

ADDITIONAL INFORMATION TO EAC INDUSTRY-2 (MoEFCC)
STYRENE AND ETHYLENE RECOVERY PROJECT

1: Reason for high CO in ambient air.

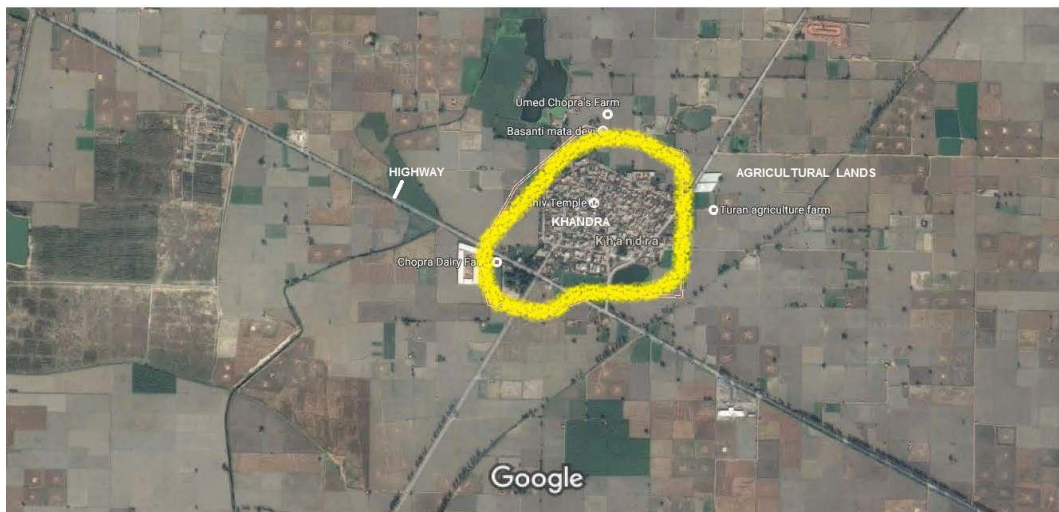
The ambient air quality data was collected at 8 villages surrounding 10 km radius from PNCP. The distance and direction w.r.t PNCP are given below.

Sl. No.	Location Code	Location	Distance w.r.t. Project site (centre) (km)	Direction w.r.t. Project site (centre)
1.	AQ1	Khandra	SW	2.7
2.	AQ2	Bahauli	NNE	6.5
3.	AQ3	Rajapur	NE	5.0
4.	AQ4	Baljatan	NW	2.3
5.	AQ5	Assan kalan	S	3.6
6.	AQ6	Untala	S	6.0
7.	AQ7	Bhalsi	SW	8.5
8.	AQ8	Sherah	W	4.5

The reason for high CO in each village is given subsequently sections.

Village - Khandra

The geographical features of Khandra monitoring station is as shown in the figure below.



The Khandra monitoring station is located about 2.7 km south west direction from PNCP. The location of Khandra monitoring station with respect to PNCP complex is as shown in the figure below:



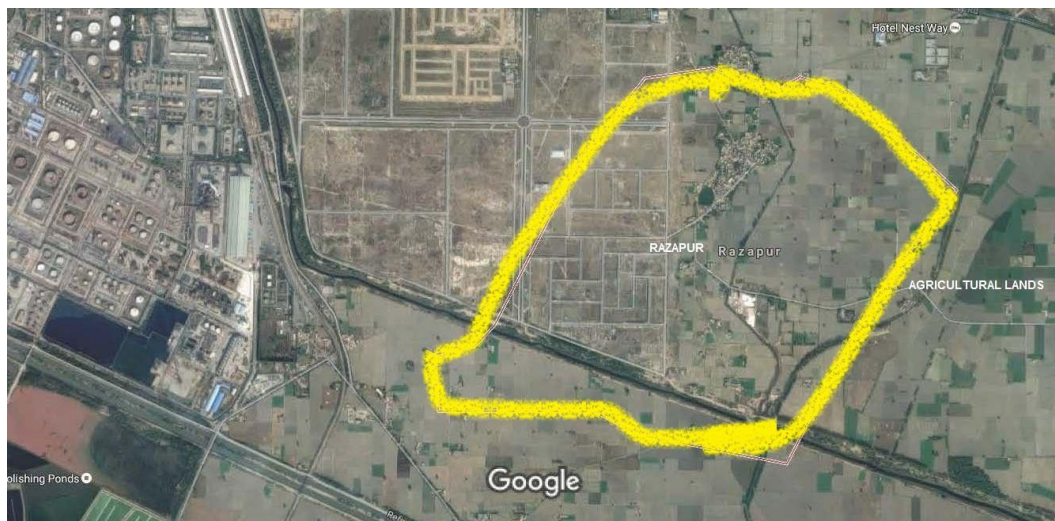
Ambient air quality monitored at this station during the period October-December 2012. The 98th percentile value of CO was found 2.1 mg/m³ which are slightly above the standard value of 2 mg/m³ (24 hourly). It can be noticed that the contributory sources at this station are mainly due to combustion of agricultural waste and traffic movement on highway. During the same period CO was monitored as <1 mg/m³ within the PNCP complex which indicates that the contribution of CO is due to local sources only. It is also to be noted that during the Diwali period (October-November) combustion of agricultural waste is a predominant activity in the village.

Village – Bahauli

The geographical features of Badauli (in Google map Bahauli is taken as Badauli) monitoring station is as shown in the figure below.

Village – Rajapur

The geographical features of Rajapur monitoring station is as shown in the figure below.



The Rajapur monitoring station is located about 5.0 km NE direction from PNCP. The location of Rajapur monitoring station with respect to PNCP complex is as shown in the figure below:



The 98th percentile value of CO was found 2.2 mg/m^3 which are slightly above the standard value of 2 mg/m^3 (24 hourly). It can be noticed that the contributory sources at this station are mainly due to combustion of agricultural waste and traffic movement on highway leads to Panipat refinery and PNCP. During the same period CO was monitored as $<1 \text{ mg/m}^3$ within the PNCP complex which indicates that the contribution of CO is due to local sources only. It is also to be noted that during the Diwali period

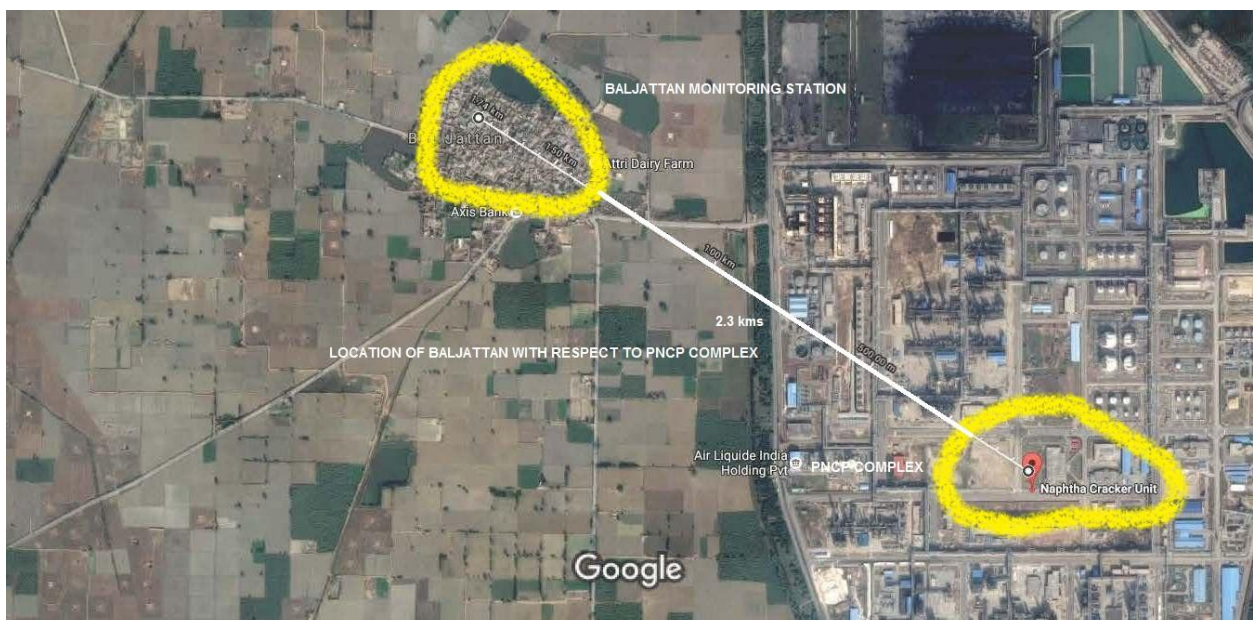
(October-November) combustion of agricultural waste is a predominant activity in the village.

Village – Baljatan

The geographical features of Baljatan monitoring station is as shown in the figure below.



The Baljatan monitoring station is located about 2.3 km NW direction from PNCP. The location of Baljatan monitoring station with respect to PNCP complex is as shown in the figure below:



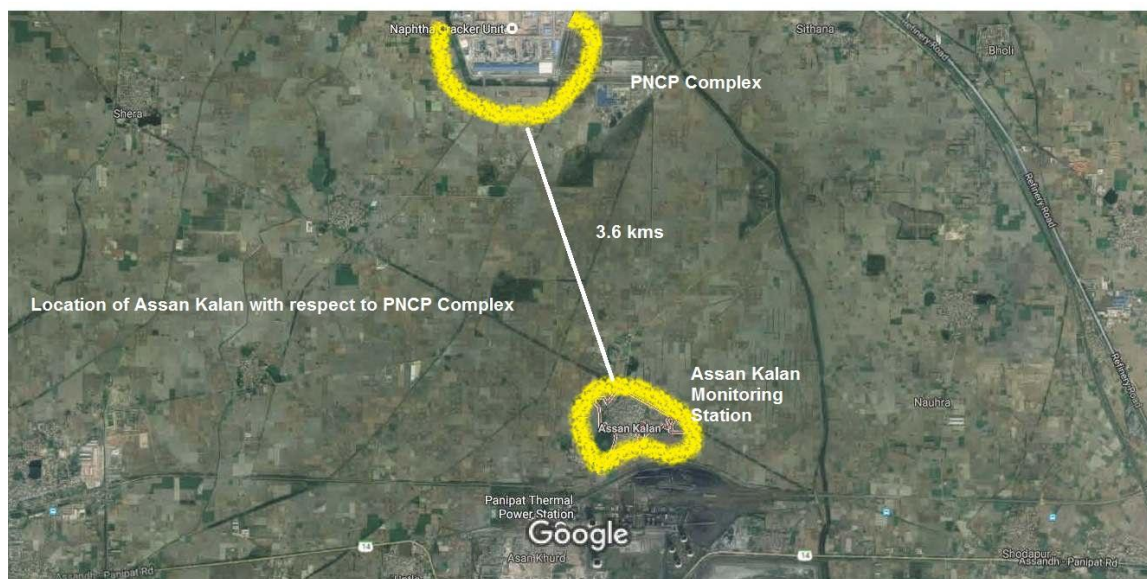
The 98th percentile value of CO was found 1.8 mg/m³ which are below the standard value of 2 mg/m³ (24 hourly).

Village – Assan Kalan

The geographical features of Assan Kalan monitoring station is as shown in the figure below.



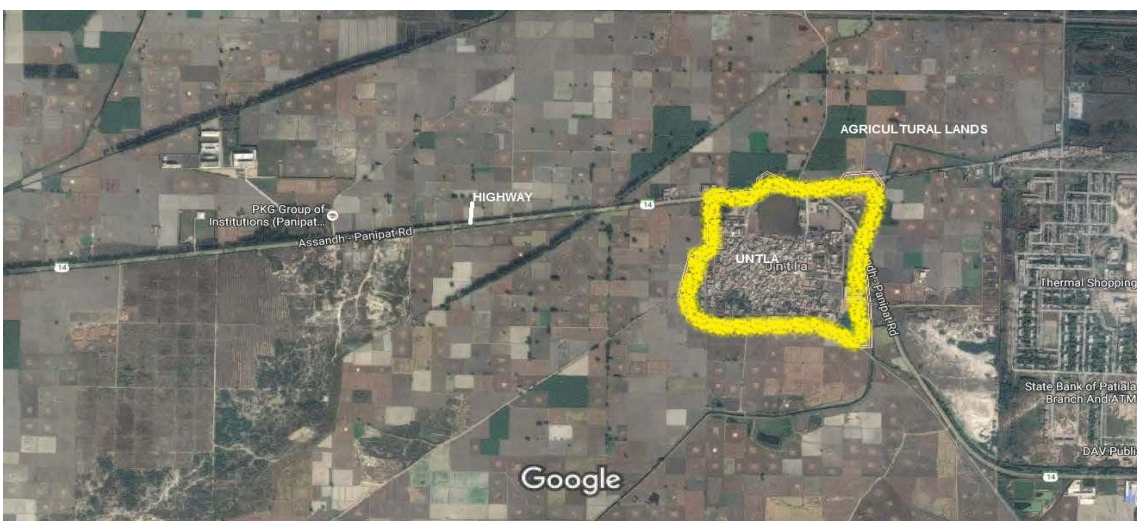
The Assan Kalan monitoring station is located about 3.6 km South direction from PNCP. The location of Assan Kalan monitoring station with respect to PNCP complex is as shown in the figure below:



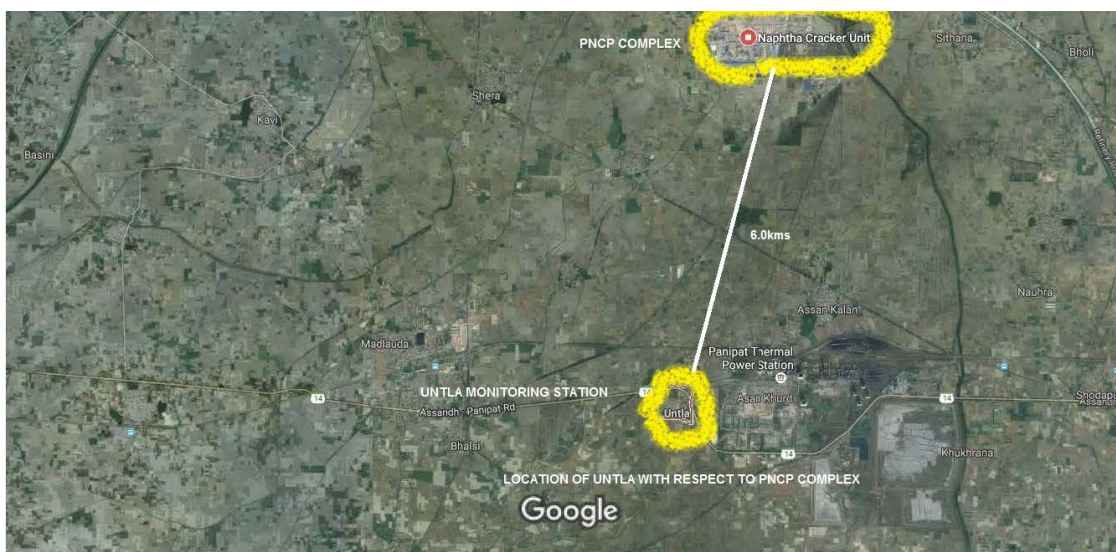
The 98th percentile value of CO was found 2.0 mg/m³ which are equal to the standard value of 2 mg/m³ (24 hourly). It can be noticed that the contributory sources at this station are mainly due to combustion of agricultural waste, traffic movement on highway and railway line. During the same period CO was monitored as <1 mg/m³ within the PNCP complex which indicates that the contribution of CO is due to local sources only.

Village – Untala

The geographical features of Untala monitoring station is as shown in the figure below.



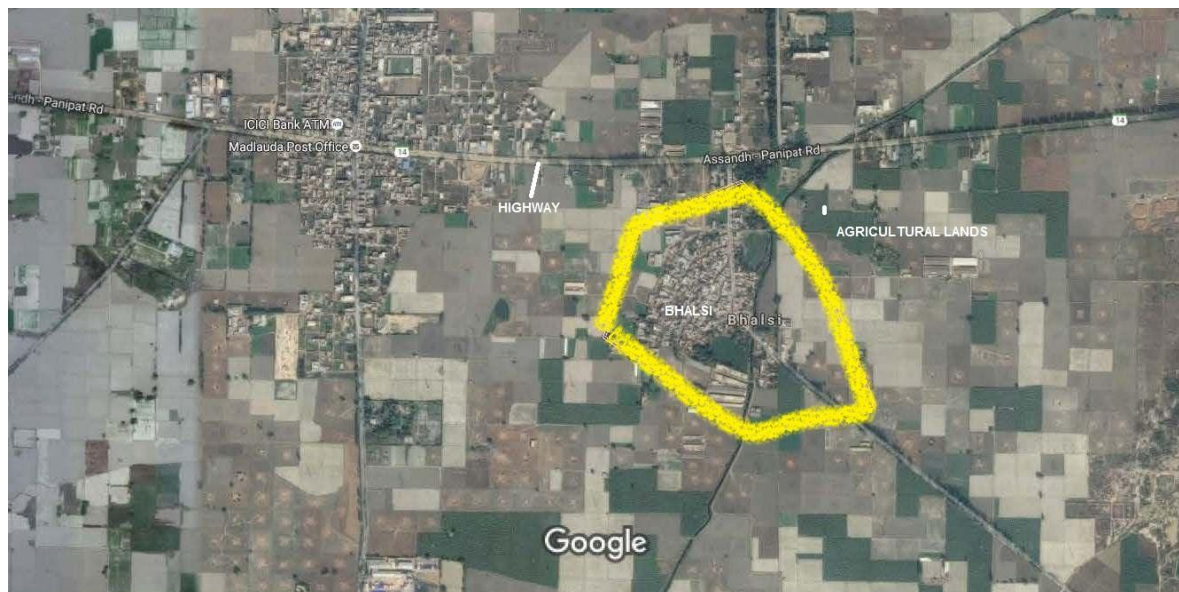
The Untala monitoring station is located about 6.0 km South direction from PNCP. The location of Untala monitoring station with respect to PNCP complex is as shown in the figure below:



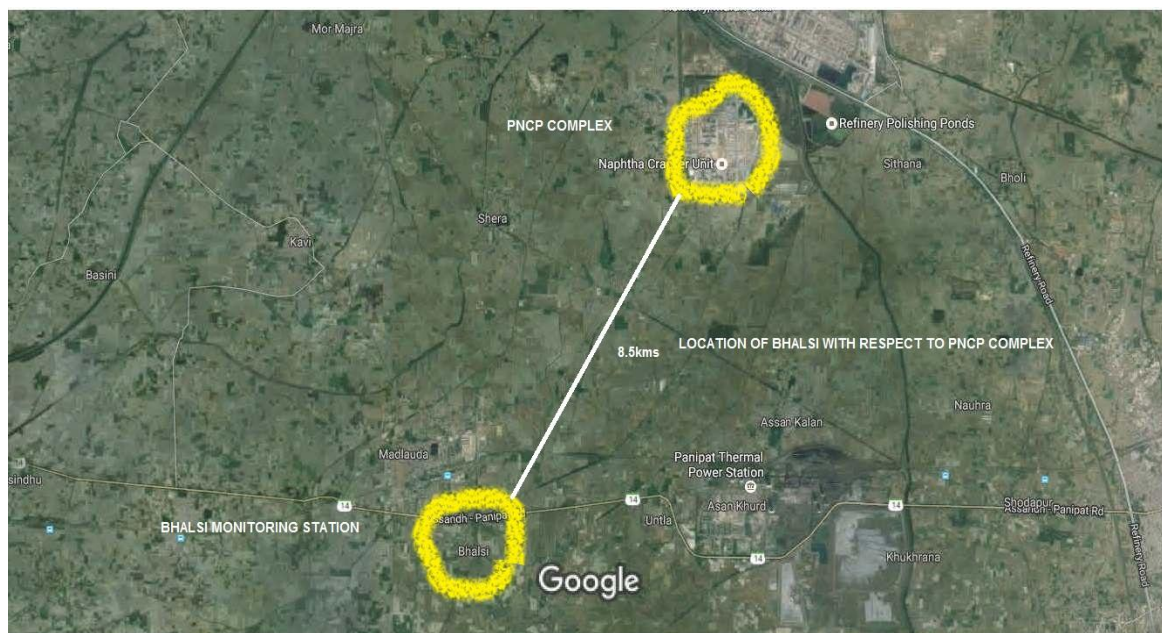
The 98th percentile value of CO was found 1.7 mg/m³ which are below the standard value of 2 mg/m³ (24 hourly).

Village - Bhalsi

The geographical features of Bhalsi monitoring station is as shown in the figure below.



The Bhalsi monitoring station is located about 8.5 km SW direction from PNCP. The location of Bhalsi monitoring station with respect to PNCP complex is as shown in the figure below:



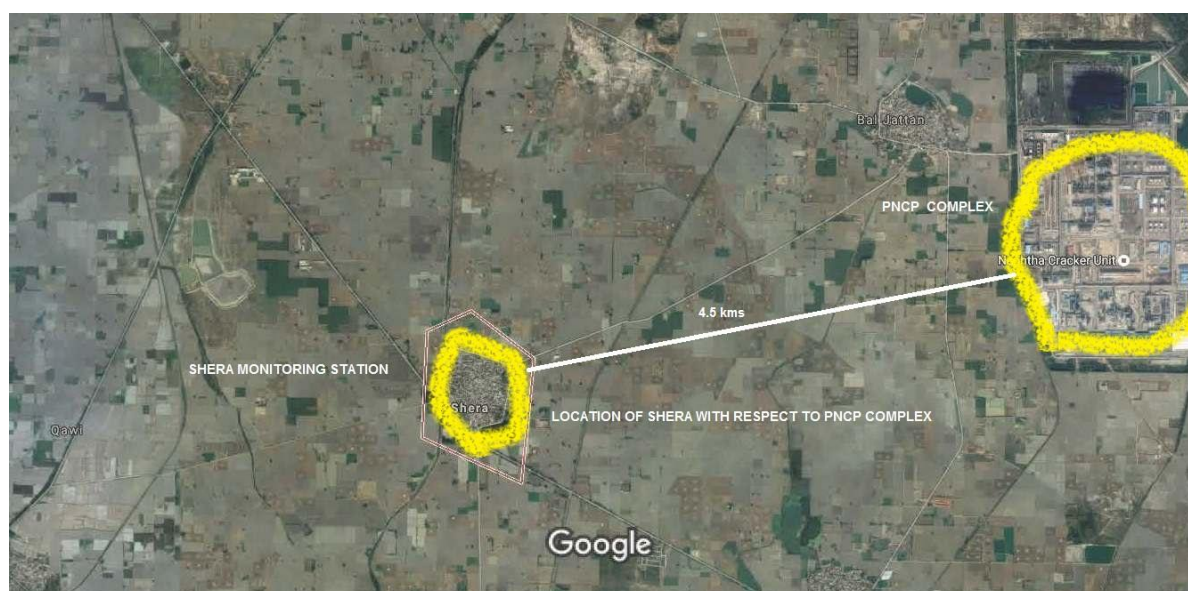
The 98th percentile value of CO was found 1.9 mg/m³ which are below the standard value of 2 mg/m³ (24 hourly). It can be noticed that the contributory sources at this station are mainly due to combustion of agricultural waste and traffic movement.

Village – Sherah

The geo graphical features of Sherah monitoring station is as shown in the figure below.



The Sherah monitoring station is located about 4.5 km W direction from PNCP. The location of Sherah monitoring station with respect to PNCP complex is as shown in the figure below:



The 98th percentile value of CO was found 1.9 mg/m³ which are below the standard value of 2 mg/m³ (24 hourly). It can be noticed that the contributory sources at this station are mainly due to combustion of agricultural waste and traffic movement on roads.

2: Measure the SO₂ emissions from the existing unit. Any additional SO₂ emission from the proposed unit.

The issue regarding SO₂ emission from the Naphtha Cracker Plant of Indian Oil Corporation Limited at Panipat has been deliberated with EAC (Industry-2). In the earlier EC for the Naphtha Cracker Plant (EC J-11011/153/2004-IA-II(I) Dated 04.01.2005) and Butene-1 (EC J-11011/106/2012-IA-II(I) Dated 23.05.2014) the limit given is 138 Kg/hr.

M/S NEERI (EIA Consultant) estimated total SO₂ emission from PNC (Panipat Naphtha Cracker) complex in 2004 based on fuel consumption at CPP (Captive Power Plant) and NCU (Naphtha Cracker Unit) which was coming out to be 138 Kg/hr (Refer to **Annexure 1**). The estimation was based on consumption of Fuel gas, Fuel Oil and Naphtha.

The actual site data collected and submitted to MOEFCC in Styrene/Ethylene recovery EIA Report, the SO₂ emission is reported as 60 Kg /hr (**Annexure 2**).

In current Operation, PNCP is operating with RLNG in lieu of Fuel gas and Naphtha. We would like to submit that during any upset in RLNG supply due to any reason, additional IFO is used as alternate fuel in UB and HSD in GTs. After detailed calculations, SO₂ emission is estimated to go up as high as 113 Kg/hr (Refer to **Annexure 3**).

There will be no additional SO₂ emission from Styrene/ethylene recovery Project.

Panipat Naphtha Cracker has demonstrated its commitment to minimize SO₂ emission to lowest possible level, despite existing limit of 138 Kg/hr. In view of above, MoEFCC is requested to maintain the emission of SO₂ limit to 138 Kg/hr at Panipat Naphtha Cracker.

3: Ministry has made certain observations while site visit was conducted for butadiene plant. Action taken report to be submitted.

MOEFCC, Chandigarh office vide letter no. F.No.4-1404/2014-RO(NZ) /6945 dated 21.11.2014 for the Project Butene -1 Panipat refinery & petrochemical Complex by M/s Indian Oil corporation Ltd at Village Balijathan, Tehsil Matlauda in Dist Panipat, Haryana – Site Inspection regarding has made certain observations.

The ATR to the above Observation made by MOEFCC, Chandigarh office has been submitted to the office of Director (S) MOEFCC, Chandigarh office vide IOCL letter no PNC/HSE/4 dated 23.01.2015 (**Annexure 4**).

Table 3.1.1

Estimated Fuel Combustion at Proposed NC Complex

Process Requirement		All Units Normal Operation		NCU Startup & Other Units Operating at Max. Capacity	
Power Steam		125 MW 241 MTPH		150 MW 580 MTPH	
Fuel used	Sulfur Content (% wt)	Combustion Rate (MTPH)	SO ₂ Emission (Kg/hr)	Combustion Rate (MT/hr)	SO ₂ Emission (Kg/hr)
Fuel Gas	Neg.	26.4	Neg.	23.8	Neg.
Fuel Oil	1.0	5.9	118.0	27.3	546
Naphtha	0.05	20.0	20.0	34	34
Total		52.3	138.0	85.1	580

Table 3.1.2

Point Sources at Proposed IOCL-NC Complex

Sr. No.	Stack Identification	Stack Locations		Stack Height (m)	Stack Top ID (m)	Flue Gas Temp (K)	Flue Gas Vel. (m/s)	Emission Rates			
		E-W Coord. (m)	N-S Coord. (m)					(g/s)		kg/hr	
								SO ₂	NO _x	SO ₂	NO _x
1.	Heater 1	24850	24950	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
2.	Heater 2	24850	24875	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
3.	Heater 3	24850	24800	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
4.	Heater 4	24850	24725	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
5.	Heater 5	24850	24650	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
6.	Heater 6	24850	24575	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
7.	Heater 7	24850	24500	45	2.6	473	4.2	Neg.	1.8	Neg.	6.4
8.	GT/HRSG 1	25200	24700	60	3.3	493	9.9	21.1	8.3	76.0	30.0
9.	GT/HRSG 2	25200	24800	60	3.3	493	9.9	21.1	8.3	76.0	30.0
10.	GT/HRSG 3	25200	24900	60	3.3	493	9.9	21.1	8.3	76.0	30.0
11.	UB 1	25000	25000	70	3.3	493	8.7	48.9	15.0	176.0	54.0
12.	UB 2	25100	25000	70	3.3	493	8.7	48.9	15.0	176.0	54.0
Total								161.1	67.4	580.0	242.8

Annexure 2

Stack	Fuel type	S content in Fuel, %	Fuel rate, TPH	SO2 emission, Kg/hr.
UB1	RLNG	0.001 (10 PPM)	10	Negligible
	IFO	0.5	6	60
GT1/2/3/4	RLNG	0.001 (10 PPM)	26	Negligible
HRSG1/2/3/4	RLNG	0.001 (10 PPM)	6	Negligible
	NCU off Gas	0.00002 (0.2 PPM)	2	Negligible
NCU H100	NCU off Gas	0.00002 (0.2 PPM)	5	Negligible
NCU H200	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H300	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H400	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H500	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H600	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H700	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
MEG	NCU off Gas	0.00002 (0.2 PPM)	1.5	Negligible
SWING	NCU off Gas	0.00002 (0.2 PPM)	1.5	Negligible
Total SO2 emission from PNC, Kg/hr.				60

[Signature]
29/7/16
CHV Farkya

Annexure 3:

Sulphur emission from PNC

Stack	Fuel type	S content in Fuel, %	Fuel rate, TPH	SO2 emission, Kg/hr.
One Utility Boiler	RLNG	0.001 (10 PPM)	6	Negligible
	IFO	0.5	11	110
Four GTs	RLNG	0.001 (10 PPM)	0	Negligible
	HSD	0.005 (50 PPM)	29.5	3.0
4 HRSGs	RLNG	0.001 (10 PPM)	6	Negligible
	NCU off Gas	0.00002 (0.2 PPM)	2	Negligible
NCU H100	NCU off Gas	0.00002 (0.2 PPM)	5	Negligible
NCU H200	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H300	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H400	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H500	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H600	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
NCU H700	NCU off Gas	0.00002 (0.2 PPM)	7	Negligible
MEG	NCU off Gas	0.00002 (0.2 PPM)	1.5	Negligible
SWING	NCU off Gas	0.00002 (0.2 PPM)	1.5	Negligible
Total SO2 emission from PNC, Kg/hr.				113

NCU: Naphtha Cracker unit

Basis:

During normal operation of PNC, majority of NCU off gas is consumed in NCU heaters, Swing unit and MEG. As sulphur content in NCU off gas is very low (0.02 ppm), SO2 emission from NCU heaters, MEG and Swing unit are negligible. CPP consumes NCU off gas, RLNG and IFO at the rate of 2 TPH, 38 TPH and 6 TPH respectively which is leading to SO2 emission of 60 kg/hr.

However, GTs in CPP is also designed to use diesel (HSD) apart from RLNG. During any upset in RLNG supply, additional IFO is used as alternate fuel in UB and HSD in GTs. During this time, consumption of NCU off gas, RLNG, IFO and HSD become around 2 TPH, 12 TPH, 11 TPH and 29.5 TPH respectively which generates SO2 emission of 113 kg/hr


 29/7/16
 (H V Faruqi)

इंडियन ऑयल कॉर्पोरेशन लिमिटेड
डाकघर : पानीपत रिफाइनरी, पानीपत-132140



INDIAN OIL CORPORATION LTD.
(Govt. of India Undertaking)
PANIPAT NAPHTHA CRACKER
PO - PANIPAT REFINERY,
PANIPAT- 132140 (Haryana),
Fax : 0180-2541100

Ref. No. PNC/HSE/4

Date: 23.01.2015

To

The Director(S)
Ministry of Environment & Forests,
Govt. of India,
Regional Office (N.R.)
Bays No. 24-25,
Sector-31-A, Dakshin Marg,
Chandigarh - 160047

Ref. No. MoEF's letter No. J-11011/106/2012-IA-II (I) dated 23.05.2014

Sub: ATR to Butene-1 EC

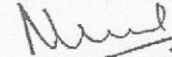
Dear Sir,

Thank you for sending the Inspection Report of the Butene-1 EC. As desired, we are enclosing the ATR report in the format you suggested.

With Warm Regards

Thanking You

Yours faithfully


23/1/2015
Navneet Kumar

Deputy Manager (HS&E)

Encl: As above

Action Taken Report for F.No.4-1404/2014-RO (NZ) Dated- 21.11.2014

S.N.	Description	Reply					
1.	Month wise production figures since January, 2014 onwards.	Attached as Annexure 1					
	Total funds spent on civil construction of the entire project and funds spent of implementation of Environment Management Cell may be submitted.	On Civil jobs: 24.44 Crore. Environment Management Cell: 24 Crore (approx.)					
2.	The budget estimates for Corporate Social Responsibility (CSR) activities and expenditure incurred till date on different items.	Attached as Annexure 2					
3.	Details about the quantity of solid waste generated per year and its disposal details.	No Solid waste is generated in Butene-1 plant till now.					
4.	Submit condition wise compliance report in respect of Air & Water Consents and Authorization under the HW (M, H & T) Reules, 2008.	Attached as Annexure 3					
5.	The insurance policy under the Public Liability Insurance Act. 1991 may be renewed from time to time.	Being Complied					
6.	Submit monitoring reports in respect of stack emission, ambient air quality, effluent quality at inlet & outlet, ground water, noise level monitoring and domestic effluent for all the parameters through some approved lab or HSPCB regularly in addition to in-house monitoring and the results should be sent to this office with six monthly progress reports and should be displayed on your web site as well.	Monitoring report is sent to HSPCB monthly.					
7.	Inform the number of workers employed and submit medical checkup reports in respect of all the workers on regular basis.	Medical checkup of all the workers are done in occupational health center and record is available.					
8.	Ensure monitoring of fugitive emission in Work Zone, Raw material storage and loading and uploading terminals regularly.	Quarterly Fugitive Emission is done and report is available.					
9.	Submit return in Form 4 & 13 in respect of hazardous waste and used oil to PSPCB with copies to this office from time to time.	Form 4 & 13 are sent to HSPCB timely.					
10.	Inform the quantity of HW shifted from the factory premises to common Hazardous Waste Management Facility at Pali till date.	No hazardous waste shifted to HWM facility at Pali.					
11.	Submit the progress of green belt development in the following Proforma immediately:-	Attached as Annexure 4					
	<table><tr><th>S. N.</th><th>Area Covered</th><th>No. of plants planted</th><th>Species of plants</th><th>Expenditure incurred (in Rs.)</th></tr></table>	S. N.	Area Covered	No. of plants planted	Species of plants	Expenditure incurred (in Rs.)	
S. N.	Area Covered	No. of plants planted	Species of plants	Expenditure incurred (in Rs.)			
12.	Submit the activities and constitution of Environment Management cell for last one year.				Attached as Annexure-5		
13.	Submit details of quantities of different hazardous wastes being generated and their collection & disposal strategy for the period from January, 2014 till date.				No Solid waste is generated in Butene-1 plant till now.		
14.	Submit up-to-date details of recurring and non-recurring expenditure on Environment Management Plans in the following proforma with the next six monthly report:-				Noted and will be submitted in the next Six monthly report.		
S. N.	Items	Expenditure details till date	Proposed budget estimates for next two				

		years				
		Recurring (in Rs.)	Non- Recurring (in Rs.)	Recurring (in Rs.)	Non- Recurring (in Rs.)	
a)	APCM					
b)	Monitoring of different parameters.					
c)	Occupational health surveillance					
d)	Rain water harvesting measures					
e)	Water pollution control measures.					
f)	Safety training to workers					
g)	Green belt development					
	Total					
15.	Submit copy of the Environment Statement for the year 2014-2015 in time.					Noted and will be complied.
16.	Inform the cleaning schedule for rainwater harvesting systems.					Yearly (Jan - April)
17.	Submission of six monthly report in soft and hard copies may be ensured by 1st week of June and December every year as the same will be displayed on the web site of the Ministry. Next six monthly report will be due in 1st week of December, 2014.					Submitted

ANNEXURE-1

Month	Butene-1 Production
Apr'14	0
May'14	712
June'14	1655
July'14	1145
Aug'14	485
Sep'14	1434
Oct'14	1723
Nov'14	1840
Dec'14	2120

ANNEXURE-II**CSR Estimate for year 2014-2015**

S. No.	Activity	Budget Rs. In Lac	Expenditure Status Rs. In Lac
1	Medical Camps at 6 neighbouring villages (Baljatan, Dadlana, Bohali, Kutana, Rajapur	5.00	5.00
2	Smart Education in 25 nos. of Govt. Schools in nearby villages.	11.50	11.50
3	Meritorious Awards to 88 (8 students each from 11 neighbouring villages @ Rs.3000/ for class X & Rs.4,000/- for class XII.	3.08	Under Process
4	Setting up of Public Library at Dadlana.	3.00	Under Process
5	Furniture for 12 schools at neighbouring villages.	14.99	Under Process
6	Health Care/ Medical Camp at neighbouring villages.	1.5	1.5
	Total	39.07	18.50

The terms & conditions of consents and authorization so granted will remain the same as already granted last year, with the following additional and specific-conditions:-

S.N.	Contents	Compliance Status
1.	The unit will submit analysis reports of effluent/ air emissions and noise monitoring report for DG sets as applicable, within three months and will comply with all the norms/standards prescribed under Environment (Protection) Rules, 1986 for discharge of pollutants and other directions/policy decisions of the Board.	DG set is not used.
2.	The unit will maintain and operate the Sewage Treatment Plant/Effluent Treatment Plant/ Air Pollution Control Measures regularly/effectively and will keep all the parameters within permissible limits.	ETP treated water parameters are within MINAS limit. The report is sent to HSPCB monthly.
3.	The unit will maintain the Acoustic enclosures on the DG sets to keep the noise levels within prescribed standards.	Not applicable
4.	The unit will comply with provisions of all environmental laws including Water Act, Air Act, HWM Rules etc. and comply with the directions issued by the MoEF/CPCB/State Govt./HSPCB/Hon'ble Courts from time to time in this regard.	Being Complied
5.	Unit will submit details regarding cess verifications regularly and will deposit the cess amount assessed by the Board under Water Cess Act. 1977 alongwith Cess areas, if any within 30 days after issue of assessment orders.	Being Complied
7.	The industry shall pay the balance consent fee in case it is found due from the industry at any time later on.	No Consent Fee is due.
8.	The unit will recycle/reuse treated effluent based on cleaner technology and endeavor to achieve zero discharge.	All treated Effluent is used in DMRO plant 100%.
9.	The unit will submit the environment Statement for the year 2011-12 on Form-V within 15 days, if not submitted so far and for the year 2012-13 by 30 th September, 2013.	Submitted on time.
10.	The unit will maintain non-leachate hazardous waste storage facility properly within their premises and will store their Hazardous Waste temporarily only for a period of three months.	Secured land fill facility is available within premises.
11.	The Hazardous Waste generated from the unit which is covered under schedule-IV of the Hazardous Waste (Management, Handling & Transboundary Movement) Rule, 2008, will be sold only to the recyclers/re-processors registered under three rules with CPCB or SPCBs and other categories of Hazardous Waste will be disposed off in the Common Treatment, Storage and Disposal facility developed at Pali, Distt. Faridabad through its authorized operator.	Being Complied
12.	The unit will submit the Annual Report under Hazardous Waste (MH & TM) Rules, 2008 for the year 2011-12 within 15 days, if not submitted so far and for the year 2012-13 by 30 th June 2013 positively.	Being Complied
13.	The Hazardous Waste suitable for co-processing will be sold to the authorized co-processing unit of Hazardous Waste having permission/approval from Central Pollution Control Board and concerned State Pollution Control Board.	Being Complied

14.	The unit shall apply for consent to operate and authorization under the above said Acts/Rules for the year 2015-16 at least 03 months before the date of expiry of the consent to operate and authorization.	Application sent on 30 th Dec' 2014.
15.	That the consent and authorization so granted is without prejudice to the action to be taken in respect of past violations, if any	Noted
16.	In case if at any stage the unit is found violating the pollution norms and fails to adhere to any of the conditions of the consent and authorization, the consent and authorization so granted shall become invalid and further action shall be taken as per law and provisions of Water Act, 1974 and Air Act, 1981 and EPA, 1986.	Noted

ANNEXURE-IV

Details of Tree Plantation in PNC till date:- 23rd Jan' 2015

S.N.	Area Covered	No. of plants planted	Species of plants	Expenditure incurred (in Rs.)
Number of Trees Planted Till March- 2013				
1.	North, South, East and West of PNCP Green Belt	21500	Shisham, Anar, Karanda, papdi, Eue, Amrood, Jamun, Aamla, Bottle Brush, and Arjun	Rs.1 Crore (Approx.)
2.	Naphtha approach Road	2815	Alestonia, Gold Mahar, Chalerosia, Bottle Brush, Legestonia, Kanak and Papdi	
3.	Gohana Distributor	665	Kadum, Chalerosia, Kachnav, Ginohar, Legestonia, Jaeranda, Bottle Brush, Arjun, Jamoa, Neem, Siras, Cessia Galuca and Papdi	
4.	Naphtha South Main Gate	1225	Jamun, Eue, Arjun, Anar, Chalerosia, Kadam, Neem, Amrood and Alostowa	
5.	PNCP Junk Yard Gate No.3	660	Legestonia, Gold Mahar and Cassia Galuca	
6.	School & Mandir	234	Alestonia, Chalerosia, Legestonia, Golden Bottle Brush, Silver Oak and Gold Mahar	
7.	PNCP Green Belt	601	Shisham, Papdi, Neem and Bakain	
For the year 2013-2014				
8.	Outside the Naphtha Gate in the Central side	1020	Ashoka Padula	Rs.21.5 Lakhs
9.	Inside Naphtha Gate (Near Pound)	220	Neem	
		54	Bargad	
		11	Piple	
		10	Pilkhana	
10.	Near Naphtha Gate Entry Side(Inner)	400 240	Ashoka Padula Ashoka Padula	
11.	Near Naphtha Gate	45	Keshiya Gulaka	
For the year 2014-2015				
12.	Polishing Pond	500		Under Progress

EXPENDITURE ON ENVIRONMENT FACILITIES IN PANIPAT NAPHTHA CRACKER

S. No.	Pollution Control Devices	Capital Cost	Expenditure during 2013-14	Benefit
	Name	Rs Crs.	Rs lacs	
1	ETP	34.00	435.00	Effluent treatment
2	STP- Township	8.00	30.00	Sewage treatment
3	Polishing ponds	30.00	10.00	Aeration / UV treatment
	DMRO plant	76.00	1700.00	For utilizing treated effluent to make DM water
5	Stack Analyzers in all units of PNC	8.50	74.10	Air pollution monitoring
6	Ambient Air Quality Monitoring Stations - 1 nos.	1.00	1.75	Air Monitoring
7	Ambient Air Quality Mobile Van - 1 no.	0.42	6.00	Air Monitoring
8	Stack - 17 nos.	20.00	100.00	Reduction of GLC
9	Low NOx burners	20.00	8.00	Reduction of Nox in the ambient air
10	Greenbelt - land	4.80	30.00	Improvements in ambient air quality
11	Greenbelt - plantation	2.43		
12	Secured Land Fill	7.50	0.00	Compliance of HW rules

TOTAL

212.65

2404.85

Crs.

Lacs