<b>**Actual Average</b>	42.6	19.9	10.5	28.3	17.5	0.06	0.69	16.71	0.16	BDL	BDL	BDL
<b>Location: Near MAIN GATE</b>												
<b>**Actual Average</b>	52.9	24.3	13.3	34.4	21.6	0.08	0.77	19.67	0.28	BDL	BDL	BDL
<b>Location: Near BITUMEN BUILDING</b>												
<b>**Actual Average</b>	37.8	17.0	9.3	25.6	15.8	0.05	0.60	15.17	0.13	BDL	BDL	BDL
<b>Location: Near OM&amp;S BUILDING</b>												
<b>**Actual Average</b>	48.2	21.9	12.2	31.2	19.8	0.07	0.72	18.00	0.18	BDL	BDL	BDL

BDL- Below Detectable Limit

\* Annual Target - Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.



## Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data

Haldia Refinery

Period: 1st to 30th Jun-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	9	9	9	9	9	9	9	9	9	9	9	9
*Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20
<b>Location: Near LABORATORY</b>												
**Actual Average	41.88	18.75	9.88	27.25	16.63	0.05	0.58	16.60	0.15	BDL	BDL	BDL
<b>Location: NEAR TUBEWELL 4A</b>												
**Actual Average	40.89	18.11	9.44	26.00	15.67	0.05	0.62	18.00	0.13	BDL	BDL	BDL
<b>Location: Near MAIN GATE</b>												
**Actual Average	50.50	23.25	12.75	32.50	19.63	0.08	0.75	19.57	0.25	BDL	BDL	BDL
<b>Location: Near BITUMEN BUILDING</b>												
**Actual Average	36.78	16.44	7.67	23.44	14.22	0.05	0.47	16.00	0.26	BDL	BDL	BDL
<b>Location: Near OM&amp;S BUILDING</b>												
**Actual Average	44.50	20.63	10.88	28.38	17.63	0.07	0.69	18.00	0.18	BDL	BDL	BDL

BDL- Below Detectable Limit

\* Annual Target - Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

## Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data

Haldia Refinery

Period: 1st to 31st Jul-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
<b>NO. OF SAMPLES</b>	9	9	9	9	9	9	9	9	9	9	9	9
<b>*Annual Target</b>	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20
<b>Location: Near LABORATORY</b>												
<b>**Actual Average</b>	35.67	16.78	8.78	23.56	14.00	BDL	0.52	12.50	BDL	BDL	BDL	BDL
<b>Location: NEAR TUBEWELL 4A</b>												
<b>**Actual Average</b>	35.44	15.89	8.11	22.78	14.22	BDL	0.59	BDL	BDL	BDL	BDL	BDL
<b>Location: Near MAIN GATE</b>												
<b>**Actual Average</b>	42.44	20.00	10.67	27.67	17.00	BDL	0.63	14.00	BDL	BDL	BDL	BDL
<b>Location: Near BITUMEN BUILDING</b>												
<b>**Actual Average</b>	32.78	15.11	7.67	21.22	12.67	BDL	0.52	BDL	BDL	BDL	BDL	BDL
<b>Location: Near OM&amp;S BUILDING</b>												
<b>**Actual Average</b>	37.44	17.11	9.33	24.44	14.67	BDL	0.58	14.00	BDL	BDL	BDL	BDL

BDL- Below Detectable Limit

\* **Annual Target** - Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.\*\* **Actual Average** - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

**Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data**  
**Haldia Refinery**

Period: 1st to 31st Aug 2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic (As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
SAMPLES	9	9	9	9	9	9	9	9	9	9	9	9
*Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20
<b>Location: Near LABORATORY</b>												
**Actual Average	32.33	14.67	8.11	21.22	13.50	BDL	0.50	BDL	BDL	BDL	BDL	BDL
<b>Location: NEAR TUBEWELL 4A</b>												
**Actual Average	32.22	15.22	7.44	21.00	13.67	BDL	0.51	BDL	BDL	BDL	BDL	BDL
<b>Location: Near MAIN GATE</b>												
**Actual Average	37.89	17.22	9.67	25.22	15.11	BDL	0.66	BDL	BDL	BDL	BDL	BDL
<b>Location: Near BITUMEN BUILDING</b>												
**Actual Average	29.67	13.56	6.78	19.33	12.40	BDL	0.47	BDL	BDL	BDL	BDL	BDL
<b>Location: Near OM&amp;S BUILDING</b>												
**Actual Average	33.00	15.44	8.44	21.56	14.00	BDL	0.53	BDL	BDL	BDL	BDL	BDL

BDL - Below Detectable Limit

\* Annual Target - Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

**Annexure-1**  
**Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data**  
**Haldia Refinery**

**Period:1st to 30th Sep-2018**

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
<b>NO. OF SAMPLES</b>	7	7	7	7	7	7	7	7	7	7	7	7
<b>*Annual Target</b>	<b>60</b>	<b>40</b>	<b>50</b>	<b>40</b>	<b>100 (8 hours)</b>	<b>0.5</b>	<b>2 (8 hours)</b>	<b>100</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>20</b>
<b>Location: Near LABORATORY</b>												
<b>**Actual Average</b>	36.4	16.0	9.1	23.5	13.5	0.1	0.6	12.3	BDL	BDL	BDL	BDL
<b>Location: NEAR TUBEWELL 4A</b>												
<b>**Actual Average</b>	38.4	17.4	9.3	25.4	15.0	0.1	0.6	12.5	BDL	BDL	BDL	BDL
<b>Location: Near MAIN GATE</b>												
<b>**Actual Average</b>	43.1	19.8	10.9	28.1	16.9	0.1	0.7	14.3	0.1	BDL	BDL	BDL
<b>Location: Near BITUMEN BUILDING</b>												
<b>**Actual Average</b>	34.9	16.0	7.4	23.5	14.5	BDL	0.5	BDL	BDL	BDL	BDL	BDL
<b>Location: Near OM&amp;S BUILDING</b>												
<b>**Actual Average</b>	38.0	16.5	9.9	25.1	14.8	0.1	0.6	13.8	BDL	BDL	BDL	BDL

BDL- Below Detectable Limit

\* **Annual Target** - Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* **Actual Average** - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data

Annexure 1A

Haldia Refinery

Period: 1st to 30th Apr-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	8	8	8	8	8	8	8	8	8	8	8	8
*Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20
Location: Near REFINERY HOSPITAL												
** Actual Average	36.7	16.2	4.0	24.1	18.0	BDL	0.5	12.2	ND	ND	BDL	BDL
Location: Near SECTOR-21												
** Actual Average	39.4	16.8	4.0	25.9	19.1	0.05	0.6	15.0	ND	ND	BDL	BDL

Period: 1st to 31st May-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	9	9	9	9	9	9	9	9	9	9	9	9
*Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20
Location: Near REFINERY HOSPITAL												
** Actual Average	32.8	14.8	4.0	21.2	15.7	BDL	0.5	13.0	ND	ND	BDL	BDL
Location: Near SECTOR-21												
** Actual Average	33.6	15.1	4.0	20.8	14.9	0.1	0.5	13.5	ND	ND	BDL	BDL

BDL- Below Detectable Limit, ND- Not Detectable

\* Annual Target- Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data

Annexure 1A

Haldia Refinery

Period: 1st to 30th Jun-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	9	9	9	9	9	9	9	9	9	9	9	9
*Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20

Location: Near REFINERY HOSPITAL

** Actual Average	33.8	16.9	BDL	21.0	15.6	BDL	0.5	BDL	ND	ND	BDL	BDL
Location: Near SECTOR-21												
** Actual Average	34.2	15.6	BDL	21.4	14.9	BDL	0.5	BDL	ND	ND	BDL	BDL

Period: 1st to 31st Jul-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	9	9	9	9	9	9	9	9	9	9	9	9
*Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20

Location: Near REFINERY HOSPITAL

** Actual Average	29.4	12.9	BDL	19.0	14.4	BDL	0.4	BDL	BDL	BDL	BDL	BDL
Location: Near SECTOR-21												
** Actual Average	29.7	13.2	BDL	18.3	12.4	BDL	0.4	BDL	BDL	BDL	BDL	BDL

BDL- Below Detectable Limit, ND- Not Detectable

\* Annual Target- Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

**Compliance of Statutory Stipulations - Ambient Air Quality Monitoring data**  
**Haldia Refinery**

Annexure 1A

Period: 1st to 31st Aug-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	9	9	9	9	9	9	9	9	9	9	9	9
* Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20

Location: Near REFINERY HOSPITAL

** Actual Average	29.3	13.0	BDL	16.4	10.5	BDL	0.4	BDL	ND	ND	BDL	BDL
** Actual Average	26.9	13.0	BDL	16.9	10.5	BDL	0.4	BDL	ND	ND	BDL	BDL

Location: Near SECTOR-21

Period: 1st to 30th Sep-2018

Parameters	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>	Ozone	Pb	CO	NH <sub>3</sub>	Benzene	Benzo(a)Pyrene (BaP)	Arsenic(As)	Nickel (Ni)
Unit	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>	ng/m <sup>3</sup>
NO. OF SAMPLES	8	8	8	8	8	8	8	8	8	8	8	8
* Annual Target	60	40	50	40	100 (8 hours)	0.5	2 (8 hours)	100	5	1	6	20

Location: Near REFINERY HOSPITAL

** Actual Average	30.3	13.4	BDL	17.4	12.5	BDL	0.4	BDL	ND	ND	BDL	BDL
** Actual Average	31.3	14.5	BDL	19.8	13.7	BDL	0.5	BDL	ND	ND	BDL	BDL

Location: Near SECTOR-21

BDL- Below Detectable Limit, ND- Not Detectable

\* Annual Target- Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* Actual Average - Average of the month as analysis is being done twice a week 24 hourly at uniform intervals.

**MONTH WISE AVERAGE DATA OF FINAL  
TREATED EFFLUENT DISCHARGED TO RIVER  
HOOGLY**

(Apr-2018 to Sep-2018)

S.No.	Parameter	Statutory Stipulations	Average for the month							Percent Compliance w.r.t. SPCB
			Apr'18	May'18	Jun'18	Jul'18	Aug'18	Sep'18		
1	pH	SPCB 6 - 8.5	7.6	7.9	7.7	7.6	7.8	7.7	100	
2	Phenol, mg/l	0.35	0.05	0.05	0.04	0.06	0.08	0.09	100	
3	Sulphides, mg/l	0.5	0.25	0.33	0.26	0.29	0.20	0.21	100	
4	Oil, mg/l	5	3.4	2.4	3.0	2.7	2.3	2.4	100	
5	COD, mg/l	125	64.8	63	69.8	57.9	60.3	62.8	100	
6	BOD, mg/l	15	8.6	8.5	7.8	9.1	9.7	12.1	100	
7	TSS, mg/l	20	18.3	14.1	12.8	11.0	12.1	14.9	100	



## Details of Environmental Expenditure of Haldia Refinery for Year: 2018-19 Up to Sept'18

S No	Item description	Expenditure (Rs. Lakhs)				
		Apr'18 to Jun'18	Jul'18 to Sep'18			FY 2018-19
<b>O&amp;M contracts (Operation of ETP/STP/RO/TSDf/Oily Sludge Treatment/Biomethanation plant/Mobile Ambient Air/ Bio Medical Waste Handling etc.)</b>						
1	Operation of ETP	55.00	55.0			110.0
2	O & M Contracts for TTP-RO	48.66	51.5			100.2
2	Oily Sludge Treatment for recovery of Oil	116.90	119.2			236.1
<b>One Time Expenditure (ETP Chemicals, activated Carbon etc./ Bioremediation of oily Sludge/Disposal of Haz. Wastes, Spent Catalyst / Storage Tank Cleaning/ Tree Plantation etc. )</b>						
1	ETP Chemicals like ACF & PSF	4.46	4.46			8.9
2	Disposal of Hazardous waste to TSDf through authorized agency	9.62	11.89			21.5
3	Disposal of Residual Oily Sludge to TSDf through authorized agency	98.06	126.47			224.5
4	Tree Plantation	0.05	0.5			0.6
<b>Fees payable towards Statutory authorities (for Consents, Authorisation/Water Cess/ Effluent Discharge etc.)</b>						
1	Consent to Operate for Refinery	0	0			0.0
2	Consent to Establish for BS-VI Project Phase-1	0	0			0.0
3	ETP Treated effluent & Effluent discharge monitoring by WBPCB	0	0.21			0.2
4	Quarterly Stack emission monitoring by WBPCB	0.45	0.45			0.9
<b>AMC jobs (Online Stack/Treated Effluent / Ambient Air Monitoring)</b>						
1	Chemical Treatment of ETP treated effluent water for using at Cooling tower & Fire water	20.88	24.36			45.2
<b>Audit / Study / Consultancy jobs (Water Pinch Study/Audits; ISO Audits; Audits by External Agencies etc.)</b>						
1	ISO Audit	0.84	0			0.8
2	RRA Study	0	0			0.0
3	Water consumption study	0	9.4			9.4
<b>Monitoring jobs (Ground water, soil, stack emissions, ambient air, fugitive emissions (LDAR) etc.</b>						
1	Environmental Monitoring job	1.44	1.11			2.6
2	Ambient Air Quality Monitoring	6.77	7.14			13.9
<b>Other Jobs (WED Celebrations/ Awareness &amp; Training Programs/ Process Modifications/ Green Belt Development</b>						
1	World Environment Day Celebration/ Awareness program	2.6	0.0			2.6
<b>A</b>	<b>Total Revenue expenditure</b>	<b>365.7</b>	<b>411.7</b>	<b>0.0</b>	<b>0.0</b>	<b>777.410</b>
<b>Capital Expenditure</b>						
<b>(ETP Modernisation/RO Plant/EIA&amp;RA Studies/ Rainwater Harvesting/Solarisation/ LED Lights etc.)</b>						
1	LED Lights	0	0			0.0
2	EIA & RA study	0	0			0.0
<b>B</b>	<b>Total Capital expenditure</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Environmental Expenditure Rs.in Lakh (A+B)</b>		<b>365.7</b>	<b>411.7</b>	<b>0.0</b>	<b>0.0</b>	<b>777.41</b>

Environmental Expenditure for first six months during FY 2018-19 is arrived of Rs. 7.77 Crore (Rupees Seven Crore Sixty Eight lakh only)

**Indian Oil Corporation Ltd**

**Haldia Refinery**

**DAY & NIGHT NOISE MONITORING RESULTS**

**Date: 06/10/2018 to 07/10/2018**

SI No.	Location Name	NOISE RESULTS ( dBA)	
		Day Time Limit: 75 dBA	Night Time Limit: 65 dBA
1	East of Horton Sphere	66.3	61.3
2	East of Tank No. 109	62.4	60.1
3	North of Tank No. 111	63.6	58.7
4	East of Tank No. 113	74.8	64.2
5	DHDS Cooling Tower	72.4	63.8
6	West of OHCU Plant Area, Road A	63.2	58.3
7	Near Flare Stack Area	73.1	61.4
8	West of ETP Office, Road A	66.7	59.8
9	Near Gate No. 04, Road A	67.7	60.2
10	South West of Old and Closed Catch Pit No. 01	61.3	56.9
11	South of Solvent Handling Area	64.2	61.2
12	South East of LPG Bulk Loading Area	71.9	60.1

**INDIA OIL CORPORATION LTD**  
**Haldia Refinery**  
**Stack Monitoring Result for SO2 emission**  
**Period : Apr'18 to Sep'18**

Sl.No.	Source Name	SO2 emission data of Haldia Refinery					
	Stack Attached to	Apr'18	May-18	Jun'18	Jul'18	Aug'18	Sep'18
1	CDU # 1	23.0	24.8	21.5	23.8	22.6	24.0
2	CDU # 1 Trim Heater	7.2	7.7	7.2	7.3	6.9	7.5
3	CDU # 2	54.6	53.2	56.1	48.1	46.3	43.5
4	CDU # 2 Trim Heater	14.1	14.1	15.5	14.0	13.3	12.0
5	CRU	1.6	1.8	1.6	1.7	2.1	1.9
6	KHDS	0.9	1.2	1.4	1.3	1.3	1.2
7	FEU (North)	S/D	9.8	11.2	S/D	9.5	S/D
8	FEU (Middle)	S/D	12.6	13.2	S/D	11.3	S/D
9	FEU (South)	S/D	11.4	12.5	S/D	10.4	S/D
10	HFU	0.1	0.2	0.2	0.2	0.2	0.2
11	VBV (North)	17.2	16.5	16.7	16.3	17.5	16.7
12	VBV (South)	12.9	12.4	14.4	13.5	14.3	13.0
13	VDU # 1	27.2	26.8	26.9	24.5	22.9	22.6
14	VDU # 1 Trim Heater	11.5	10.5	11.9	10.2	9.6	8.4
15	CIDW	0.9	0.7	1.1	0.8	S/D	0.8
16	PDA	15.6	14.2	15.7	15.3	S/D	11.7
17	OHCU	17.4	17.8	17.5	17.1	16.8	14.0
18	HGU # 2 Reformer	6.2	5.3	5.6	5.2	5.2	4.6
19	HGU # 2 PDS	0.1	0.1	0.1	0.1	0.1	0.1
20	FPU	S/D	S/D	S/D	1.7	1.6	2.1
21	SRU - II	35.0	S/D	S/D	35.1	31.9	34.7
22	SRU-III	S/D	42.8	43.1	43.3	40.3	79.6
23	SRU - IV	73.7	48.1	72.1	74.3	71	70.6
24	FCCU (Heater)	1.1	1.4	1.4	1.1	1.1	1.4
25	FCCU (Regenerator)	78.3	78.2	86.0	92.0	84.3	81.7
26	VDU # 2	64.3	63.3	59.0	80.7	61.6	63.4
27	MSQU	0.9	0.8	0.8	58.5	1.2	1.6
28	DHDS	0.9	0.8	0.9	1.3	1.0	0.7
29	GAS TURBINE(GT#1)	9.4	8.8	8.3	0.7	8.2	7.4
30	GAS TURBINE(GT#2)	11.4	10.2	10.5	7.6	10.2	8.8
31	GAS TURBINE(GT#3)	8.4	7.6	7.1	S/D	6.9	6.3
32	TPS (Boiler-II)	S/D	S/D	139.6	9.7	137.2	S/D
33	TPS (Boiler-III)	S/D	S/D	S/D	130.7	S/D	S/D
34	TPS (Boiler-IV)	170.1	131.6	189.2	141.0	176.9	193.9
<b>Total SO2 emission (Kg/hr)</b>		<b>664.0</b>	<b>634.7</b>	<b>868.3</b>	<b>877.1</b>	<b>843.7</b>	<b>734.4</b>

Note- S/D : Shutdown

**Average SO2 emission rate from Apr-18 to Sep'18**

**770.4 Kg/hr**

## INDIAN OIL CORPORATION LTD

## HALDIA REFINERY

## Typical Continuous Ambient Air Quality Monitoring Data

Month: Sep-2018								
Time Base:	24 hours							
	Permissible Limit							
Pollutants	PM-10	PM-2.5	SO2	NOx	O3	CO	NH3	Benzene
Unit	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	mg/m3	ug/m3	ug/m3
Date	60	40	50	40	100 (8 hours)	02 (8 hours)	100	5
1-9-18	37.6	15.7	3.2	9.6	36.4	1.6	16.8	4.2
2-9-18	38.0	20.5	3.4	9.8	50.7	1.4	17.2	4.0
3-9-18	41.5	42.0	3.4	14.5	44.3	1.2	21.7	4.0
4-9-18	46.3	34.4	1.7	16.7	28.6	1.3	24.1	4.7
5-9-18	48.6	37.2	1.6	16.2	18.2	1.1	24.7	2.5
6-9-18	28.9	14.4	1.7	10.8	33.6	1.2	18.9	2.9
7-9-18	45.6	18.0	2.2	7.9	39.9	1.3	14.9	4.2
8-9-18	53.7	21.8	2.6	7.2	40.6	1.5	14.8	4.6
9-9-18	54.6	23.7	2.6	7.8	44.3	1.0	15.4	3.8
10-9-18	55.1	26.9	2.9	9.3	34.8	1.1	16.8	3.3
11-9-18	45.4	36.4	2.6	16.0	33.3	1.6	23.3	3.2
12-9-18	51.2	37.4	3.7	13.5	58.6	1.4	20.8	2.7
13-9-18	53.8	36.4	3.2	13.3	58.6	1.7	20.3	2.6
14-9-18	56.7	38.2	3.5	20.2	45.1	1.8	29.0	4.5
15-9-18	54.3	33.5	2.3	19.9	33.7	1.7	27.7	2.1
16-9-18	57.1	34.9	2.8	16.6	40.0	1.4	24.1	2.0
17-9-18	50.5	36.4	3.5	14.6	36.6	1.3	22.7	1.1
18-9-18	53.2	38.4	3.3	15.0	30.3	1.1	23.3	1.2
19-9-18	57.8	37.1	4.0	18.0	49.4	1.6	25.8	2.2
20-9-18	45.3	35.5	5.1	12.2	24.1	1.3	21.1	1.5
21-9-18	24.0	12.5	3.1	7.5	46.4	0.9	15.0	2.8
22-9-18	35.1	17.9	2.8	8.0	27.7	1.4	15.7	2.1
23-9-18	39.8	16.6	2.9	13.2	17.8	1.8	22.3	2.2
24-9-18	55.0	37.5	2.7	11.6	19.1	1.4	20.3	2.8
25-9-18	57.1	28.9	2.9	15.5	26.7	1.7	24.0	2.3
26-9-18	56.2	37.5	1.9	14.0	42.8	1.6	21.6	2.4
27-9-18	54.8	34.6	2.2	15.6	42.2	1.6	23.1	1.6
28-9-18	56.1	33.6	2.5	13.4	35.0	1.7	20.8	1.3
29-9-18	54.8	37.4	2.4	15.8	37.9	1.8	23.3	1.3
30-9-18	52.3	34.8	4.4	16.7	55.4	1.6	24.3	0.5

**Haldia Refinery**  
**OHC Health Check up Records of employees**  
 ( Status for the period of Apr'18 to Sep'18 )

Periodical examination		STATUTORY-A (Half Yearly)									
Group - A		Target groups exposed to chemical hazards									
	Unit / Department	Toxic Chemical Exposure	Frequency	Target	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Total
Toxic Chemical Exposure	FOB (production) CDU-I/II, KHDS, NHDT)-Area Field Operation	Corrosion inhibitor, CCL4, Caustic, Ammonia, H2S and Amine	Half yearly	62	2	1	0	12	30	14	59
	LOB (production) (VDU, VBU, NMP, CIDW, FEU, SDU, WHFU, HFU)-Area Field Operation	MEK, NMP, Furfural, H2S, Toluene, Ammonia, corrosion inhibitor, Caustic, Ammonia and Amine	Half yearly	56	2	0	0	3	24	21	50
	DHDS (production) MSQ, FCCU, VDU-II, SRU-2/3/4, ARU Area-Field operation.	Corr inhibitor, CCL4, Caustic Ammonia, H2S, Amine, Morpholine, TSP	Half yearly	85	0	0	7	27	40	13	87
	ETP (production) Area-Field operation.	Acid, Caustic, HC vapour	Half yearly	21	0	0	1	9	5	1	16
	OMS-(solvent area) Area-Field operation.	MEK, Furfural, Toluene, Ammonia	Half yearly	2	0	0	0	0	1	1	2
	OFFSITE (E/M, M/M, I/M)		Half yearly	22							0
	P&U (operation) Turb hall, Compressor field, Boiler Basement, All Cooling Towers, GT Area Field operation.	Caustic, Chlorine, Sulphuric Acid, Morpholine, TSP.	Half yearly	87	10	1	2	6	26	38	83
	QC Lab Area-testing and sampling	Lab chemicals	Half yearly	31	1	4	3	2	9	12	31
	OHCU (production) / NHGU Area-Field operation.	H2S, Amine	Half yearly	41	0	0	0	7	31	3	41
	TWL Field operation	HC VAPOUR	Half yearly	27	0	0	0	25	18	2	45
	TTL Field operation	HC VAPOUR	Half yearly	9	0	0	0	1	2	4	7
	LPG	HC VAPOUR	Half yearly	13	0	0	0	1	11	0	12
	Elect. Testing	Process units	Half yearly	6	0	0	0	1	5	0	6
	Telecom	All office area	Half yearly	1	0	0	0	0	2	0	2
Medical- Industrial Hygienist, Area-Hosp & FAC	Toxic gas, noise, HC Vapour	Half yearly	1	0	0	0	0	1	0	1	
<b>TOTAL</b>				<b>464</b>	<b>15</b>	<b>6</b>	<b>13</b>	<b>94</b>	<b>205</b>	<b>109</b>	<b>442</b>