भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड

भारत सरकार का उपक्रम कोच्चि रिफ़ाइनरी



BHARAT PETROLEUM CORPORATION LIMITED

A Govt. of India Enterprise Kochi Refinery

28/PT/EC/'20 23rd June 2020

The Research Officer
Ministry of Environment, Forest and Climate Change
Regional Office (Southern Zone)
4th Floor, E&F Wings, Kendriya Sadan
Koramangala
Bangalore – 560 034

Dear Sir/ Madam

Sub: Compliance Report on the conditions laid down by the Ministry of Environment, Forest and Climate Change for the BS VI quality upgradation and new MS block project of BPCL Kochi Refinery, Ambalamugal, Kochi.

- Ref: (i) MoEF&CC letter no: J- 11011/43/2016 -IA II (I) dated 20th October 2016 granting Environmental Clearance.
 - (ii) BPCL letter no: KR.PROJTECH.MSBP.MOEFCC.28 dated 5th July 2019

This refers to the six monthly compliance report submitted online for the period 1st October 2019 to 31st March 2020 on various conditions laid down by Ministry of Environment, Forest and Climate Change vide Ref (i). As advised by your good office vide e-mail dated 12th June 2020, Half Yearly Compliance Report has been revised and submitted herewith.

Thanking You

Very truly yours For BPCL Kochi Refinery

Sreeram A N

GM (Project Technical & Petchem)

Cc: 1. The Member Secretary
Central Pollution Control Board
Parivesh Bhavaner
East Arjun Nagar
Delhi – 110 032

3. The Environmental Engineer
Kerala State Pollution Control Board
District Office 2, Perumbayoor, Ernakulam

The Member Secretary
 Kerala State Pollution Control Board
 Plamoodu Junction
 Pattom Palace
 Thiruvananthapuram – 695 004

पोस्ट बैग नं: 2, अम्बलमुगल - 682 302, एरणाकुलम ज़िला, केरल, दूरभाषः 0484 - 2722061 - 69 फैक्सः 0484 - 2720961 / 2721094 पंजीकृत कार्यालयः भारत भवन, 4 & 6, क्रीमभाय रोड, बेलार्ड इस्टेट, पी. बी. नं. 688 मुंबई -400 001

REPORT ON THE STATUS OF COMPLIANCE OF STIPULATED ENVIRONMENTAL CONDITIONS -BS VI QUALITY UPGRADATION AND MS BLOCK PROJECT OF BPCL KOCHI REFINERY - PERIOD 1ST OCTOBER 2019 TO 31ST MARCH 2020

S.No. as per Env.Ltr.No.J- 11011/43/2016 -JA II (I), Dtd22/10/16	COMMENTS	COMPLIANCE STATUS
SPECIFIC CONDITIONS:	NDITIONS:	
parties	M/s BPCL shall comply with new standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide	The project / facility is under construction stage. Commissioning of units is expected in last Curarter of 2020-21 RPCI -KR will comply with
	G.S.K. T86(E) dated 18th March, 2008.	new standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186(E) dated 18th March, 2008.
==:	Continuous on –line stack monitoring for SO2, NOx and CO of all the stack shall be carried out.	Online monitoring of SO2, NOx and CO for 2 new stacks is incorporated in design. All stack
		monitoring analyzers will be put online during commissioning of the unit, expected in last
		quarter of 2020-21.
= :	The process emissions (SO2, NOx, HC (Methane & Non-methane)),	Measurement and detection devices for HC,
	VOCs and Benzene from various units shall conform to the standards	H2S, H2, Toluene provided in plant area. In the
	prescribed under the Environment (Protection) Act. At no time, the	event of emissions beyond permissible levels,
	of failure of pollution control system(s) adopted by the unit, the unit	and shall not be restarted until root cause is
	shall be immediately put out of operation and shall not be restarted until	identified and attended.
Ĭ.	Leak Detection and Repair programme shall be prepared and	A list of all potential HC/VOC emission points
	implemented to control HC/VOC emissions. Focus shall be given to	like flanges, valve gland, and pump seal in
	prevent fugitive emissions for which preventive maintenance of pumps,	MSBP has been identified. Leak Detection and
	valves, pipelines are required. Proper maintenance of mechanical	Repair program to detect and control HC/ VOC
	seals of pumps and valves shall be given. A preventive maintenance	emissions shall commence once units are
	schedule for each unit shall be prepared and adhered to. Fugitive	commissioned. Present outlook for

<u> </u>		
≤.	<	S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16
As proposed, record of sulphur balance shall be maintained at the Refinery as part of the environmental data on regular basis. The basic component of sulphur balance include sulphur input through feed (sulphur content in crude oil), sulphur output from Refinery through products, byproduct (elemental sulphur), atmospheric emissions etc.	emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations. SO2 emissions after expansion from plant shall not exceed 1579 kg/hr and further efforts shall be made for reduction of SO2 load through use of low sulphur fuel. Sulphur recovery units shall be installed for control of H2S emissions. The overall sulphur recovery efficiency of Sulphur recovery unit with tail gas treating shall not be less than 99.9%	COMMENTS
Sulphur balance will be updated including new facilities coming as part of MSBP, post commissioning of units.	A well-defined preventive maintenance schedule for pumps, valves, pipelines, as being practiced in our running plants, will be implemented for MSBP at the operation phase. Gas detectors at strategic locations has been included in design and installed. Sulphur rich off gases from new project units shall be treated in the existing Sulphur recovery units. BPCL-KR will comply the SO2 emission limit of 1579 Kg/Hr. New GT and HRSG envisaged in project proposal has been dropped during detailed engineering stage based on steam and power optimization. Power requirement is planned to be drawn from the state grid. One of the stack is therefore eliminated. BPCL-KR is also looking at replacing Low sulphur Fuel oil/Fuel gas firing in MSBP heater with LNG, thereby further reducing SO2 emission. Process heaters have been designed for LNG firing.	COMPLIANCE STATUS

≅.	Viii	≦ .	S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16
Total water requirement from River Periyar after implementation of IREP and BS VI project shall not exceed 1372.2 m3/hr and prior permission shall be obtained from the competent authority.	Ambient air quality monitoring stations ,{PM10,PM2.5,SO2,NOX,H2S, mercaptan, non-methane-HC and Benzene} shall be set up in the complex in consultation with Kerala State Pollution Control Board (KSPCB), based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs.	Flare gas recovery system shall be installed.	COMMENTS
Total fresh water requirement for MSBP will be 125M3/hr. Government of Kerala has given approval for drawing maximum of 3083.3m3/hr water from River Periyar. The total fresh water requirement for BPCL KR post MSBP will be	different locations inside refinery premises and are online monitored by PCB. KSPCB visited BPCL-KR to identify additional requirement of AAQMS as part of MSBP and recommended that 2 manual sample points would be sufficient in addition to 6 no's of existing AAQMS. The same was updated in the MSBP plot plan and sent to KSPCB, Trivandrum for approval. KSPCB vide letter ref: PCB/HO/HWM/416/90 dated 20/01/2020 provided their consent. KSPCB consent letter dated 20/1/2020 is attached herewith. An Annual Rate Contract is in place for carrying out sampling and analysis of ambient air quality within refinery	New Flare system was proposed in the project report. However, based on inputs from selected Process Licensor, mitigated flare load is found to be less. Hence Flare load from MSBP will be connected to existing flare system. A Flare gas recovery system is commissioned as part of the Integrated Refinery Expansion Project (IREP). This has been communicated to MoEF&CC vide letter dated 11th December 2018 and 5th July 2019. Letter dated 5th July is attached herewith.	COMPLIANCE STATUS

S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16	COMMENTS	COMPLIANCE STATUS
		limited within 3083.3 m3/hr. The number 1372.2 M3/hr. seems to have come in place of 3083.3m3/hr. as an error in the Environmental Clearance Letter. This was intimated to MoEF&CC along with minor design changes in detailed engineering phase. Letter in this regard has been submitted to MoEF&CC vide letter dated 11th December 2018 and 5th July 2019.
×	As proposed, Industrial effluent generation shall not exceed 5.6 m3/hr. from proposed expansion and treated in the effluent treatment plant. Treated effluent shall be recycled/reused within the factory premises. Domestic sewage shall be treated in sewage treatment plant (STP).	All effluent generated shall be treated in the existing Refinery ETP. There will be no treated effluent discharge from MSBP complex. Piping connections have already been completed. Domestic sewage shall be treated in existing STP in the Refinery.
≚.	Oil catchers/oil traps shall be provided at all possible locations in rain/storm water drainage system inside the factory premises.	Closed drainage system is provided for tank drains. Oil catchers/traps provided in oil water sewer system.
GENERAL CONDITIONS:	ADITIONS:	
_ .	The project authorities must strictly adhere to the stipulations made by the Kerala State Pollution Control Board (KSPCB), State Government and any other statutory authority.	Commissioning of units is expected in last quarter of 2020-21. BPCL-KR will adhere to the stipulations made by KSPCB, State Government and other statutory bodies.
=:	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made	Fresh reference on minor design changes during detailed engineering phase is intimated to MoEF&CC. Fresh reference on minor changes in the EC has been communicated to
	to the Ministry to assess the adequacy of conditions imposed and to additional environmental protection measures required, if any.	MoEF&CC vide letter dated 11th December 2018 and 5th July 2019. Letter is attached herewith.

vi During t drains k domesti	v The Comp buildings ar the same v fresh water	iv The ove within the acoustic generation prescrib 75 dBA		S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16
During transfer of materials, spillages shall be avoided and garland drains be constructed to avoid mixing of accidental spillages with domestic wastewater and storm water rains.	The Company shall harvest rainwater from the roof-tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water	The overall noise levels 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 Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time)	The locations of ambient air quality monitoring stations shall be decided in consultation with the KSPCB and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	COMMENTS
Drains are constructed for each unit and separate storm water drain is constructed outside unit periphery in order to avoid mixing of	Facilities are made for diverting rain water from roof tops to recharge ground water.	Sound engineering practice is incorporated in the design to limit noise levels at the fence as prescribed under EPA rules. Equipment selection has been done taking into consideration of restricting noise levels to acceptable limits. Continuous operation of the plants and facility is yet to commence. The facility is under construction stage	6 nos of AAQMS are already installed at different locations inside refinery premises and are online monitored by PCB. KSPCB visited BPCL-KR to identify additional requirement of AAQMS as part of MSBP and recommended that 2 manual sample points would be sufficient in addition to 6 nos of existing AAQMS. The same was updated in the MSBP plot plan and sent to KSPCB, Trivandrum for approval. KSPCB vide letter ref: PCB/HO/HWM/416/90 dated 20/01/2020 provided their consent. KSPCB consent letter dated 20/1/2020 is attached herewith. An Annual Rate Contract is in place for carrying out sampling and analysis of ambient air quality within refinery.	COMPLIANCE STATUS

wiii Iraming of Presonnel Protection Equipment by all employees workers Usage of PPEs within plant area is already shall be ensured. wiii Iraming shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical machina basis. Training to all employees shall be undertaken on regular imparted. The company shall also comply with the environmental protection the Ministry. All the recommendations made in the EIA/EMPI in respect of environmental management, risk mitigation measures and valer sprinking in construction sits and nearby public hearing relating to the project shall be implemented. All recommendations of EIA study are complied. The company shall undertaken be implemented. The company shall be implemented. Will be training on health and routine periodical medical properties shall be examinations are also undertaken. All recommendations of EIA study are complied measures have been implemented. All recommendations of EIA study are complied measures and walder sprinking in construction sits and nearby public hearing relating to the project shall be implemented. The company shall undertake cSR activities and all relevant measures. The company shall undertake cSR activities and all relevant measures and carbot operation prior to MSBP commissioning, scheduled during last quarter of 2002-2021. The company shall undertake cSR activities and all relevant measures are near to project site are 1) improving area near to project site are 1) improving condition of area near to project site are 1) improving carbot provisions and the project site are 1) improving carbot provisions are also undertake. The company shall undertake companies to improve sock-economic condition of area near to project site are 1) improving carbot provisions are also into provisions are under to project site are 1) improving carbot provisions are along the project site are 1) improving carbot provisions are solutions of a prearty public roads. 2001-kind.	S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16	COMMENTS	COMPLIANCE STATUS
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medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted. The company shall also comply with the environmental protection the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented. All recommendations of EIA study are compliance following mitigation measures and visite sprinkling in construction site and near public hearing relating to the project shall be implemented. The company shall undertake CSR activities and all relevant measures for improving the socio-economic condition of nearty public roads. 2 Dirning the socio-economic condition of nearty public roads. 2 Dirning the socio-economic condition and the project size are 1 improve socio-economic condition of nearty public roads. 2 Dirning the socio-economic condition of nearty public roads. 2 Dirning the socio-economic condition of the surrounding area.	viii	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical	BPCL-KR conducts periodic training on health, safety and environment to cover all employees.
The company shall also comply with the environmental protection described in the project report submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented. All trecommendations of EIA study are compling mitigation phase-following mitigation measures and public hearing relating to the project shall be implemented. The company shall undertake CSR activities and all relevant measures for improving the socio-economic conditions of the surrounding area. The company shall undertake CSR activities and all relevant measures for improve socio-economic condition area near to project site are 1)Improve socio-economic condition and sampling stations are anded and sampling stations are added processing all effluents in existing ETP. The company shall undertake CSR activities every year for improve socio-economic condition area near to project site are 1)Improve socio-economic condition area.		medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Pre-employment and routine periodical medical examinations are also undertaken.
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The company shall undertake CSR activities and all relevant measures for improving the socio-economic conditions of the surrounding area. The company shall undertake CSR activities and all relevant measures ber Government guidelines. Following addition area near to project site are 1)Improve condition of nearby public roads. 2)Drint			cover, facilities for rain water harvesting are
The company shall undertake CSR activities and all relevant measures for improving the socio-economic conditions of the surrounding area.			oring air quality. Provisions made
for improving the socio-economic conditions of the surrounding area.	×	The company shall undertake CSR activities and all relevant measures	processing all effluents in existing ETP. BPCL undertakes CSR activities every year as
phase to improve socio-economic condition of nearby public roads. 2)Drinking condition of nearby public roads.		for improving the socio-economic conditions of the surrounding area.	per Government guidelines. Following additional
area near to project site are 1)Improving			phase to improve socio-economic condition of
			area near to project site are 1)Improving

management and monitoring functions. BPCL-	Management and Monitoring functions.	
Management cell to carry out environmental		<u>×</u> :
detailed above.		
undertaken by BPCL on a consistent basis as		
pollution. Community welfare measures are		
ppm with resulting reduction in vehicular		
Sulphur in MS will reduce from 50 ppm to 10		
quality will comply with BS-VI standards.		
eco-development measure as the auto fuel		
been purchased. MSBP project in itself is an		
green cover. Part of this 52 acres have already		
the eastern side of MSBP site to be utilized as	improvement of the environment.	
process of acquiring around 52 acres of land in	community welfare measures in the project area for the overall	
As part of eco-development, BPCL is in the	The company shall undertake eco-developmental measures including	≚.
projects are currently underway.		
concluded IREP project and ongoing PDPP		
Implementation of ESC activities under recently		
development in nearby locations.		
areas of health, education and infrastructure		
The company carries out CSR activities in the		
scheme to local public-which is being rolled out.		
during COVID-19 lockdown period, 6) Insurance		
supplied to more than 90 families in the vicinity		
community, 5) Grocery and vegetable kits		
cables underground to benefit nearby		
enhancing height of distribution cables/ routing		
deposited to Kerala State Electricity Board for		
nearby roads to prevent accidents, 4) Amount		
community, 3) Reflective mirrors in turnings of		
water pipeline extension to benefit nearby		
		-IA II (I), Dtd22/10/16
COMPLIANCE STATUS	COMMENTS	11011/43/2016
		S.No. as per Env.Ltr.No.J-
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S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16	COMMENTS	COMPLIANCE STATUS
		KR also has well equipped Centralized Quality Control Laboratory. The same facility will be utilized for MSBP.
Xiii	The company shall earmark sufficient funds for recurring cost per annum to implement the conditions stipulated by the Ministry of Environmental and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein.	Industrial and domestic effluents from MSBP are planned to be treated in existing treatment plants. Incremental cost for yearly operation has been budgeted. Also cost provision already
	The funds so earmarked for environment management/pollution control measures shall not be diverted for any other purpose.	provided for pollution monitoring devices like stack monitoring, manual sampling locations etc. Inputs for LDAR programme has been collected and same will be in place once units are commissioned.
χίν	A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban local Body and the local NGO, if any, from who suggestions/representations, if any, were received while processing the proposal.	BPCL-KR has complied with this condition.
VX	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 the	Six monthly compliance reports will be submitted during December (for period April-September) and during June (for period October to March). The same will be sent to the Regional
	respective Zonal Office of CPCB and the Kerala State Pollution Control Board. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.	office of MoEF&CC and also uploaded in the website of BPCL.
XV.	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the Kerala 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 Rhonal Regional Offices of MoEE by e-mail	Environmental statement for the Refinery is submitted annually. Post MSBP commissioning, Environmental statement shall be updated with inclusion of MSBP facilities

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XVIII	xvii	S.No. as per Env.Ltr.No.J- 11011/43/2016 -IA II (I), Dtd22/10/16
The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	The project proponent shall 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 at http://envfor.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.	COMMENTS
The Board approval for the MSBP project was obtained on 24.02.2016. The date of start of project is considered from the Environmental clearance on 20th October 2018.	BPCL-KR has complied with this condition.	COMPLIANCE STATUS





KERALASTATE POLLUTION CONTROL BOARD കേരളസംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram — 695~004 പട്ടം പി.ഒ., തിരുവനന്തപുരം – 695~004

PCB/HO/HWM/416/90

Date: 20/01/2020

From

Member Secretary

To

Chief General Manager (ops and Commissioning)
BPCL-Kochi Refinery
Post Bag No. 2
Ambalamughal
Ernakulam - 682302

Sub:- Installation of proposed ambient air quality monitoring stations-reg.

Ref:- Letter No. 05.HSSE.CR/Vol 7/08.19 dated 26/08/2019

Sir,

Referring to the letter vide cited it is informed to proceed with the setting up of ambient air quality monitoring stations (2 nos) in the proposed location as per the site plan submitted.

Yours faithfully,

MEMBER SECRETARY

Copy to:

- The Environmental Engineer District Office -2 Ernakulam
- 2. Chief Environmental Engineer Regional Office ,Ernakulam

HARDT PETROLEUM CORPORATION LIMITE

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KR PROJITECH,MSBP MOFFCC,28 5% July 2019

To
The Member Secretary (Industry-II)
Ministry of Environment, Forest and Climate Change (MoEFCC)
Indira Gandhi Paryavaran Bhavan, Jorbagh Road
New Delhi 110003

NOA III

Dear Sir.

Sub:

BS VI Quality Fuel Upgradation and a new MS block comprising of NHT, NSU, UNISM, CCR and associated facilities at Kochi refinery, village - Ambalamugal, Tehsil Kunnathunad, District Ernakulum, Kerala by M/s Bharat Petroleum Corporation Limited: Changes subsequent to grant of Environmental Clearance.

Ref:

Ministry of Environment, Forest and Climate Change (MoEF&CC) letter number: J-11011/43/2016-IA II(1) dated 20th October 2016 granting Environmental Clearance for the BS VI Motor Spirit Block Project at Kochi.

Ministry of Lavironment, Forest and Climate Change (MoLECC) vide the reference letter number 1.41011-13 2016-1A H (1) dated 20th October 2016 had accorded Environmental Clearance (EC) for the BS VI Motor Spirit Block Project (NISBP) of BPCI. Kochi Refinery, Subsequently the project facilities has been optimized based on interaction with Process Ficensor and further detailing of the project. The configuration of the process units, offsite facilities and utilities were reviewed in line with specific condition of the EC to limit the SO2 emission level and take additional efforts for further reduction of emissions. Copy of the LC is attached as Annexure-1.

The optimization of the project facilities has resulted in minor changes to the facilities proposed in the MSBP from what was mentioned in our project proposal while applying for the Environmental Clearance. You may kindly note that the above changes will not impact the pollution loads and overall emission levels will continue to be well within the limit (i.e. 1579 kg/hr) prescribed by MoEFCC in the FC conditions

As per Mol-FCC notification S.O. 3518 (E) dated 23rd November, 2016 under point no. 7(ii) (b), the project proponent shall inform the Ministry of Environment, Forest and Climate Change (Mol-FCC), if there is any change in configuration of the plant after detailed engineering BPCL takes this opportunity to appraise Mol-FCC that during detail-engineering there has been changes in configuration of the project viz a viz that submitted during 1 C. Proposed changes along with justifications is attached as **Annexure II**

We request you to kindly accept our proposal for amendment in Environmental Clearance.

Thanking you.

Very Ituly Yours For Bharat Petroleum Corporation Limited -Kochi Refinery

Sreeram A.N General Manager (Project Technical)

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Annexure-II

Changes proposed in Project Facilities viz a viz EC granted

SLNo:	Description	As per proposal submitted to MoEFCC	Changes Proposed	Justification for the proposed changes
1	Total fresh water requirement for the Refinery (Clause 3.0 and A(ix) of EC)	Fresh water intake to refinery on implementation of MSBP project is 1372.2 m3/hr.	Fresh water requirement for the MSBP project is 142m3/Hr. and total fresh water requirement for the Refinery post MSBP is 3083 m3/hr.	The breakup of raw water requirement for the Refinery as submitted along with EC application are 28 MLD for old Refinery complex, 33 MLD for IREP complex, 9.6 MLD for PDPP complex and 3.4 MLD for MSBP, totaling to 74 MLD (3083.3 m3/hr.). Government of Kerala has already given consent to BPCL Kochi Refinery for drawing 74 MLD water from Periyar River. Kindly refer Cl: 2.2 of the attached Appendix-I, which was submitted as part of application for EC.
2	Flare gas recovery system shall be installed(Clause A(vii) of EC	Flare gas recovery system shall be installed	New flare was considered in the original proposal. During detailed engineering stage, it was found that new flare is not required and hence flare gas recovery system to be exempted.	Based on flare mitigation study conducted by UOP/EIL, flare load of MSBP can be taken care by existing DHDS flare. Hence DHDS flare with minor modifications is proposed for MSBP. Flare gas recovery system is already provided as part of the integrated Refinery Expansion Project.

Changes in Project Facilities for information

SI No:	Description	As per proposal submitted to MoEFCC	Changes Proposed	Justification for the proposed changes
3	Source of power	New Gas Turbine of 34.5 MW with Heat Recovery Steam Generator (HRSG) of 110 TPH capacity	Estimated power consumption has come down based on licensors inputs and it was decided to avoid	The total power and steam requirement was reviewed and optimized further to the Pre-feasibility stage after ascertaining the requirements of licensed units. The power requirement for MSBP is only 25.4 MW and same shall be sourced from state grid. GT/HRSG stack is eliminated.

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ļ			and source	
ŧ		ļ.	power from	
			State grid.	· .
I	!		A new 220 KV	
	'	1	double bus Gas	
	1		Insulated	
	!		Substation (GIS)	
	!	,	within plant	
	!		with high power	
	. !		carrying and	
	!		fault	
	!		withstanding	
ĺ	!		ratings is	
ł	!		proposed to	
1			strengthen the	
1			power	,
		,	infrastructure	~
İ			facility inside the	
	-		Refinery.	
4	Intermediate storage	New tank for	New tank is not	Existing tanks YT 500, 502 A/B shall be
!	tanks	isomerate feed	required	converted to isomerate feed service.
5	Plot plan for MSBP	:Total area 7 acres	Area remain	The plot plan has undergone minor
	.	within existing	same .However,	changes due to optimization of equipment
İ		Refinery complex	plot plan	layout based on the basic engineering
ĺ	!	· ·	optimized ·	package developed by M/s UOP as well as
· -				detailed engineering done by LSTK
			•	contractors. Revised plot plan enclosed.

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Sreeram A.N.
General Manager (Project Technical)