भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड
भारत सरकार का उपक्रम
कोच्चि रिफ़ाइनरी

BHARAT PETROLEUM CORPORATION LIMITED
A Govt. of India Enterprise
Kochi Refinery

KR.HSE.ENV.05.HSSE.HECCR/02/2022/ J-11011/43/2016 - IA-II (I)
15.12.2022

To
The Additional Principal Chief conservator of Forests (C)
Ministry of Environment, Forest & Climate Change
4th Floor, E&F Wings, Kendriya sadan, Koramangala
Bangalore-560 034

Dear Sir,

Sub: Submission of Half yearly compliance report on Environmental Clearance issued by the Ministry of Environment, Forests and Climate Change (MoEF & CC)

Ref: EC Nos. J-11011/43/2016-IA-II (I) dated **20.10.2016;** issued to the **"Motor Spirit Block Project"** of M/s Bharat Petroleum Corporation Ltd, Kochi at Ambalamugal".

Please find enclosed the compliance reports on the various conditions laid down by MoEF &CC, pertaining to the half year period from **1st April 2022 to 30th September 2022** for the said project.

Thanking you,
Very truly yours
For BPCL Kochi Refinery.

Ramachandran. M.K
General Manager in Charge (HSE)

Encl: 1. Six Monthly Compliance Report
2. Annexure - I Emission Details
3. Annexure - II Ambient Air Details

CC:

1.
The Member Secretary
Central Pollution Control Board
Parivesh Bhawan
East Arjun Nagar, New Delhi- 110032

2.
The Member Secretary
Kerala State Pollution Control Board
Plamoodu Junction
Pattom Palace, Thiruvananthapuram - 695 004

Compliance Status of Environmental Clearance conditions for installation of "Motor Spirit Block Project" at BPCL – Kochi Refinery, project accorded by EC No. J-11011/43/2016-IA-II (I) dated **20.10.2016**

Status of the project: Project commissioned in 2021		
	COMMENTS	**Compliance Status as on 30.09.2022**
SPECIFIC CONDITIONS:		
i	M/s BPCL shall comply with new standards/norms for Oil Refinery Industry notified under the Environment (Protection) Rules, 1986 vide G.S.R. 186 (E) dated 18th March, 2008.	BPCL-KR has complied with this condition.
ii	Continuous on - line stack monitoring for SO2, NOx and CO of all the stack shall be carried out.	Continuous online monitoring of S02, NOx and CO is being carried out for 2 new stacks in the MSB project.
iii	The process emissions [SO_2 NOx, HC (Methane & Non-methane)] VOCs and Benzene from various units shall conform to the standards prescribed under the Environment (Protection) Act. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency of the pollution control device has been achieved.	Measurement and detection devices for HC, H2S etc. put online in plant area. In the event of emissions beyond permissible levels, the unit shall be immediately put out of operation and shall not be restarted until root cause is identified and attended.
iv	Leak detection and repair program shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to. Fugitive emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations.	A list of all potential HC/VOC emission points like flanges, valve gland, pump seal etc. in MSBP has been identified. Leak Detection and repair program to detect and control HC/VOC emissions is in place for MSBP units. A well-defined preventive maintenance schedule for pumps, valves, pipelines as being practiced in our running plants is implemented for MSBP. Gas detectors are provided at strategic locations for detecting leakages.
v	SO_2 emissions after expansion from the plant shall not exceed 1579 kg/hr. and further efforts	Sulphur rich off gases from new project units is treated in the existing Sulphur recovery units. BPCL-KR will comply

	shall be made for reduction of SO_2 load through use of low sulphur fuel. Sulphur recovery units shall be installed for control of H_2S emissions. The overall sulphur recovery efficiency of Sulphur Recovery Unit with tail gas treating shall not be less than 99.9%.	with the S02 emissions 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 drawn from the state grid. One of the stack is therefore eliminated. Process heaters have been designed for LNG firing, LNG firing provision is provided to MSBP heater to reduce S02 emission.
vi	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, by-product (elemental sulphur), atmospheric emissions etc.	Sulphur balance is being maintained at refinery on regular basis.
vii	Flare gas recovery system shall be installed.	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 is 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.
viii	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 modelling exercise to represent short terms GLCs.	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 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 approved the same. An Annual Rate contract is in place for carrying out sampling and analysis of ambient air quality within refinery.

ix	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.	Total fresh water requirement for MSBP will be 125M3/hr. Govt.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 limited within 3083.3 m3/ hr. The number 1372.2 M 3/ 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 dated 11th December2018 and 5th July 2019. Acknowledgement received from MoEF&CC dated 11.9.2019 was attached for reference with previous half yearly compliance report.
x	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 is being treated in the existing refinery ETP. There will be no untreated effluent discharge from MSBP complex. Domestic sewage is treated in existing refinery STP.
xi	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 with traps provided in oil water sewer system.

GENERAL CONDITIONS:		
i	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.	BPCL-KR will adhere to the stipulations made by KSPCB, State Govt. and other statutory bodies.
ii	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & 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 to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Reference on minor changes in the EC has been communicated to MoEF&CC vide letter dated 11th December 2018 and 5th July 2019. Acknowledgement received from MoEF&CC dated 11.9.2019.
iii	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	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

	direction as well as where maximum ground level concentrations are anticipated.	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. The said letter was appended with previous half yearly compliance report. An Annual Rate Contract is in place for carrying out sampling and analysis of ambient air quality within refinery.
iv	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 EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	To minimize Sound, engineering practice has incorporated in the design as prescribed under EPA rules. Equipment selection has been done taking into consideration of restricting noise levels to acceptable limits. Also we are doing regular noise monitoring in the premises and reports being submitted to PCB on monthly basis.
v	The Company shall harvest rainwater from the roof-tops of the buildings and storm water drains to recharge the gro und water and use the same water for the process activities of the project to conserve fresh water	Facilities are made for diverting rain water from roof tops to recharge ground water.
vi	During transfer of materials, spillages shall be avoided and garland drains be constructed to avoid mixing of accidental spillages with domestic waste water and storm water rains.	Drains are constructed for each unit and separate storm water drain is constructed outside unit periphery in order to avoid mixing of accidental spillages with storm water.
vii	Usage of Personnel Protection Equipment by all employees/ workers shall be ensured.	Usage of PPE's within plant area is already enforced in BPCL KR.
viii	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. Training to all employees on handling of chemicals shall be imparted.	BPCL-KR conducts periodic training on health, safety and environment to cover all employees. Pre-employment and routine periodical medical examinations are also under taken.
ix	The company shall also comply with the environmental protection measures and safeguards proposed in the project report submitted to the Ministry. All the	All recommendations of EI A study are complied.

	recommendations made in the EIA/EMP in respect of Environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.	Operation phase - Facilities for detection and monitoring of emissions are installed and put online for all MSBP units. As part of Environmental Management Plan, saplings are planted to increase green cover, facilities for rain water harvesting are made and sampling stations are added for monitoring air quality. All effluents is being treated in existing ETP.
x	The company shall undertake CSR activities and all relevant measures for improving the socio-economic conditions of the surrounding area.	BPCL undertakes CSR activities every year as per Government guidelines .Various activities are carried out to improve socio-economic condition of area near to project site. A few of the activities taken up are 1)Improving condition of nearby public roads, 2)Drinking water pipeline extension to benefit nearby community, 3) new and renovated anganwadis 4) Reflective mirrors in turnings of nearby roads to prevent accidents, 5) Amount deposited to Kerala State Electricity Board for enhancing height of distribution cables/ routing cables underground to benefit nearby community, 6) Grocery and vegetable kits supplied to families in the vicinity during COVID-19 lockdown period, 7) Insurance scheme to local public is in place. The company carries out CSR activities in the areas of health, education and infrastructure development in nearby locations. Implementation of ESC activities under PDPP project is currently underway. Apart from these, from the second wave the apex Covid Treatment Center of the District is being run in KR campus with direct oxygen supply from the plant area. So far, more than 6000 patients have been treated. These include patients from the neighbouring areas.
xi	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.	As part of eco-development, BPCL is in the process of acquiring around 52 acres of land in the eastern side of MSBP site to be utilized as green cover. Major portion of this 52 acres have already been purchased. MSBP project in itself is an eco-development measure as the

		auto fuel quality will comply with BS-VI standards. Sulphur in MS will reduce from 50 ppm to 10 ppm with resulting reduction in vehicular pollution. Community welfare measures are undertaken by BPCL on a consistent basis as detailed above.
xii	A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	BPCL-KR is having a separate Environment Management cell to carry out environmental management and monitoring functions. BPCL-KR also has well equipped Centralized Quality Control Laboratory. The same facility is 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. The funds so earmarked for environment management/pollution control measures shall not be diverted for any other purpose.	Industrial and domestic effluents from MSBP is treated in existing treatment Plants. Incremental cost for yearly operation has been budgeted. A list of all potential HC/VOC emission points like flanges, valve gland, pump seal etc. in MSBP has been identified. Leak Detection and repair program to detect and control HC/VOC emissions is in place for all the units in MSBP.
xiv	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.
xv	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 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.	Six monthly compliance reports will be submitted during December (for period April-September) and during June (for period October to M arch). The same will be sent to the Regional office of MoEF&CC and also uploaded in the website of BPCL.
xvi	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	Environmental statement for the Refinery is submitted annually, this statement will include details of MSBP facilities.
xvii	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the	BPCL- KR has complied with this condition.

	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 newspaper 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.	
xviii	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 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 2016.

Annexure – 1

Stack emission data of MSBP unit for the period of 1st April 2022 to 30th September 2022

Stack Name	Date	Temp (^{0}C)	Flow rate (Nm^3/hr)		PM (mg/Nm^3)	SO2 (mg/Nm^3)	NOx (mg/Nm^3)	CO (mg/Nm^3)	(Ni+ V) (mg/Nm^3)	H_2S (mg/Nm^3)
			Results	Limit						
MSBP_ Combined HOH	04.04.2022	160	158034	159850	8.74	15.95	13.05	8.97	BDL	BDL
MSBP_ MRH 01_04	04.04.2022	203	96964	97200	2.12	14.91	19.23	12.08	BDL	BDL
MSBP_ Combined HOH	17.05.2022	152	117718	159850	12.35	24.36	13.59	24.61	BDL	BDL
MSBP_ MRH 01_04	17.05.2022	184	96565	97200	2.35	10.39	20.39	BDL	BDL	BDL
MSBP_ Combined HOH	24.08.2022	152	152311	159850	5.4	5.2	77.1	72.1	BDL	BDL
MSBP_ MRH 01_04	24.08.2022	181	80292	97200	5.1	7.8	107	BDL	BDL	BDL
MSBP_ Combined HOH	19.09.2022	164	149677	159850	11.9	49.7	43.3	61.8	BDL	BDL
MSBP_ MRH 01_04	19.09.2022	179	81276	97200	22.1	5.2	77.1	6.9	BDL	BDL

AMBIENT AIRQUALITY DATA FOR THE HALF YEAR PERIOD
1st April 2022 to 30th September 2022

AAQMS - Marketing							
Parameter	**unit**	**Apr. 22**	**May. 22**	**Jun. 22**	**Jul. 22**	**Aug. 22**	**Sept. 22**
SO2	µg/m3	35.81	41.25	20.03	10.21	24.32	49.69
NOx	µg/m3	1.28	0.99	1.29	2.87	7.09	22.74
NH3	ug/m3	0.00	0.10	0.45	4.25	10.52	4.51
CO	mg/m3	0.91	0.83	0.89	0.96	0.56	0.56
Benzene	µg/m3	0.11	0.10	0.09	0.08	0.09	0.13
Methane	ppm	0.00	0.00	0.00	0.00	0.02	0.00
NMHC	ppm	0.00	0.00	0.00	0.00	0.00	0.00
PM 10	µg/m3	56.20	48.14	34.80	36.42	37.03	41.74
PM 2.5	µg/m3	32.97	27.69	20.39	18.84	17.40	20.65

AAQMS - Colony							
Parameter	**unit**	**Apr. 22**	**May. 22**	**Jun. 22**	**Jul. 22**	**Aug. 22**	**Sept. 22**
SO2	µg/m3	15.01	16.78	18.73	19.92	19.35	22.82
NOx	µg/m3	23.47	21.04	**17.70**	15.15	19.92	18.71
NH3	ug/m3	34.13	25.17	14.87	4.77	2.37	2.10
CO	mg/m3	0.48	1.02	1.33	1.27	1.30	1.36
Benzene	µg/m3	0.10	0.05	0.00	0.00	0.00	0.00
Methane	ppm	1.71	0.00	0.04	0.02	0.02	0.02
NMHC	ppm	1.71	0.00	0.01	0.00	0.00	0.01
PM 10	µg/m3	52.61	45.95	33.14	30.18	33.78	40.38
PM 2.5	µg/m3	27.82	20.86	15.69	15.47	17.09	20.02

DHDS							
Parameter	**unit**	**Apr. 22**	**May. 22**	**Jun. 22**	**Jul. 22**	**Aug. 22**	**Sept. 22**
SO2	µg/m3	5.06	4.82	8.81	11.34	14.30	16.91
NOx	µg/m3	5.50	3.13	4.77	7.33	8.65	11.03
NH3	ug/m3	0.00	0.03	0.00	0.00	0.29	0.00
CO	mg/m3	0.61	0.64	0.74	0.57	0.80	1.24
Benzene	µg/m3	0.01	0.03	0.03	0.05	0.06	0.07
Methane	ppm	0.03	0.03	0.01	0.00	0.02	0.00
NMHC	ppm	0.01	0.02	0.04	0.00	0.00	0.00
PM 10	µg/m3	40.01	32.84	24.03	26.60	26.86	32.14
PM 2.5	µg/m3	26.45	21.88	13.38	15.15	14.87	20.40

AAQMS - CISF Township							
Parameter	**unit**	**Apr. 22**	**May. 22**	**Jun. 22**	**Jul. 22**	**Aug. 22**	**Sept. 22**
SO2	µg/m3	6.19	4.40	9.25	10.96	11.77	13.39
NOx	µg/m3	23.26	20.02	26.07	18.33	22.81	17.01
NH3	ug/m3	13.86	12.38	17.54	12.17	15.43	9.65
CO	mg/m3	1.14	1.14	1.23	1.32	1.39	1.56
Benzene	µg/m3	0.07	0.04	0.04	0.05	0.03	0.01
Methane	ppm	0.06	0.18	0.19	0.06	0.00	0.00
NMHC	ppm	0.00	0.00	0.00	0.00	0.00	0.00
PM 10	µg/m3	53.32	48.72	37.41	37.10	35.42	41.24
PM 2.5	µg/m3	31.86	22.86	16.08	12.28	14.62	22.33

AAQMS - NHT CCR							
Parameter	**unit**	**Apr. 22**	**May. 22**	**Jun. 22**	**Jul. 22**	**Aug. 22**	**Sept. 22**
SO2	µg/m3	1.05	1.05	3.17	2.53	2.79	1.60
NOx	µg/m3	10.00	10.01	10.00	9.99	10.00	10.00
NH3	ug/m3	1.43	0.00	0.00	0.00	faulty	faulty
CO	mg/m3	0.56	0.36	0.65	0.20	0.52	0.43
Benzene	µg/m3	0.00	0.00	0.00	faulty	faulty	faulty
Methane	ppm	0.01	0.01	0.00	0.01	0.04	0.03
NMHC	ppm	0.10	0.10	0.02	0.10	0.10	0.10
PM 10	µg/m3	36.03	31.35	30.26	30.88	31.00	30.36
PM 2.5	µg/m3	32.20	21.71	14.57	14.00	faulty	faulty

Annexure - III

TREATED EFLUENT QUALITY DATA FOR THE HALF YEAR PERIOD

1st April 2022 to 30th September 2022

Effluent _ Outlet - A (monthly average value)								
Parameter	limit	unit	Apr. 22	May. 22	Jun. 22	Jul. 22	Aug. 22	Sept. 22
pH	6 - 8.5		7.83	7.94	7.9	7.7	7.5	7.35
TSS	100	ppm	11.7	10.3	12.2	10.5	9.45	11.77
Oil & Grease	5	ppm	3.3	3.28	3.4	3.3	3.31	3.37
BOD (3 day @27 C.)	15	ppm	11.3	11.5	13.2	12.1	12.4	13.47
Phenol	0.35	ppm	0.13	0.11	0.1	0.1	0.12	0.13
Sulphides	0.5	ppm	0.41	0.4	0.4	0.4	0.4	0.4
COD	125	ppm	33.14	32.5	47	38.6	48.77	46.91
Effluent _ Outlet - B (monthly average value)								
Parameter	limit	unit	Apr. 22	May. 22	Jun. 22	Jul. 22	Aug. 22	Sept. 22
pH	6 - 8.5		7.15	7.2	7.2	7.2	7.0	7.25
TSS	100	ppm	12.5	15.2	12.2	10.5	9.6	12.5
Oil & Grease	5	ppm	3.2	3.5	3.2	3.3	3.3	3.2
BOD (3 day @27 C.)	30	ppm	13.5	12.5	12.6	12.5	12.0	12.5