



IndianOil

BARAUNI REFINERY

Status as on 31.03.2020

Subject: Status of Environmental Clearance Conditions for Expansion of Barauni Refinery from 6 MMTPA to 9 MMTPA along with polymer units by M/s Indian Oil Corporation Limited at Barauni, District Begusarai (Bihar)- Environmental Clearance - reg.

Ref: Ministry's clearance letter no J-11011/15/2015 - IA-II (I) dated 15.02.2019.

SN	Point	Status
11	Terms and Conditions	
a)	Third party assessment for the environmental damage, if any, and differential impacts on environmental parameters due to excess crude processing (during the periods 2009-10, 2010-11, 2012-13, 2013-14, 2015-16, & 2016-17) shall be carried out by NEERI or by any other agency of repute, in a fixed time frame and the report shall be submitted to the ministry.	<ul style="list-style-type: none">• Study has been completed by M/s NEERI Nagpur in Jan 2020 and report submitted to MoEF&CC on 30.01.2020.• As per report no adverse impact of excess crude processing is observed and same has been accepted by MoEF&CC (Ref: Minutes of the 17th meeting of the Expert Appraisal Committee (Industry-2 sector) held during 25-27 February, 2020, Agenda 17.15) Complied
b)	Necessary permission as mandated under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981, as applicable from time to time, shall be obtained from the State Pollution Control Board as required.	<ul style="list-style-type: none">• Noted for compliance-shall be taken at the time of BR-9 project execution.
c)	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises.	<ul style="list-style-type: none">• Noted for compliance
d)	Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016 and Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.	<ul style="list-style-type: none">• Noted for compliance

e)	To control source and the fugitive emissions, suitable pollution control devices shall be installed with different stacks to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stacks of adequate height as per CPCB/SPCB guidelines.	<ul style="list-style-type: none"> • BELCO scrubber is installed in RFCCU for effluent scrubbing as a pollution control device. • Noted for compliance
f)	The National Emission Standards for the Petroleum Oil Refinery issued by the Ministry vide G.S.R.186(E) dated 18 th March, 2008, as amended from time to time, shall be followed.	<ul style="list-style-type: none"> • Please refer Annexure-1 for detailed status for compliance of standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186(E) dated 18th March, 2008.
g)	The National Emission Standards for Petrochemical (Basic & Intermediates) issued by the Ministry vide G.S.R.820 (E) dated 9 th November, 2012, as amended from time to time, shall be followed.	<ul style="list-style-type: none"> • Noted for compliance
h)	Total fresh water requirement shall not exceed 24000 cum/day to be met from ground water through artesian wells. Necessary prior permission in this regard shall be obtained from the concerned regulatory authority.	<ul style="list-style-type: none"> • Noted for compliance.
i)	Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.	<ul style="list-style-type: none"> • Noted for compliance.
j)	Hazardous chemicals shall be stored in tanks, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm and solvent transfer to be done through pumps.	<ul style="list-style-type: none"> • Noted for compliance.
k)	Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF. The ash from boiler shall be sold to brick manufacturers/cement industry.	<ul style="list-style-type: none"> • Noted for compliance

l)	The company shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals shall be as per the Motor Vehicle Act (MVA), 1989.	<ul style="list-style-type: none"> • Noted for compliance
m)	Regular monitoring of Volatile Organic Compounds shall be carried out at vulnerable points.	<ul style="list-style-type: none"> • Is already being done and will be expanded to include new units.
n)	Oily sludge shall be collected for oil recovery and the residue shall be bio-remediated.	<ul style="list-style-type: none"> • Is already being done and will be done for new units as well.
o)	Comprehensive water audit to be conducted on annual basis and report to the concerned Regional office of the Ministry. Outcome from the report to be implemented for conservation scheme.	<ul style="list-style-type: none"> • Water study for entire refinery has been carried out by EIL and final report submitted in Feb 2020. Phase wise implementation of recommendations is being undertaken.
p)	Oil caters/oil traps shall be provided at all possible locations in rain/storm water drainage system inside the factory premises.	<ul style="list-style-type: none"> • Oil catchers have been constructed at 7 strategic locations of the refinery • Oil containment booms have also been installed at 3 nos of strategic locations in the refinery. • Oil collected/trapped by oil catcher and oil containment booms are transferred to ETP mechanically through gully suckers. • The same facility will also be provided in the new units.
q)	<p>The company shall undertake waste minimization measures as below:-</p> <p>(i) Metering and control quantities of active ingredients to minimize waste.</p> <p>(ii) Reuse of by-products from the process as raw materials or as raw substitutes in other processes.</p> <p>(iii) Use of automated filling to minimize spillage.</p> <p>(iv) Use of Close Feed system into batch</p>	<p>All critical/important process lines have flow meters installed.</p> <p>All excess/byproduct gases generated are used as fuel gas. Any oil drained is routed to ETP for recovery and is reprocessed in AVUs/Coker.</p> <p>In OM&S Gantry, automated filling is done with process interlocks in place to avoid spillage.</p> <p>Batch reactors process occurs only in Coker unit. In this unit closed and automated feed system is in</p>

	<p>reactors.</p> <p>(v) Venting equipment through vapour recovery system.</p> <p>(vi) Use of high pressure hoses for equipment clearing to reduce wastewater generation.</p>	<p>place.</p> <p>ETP has a VOC recovery system. Recovered vapour is passed through activated charcoal bed before venting.</p> <p>High pressure (hydrojet) is used to clean vessels, exchangers & pipelines when required.</p>
r)	<p>The green belt of 5-10 m width shall be developed in more than 33% of the total project area, mainly along the plant periphery, in downward wind direction and along road sides etc. Selection of plant species shall be as per the CPCB guidelines in consultation with the State Forest Department.</p>	<ul style="list-style-type: none"> • Total plot area of the refinery including BTP: 887.83 acres. • Green belt area in Refinery: 148.39 acres. • Green belt area in Refinery Township: 82.19 acres. • Total green belt area: 230.58 acres. • Number of trees planted till date since 1995 is 111,144. • In view of unavailability of space within the refinery premises, scope for extensive tree plantation is limited. However, tree plantation is being taken up both in refinery and township at available spaces. 525 nos. plants were planted in 2019-20.
s)	<p>All the commitments made to the public during hearing/consultation shall be satisfactorily implemented.</p>	<ul style="list-style-type: none"> • Complied.
t)	<p>At least 0.25% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.</p>	<ul style="list-style-type: none"> • Construction of boundary wall, internal road and provision of street light in burrow pit is being done with Rs.12.32 crore. It will be completed by 13.11.2020. • For remaining items, like Cross drain in Kesawe village, biogas plant in nearby villages etc. estimation is going on. Finalization is expected by July 2020.
u)	<p>For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution.</p>	<ul style="list-style-type: none"> • DG set is being used only in case of complete power failure, hence monitoring data is not available. Stack monitoring will be done whenever DG set will be in line. The acoustic enclosure and stack height modification job will be completed by December, 2020.
v)	<p>The unit shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling. Fire fighting system shall be as per the norms.</p>	<ul style="list-style-type: none"> • Noted for compliance

w)	Continuous online (24X7) monitoring system for stack emissions shall be installed for measurement of flue gas discharge and the pollutants concentration and the data to be transmitted to the CPCB and SPCB server. For online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises.	<ul style="list-style-type: none"> • 20 nos. of existing stacks are installed with online analyzers connected to the servers. • For CRU stacks PO placed on 19.03.2020 and completion by March'2021. • All upcoming new stacks will also be provided with online analyzers. • Web camera with night vision is installed in the channel/drain to Burrow pit. • For continuous monitoring of effluent, PO for online analyser placed on 26th Feb 2020. For flow meter, PO by 15.06.2020.
x)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	<ul style="list-style-type: none"> • Being complied
y)	Process safety and risk assessment studies shall be carried out using advanced models and the mitigating measures shall be undertaken accordingly.	<ul style="list-style-type: none"> • Noted for compliance
11.1 Generic Conditions		
i.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and/or any other statutory authority.	<ul style="list-style-type: none"> • Stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority are being followed. • Complied.
ii.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to the Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	<ul style="list-style-type: none"> • Prior approval of ministry would be taken before carrying out any expansion or modification of the plant if required. • Complied.
iii.	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB), ensuring that at	<ul style="list-style-type: none"> • Five nos. of offline ambient air quality monitoring stations (four in refinery and one in township) and three nos. of continuous ambient air quality monitoring station has been provided at strategic

	least one stations each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	<p>locations at BR for monitoring of ambient air quality which are located both in upwind as well as downwind direction.</p> <ul style="list-style-type: none"> • Complied.
iv.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be complied with.	<ul style="list-style-type: none"> • Ambient air quality is checked twice in a week in five nos. of offline ambient air quality monitoring stations as per the National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009. • Complied.
v.	The overall noise level in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under the Environment (Protection) Act, 1986.	<ul style="list-style-type: none"> • The ambient noise levels from existing facilities conform to the standards prescribed under standards prescribed under Environment (Protection) Act, 1986 Rules. • For personnel working in the proximity of high noise generating equipments, appropriate PPEs are used, and exposure is controlled through job rotation, education and awareness. • Adequate noise control measures shall be taken in new facilities in the project. • Complied.
vi.	The company shall harvest rainwater from the roof tops of the buildings to recharge ground water and to utilize the same for different industrial operations within the plant.	<ul style="list-style-type: none"> • Rain water harvesting has been implemented at 21 buildings of Barauni Refinery and township in which water collected from roof top of various buildings is recharged to ground water. Total surface run-off of township is also being used for ground water recharge. • Storm water drain of the refinery has been routed to ETP and storm water is being reused in refinery operation after treatment along with ETP water except during heavy rainfall, when excess surface run off may have to be allowed to flow into Refinery owned pit (Burrow Pit) adjacent to refinery premise in the West. • Complied.
vii.	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis.	<ul style="list-style-type: none"> • Training is continuously imparted to all employees on chemical handling. • Pre – employment medical examination of all employees are carried out before joining the organization. • Routine periodical medical examination as per

		<p>statutory requirement is carried out on regular basis.</p> <ul style="list-style-type: none"> • Complied.
viii.	<p>The company shall comply with all environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing shall be implemented.</p>	<ul style="list-style-type: none"> • Presently Environmental Monitoring of all required parameters in Refinery is carried out periodically. The existing practice shall be extended for the proposed project as per EIA/EMP report.
ix.	<p>The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villagers, administrations and other stake holders. Also eco-developmental measures shall be undertaken for overall improvement of the environment.</p>	<ul style="list-style-type: none"> • Being done based on the drawn up schedule as part of CSR. CSR plan is finalized in consultation with mukhiyas of surrounding villages.
x.	<p>A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environment Management and Monitoring functions.</p>	<ul style="list-style-type: none"> • BR has a full-fledged environment protection cell and a well equipped dedicated pollution control laboratory established back in 1975. • Complied
xi.	<p>The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Changes well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/pollution control measures shall not be diverted for any other purpose.</p>	<ul style="list-style-type: none"> • Being complied. • In addition to one time investment in facilities for combating pollution, separate funds are allocated for specific activities such as environment monitoring, operation and maintenance of effluent treatment plant, oil recovery from oily sludge through mechanized skid process and studies related to environment etc.
xii.	<p>A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban local Body and the local NGO , if any, from whom suggestions/ representations, if any, were received while processing the proposal.</p>	<ul style="list-style-type: none"> • A copy of the clearance letter has been submitted to concerned Panchayat, Zila Parishad.

xiii.	<p>The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective zonal office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.</p>	<ul style="list-style-type: none"> • A six monthly compliance report and the monitored data are submitted regularly. Will be done for this EC as well. • EC Compliance status of various projects is being hosted on https://www.iocl.com/Talktous/SNotices.aspx. Alternatively, one can reach IOCL home page at https://www.iocl.com and thereafter selecting “We’re Listening” tab followed by opening “Statutory Notices”. • Complied
xiv.	<p>The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional offices of MoEF&CC by e-mail.</p>	<ul style="list-style-type: none"> • Environment Statement for each financial year is submitted to Bihar State Pollution Control Board and MoEF&CC. Same is also sent to Regional Office of MoEF&CC by e-mail and hosted at the website https://www.iocl.com/Talktous/SNotices.aspx. • Complied
xv.	<p>The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and the copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://moef.nic.in. This shall 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 shall be forwarded to the concerned Regional office of the Ministry.</p>	<ul style="list-style-type: none"> • The information regarding accord of Environment clearance for the subject project has been advertised in two local newspapers. Copy enclosed as Annexure-2. • Complied.

Annexure-1

Status and Action Plan for Compliance of Revised Emission and Effluent Standards 2008 at Barauni Refinery

Status as on 31.04.2020

Schedule -I: Petroleum Oil Refinery

A. Effluent Discharge

SN	Standard	BR status and action plan
1	Treated Effluent Quality	COMPLIED.

B. Emissions

SN	Standard	BR status and action plan
2	H ₂ S in Fuel Gas	COMPLIED.
3	SO ₂ Emissions	COMPLIED.
4	NO _x Emissions	COMPLIED.
5	CO Emissions	COMPLIED.

6	Particulate Matter (PM) Emissions	<p>Barauni Refinery processes more low sulphur crude in recent years. Only about 5% high sulfur crude processing takes place. As a result internal fuel oil quality has been improved w.r.t emission of particulate matter. Further, particulate matter analyzers have been installed in all stacks of refinery and connected to CPCB server since June-16. The online analyzer data available now help us fine tuning fuel firing and optimization of gas mix amongst various furnaces and the controlling the PM parameters within the statutory limit.</p> <p>COMPLIED.</p>
7	Nickel and Vanadium (Ni+V) Emissions	COMPLIED.
8	Sulphur Content in Liquid Fuel	COMPLIED.
9	Continuous Monitoring System for SO₂ & NO_x emissions	> COMPLIED.
10	Opacity of Flue Gas ex FCCU Regenerators	<p>> RFCCU was commissioned at Barauni Refinery along with flue gas scrubbing technology supplied by M/s Belco, USA. In the Belco unit, the flue gas is scrubbed with water & diluted caustic solution (<0.5 % concentration by wt.) to remove SO_x and particulate matter. PM level in flue gas is less than 30 mg/Nm³. High volume of condensed water vapor generated during water scrubbing of flue gas escapes through the BELCO stack as whitish plume. Opacity meter under such condition is not considered relevant as it will not be effective due to high moisture content in flue gas. > Further, PM analyzers have been installed in RFCCU stack through which particulate matter ex- RFCCU stack is monitored, which is closely akin to monitoring of opacity in flue gas. Therefore opacity meter installation at RFCCU is not planned. > Complied.</p>
11	Sulphur Recovery from	SRU at Barauni refinery meets the revised standard.

	SRU	COMPLIED.
12	H ₂ S emissions from SRU	SRU at Barauni refinery meets the revised standard. COMPLIED.

C. Fugitive Emission

SN	Standard	BR status and action plan
13	Storage tanks with capacity between 4 to 75 m ³ and TVP of more than 10 kpa	Not Applicable.
14	Storage tanks with capacity between 75 to 500 m ³ and TVP of 10 to 76 kpa	Not Applicable.
15	Storage tanks with capacity of more than 500 m ³ and TVP of 10 to 76 kpa	Storage tanks of Crude, MS & SRN have TVP of 10 to 76 kpa. All such tanks are IFRT or EFRT. COMPLIED.
16	Storage tanks with capacity of more than 500 m ³ and TVP of more than 76 kpa	Not Applicable

17	Provision of secondary seals in floating roof tanks	All such tanks at Barauni Refinery are equipped with double seal. COMPLIED.
18	Emission control in Rail Tank Wagon/ Road Tank Truck loading for Gasoline and naphtha for VOC reduction	Barauni Refinery complies most of the revised standards for petroleum refineries as notified in Gazette of India on 18th March'08 except vapor recovery system in tank wagon/tank truck. For VOC reduction of 99.5% and emission control to 5 gm/m ³ in case of Gasoline and Naphtha loading, VOC recovery system at Loading Gantry would be required. Existing gantry at Barauni refinery does not have adequate space for laying a bigger dia header all along the gantry and other equipments for vapour recovery system. It will also require the shutdown of product loading gantry for 3-4 months to install this facility. Outage of gantry for such a long period cannot be allowable in view of the chances of market dry out of the major petroleum products.
19	Equipments leak and LDAR programme	COMPLIED.

D. Emission Standards for VOC from Wastewater Collection and Treatment

20	VOC Collection & Treatment System	VOC treatment system as a part of ETP modernization project has been installed and commissioned. COMPLIED.
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Schedule -VI, Part C: Petroleum Oil Refinery

SN	Standard	BR status and action plan
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21	Quantum limit for discharge of total effluent	COMPLIED.
22	Limit of quantity of effluent discharged	COMPLIED.

