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.ECCR/01/2023/ EC No.J-11011/32/90-IA-II
25.06.2023

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 No.J-11011/32/90-IA-II dated 20.8.1991 issued to our Project **"Capacity expansion of M/s Bharat Petroleum Corporation Ltd, Kochi Refinery** (Formerly Cochin Refineries Ltd.) from **4.5 to 7.5 MMTPA** 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 October 2022 to 31st March 2023** for the subject project.

The data on ambient air, effluent, CREP recommendations, details of land balance, ground water usage, green belt, solid waste management, rain water harvesting, solar power generation and details of environment management cell being common to all the ECs granted in Kochi Refinery premises, the same are enclosed as part of EC for CEMP-II accorded vide MoEF&CC letter J-11011/369/2005-IA II (I) dated 2nd February 2006.

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 - 1 : Stack emission data

Cc:

1. The Member Secretary
Central Pollution Control Board
Parivesh Bhawan
East Arjun Nagar
Delhi - 110 032

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

Compliance status of Environmental Clearance conditions for Capacity Expansion Project accorded by J-11011/32/90-IA.II DTD.20/08/1991

Status of the project: Project **commissioned in 1994**

Sl. No.	Stipulations of MoEF & CC	Status as on 30.09.2022
1	The project authorities must strictly adhere to the stipulations laid down by the State Pollution Control Board and the State Government and a comprehensive EIA report must be submitted within two months.	Complied.
2	Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this Ministry.	Complied.
3	The present policy of crude mix refining strategy of minimum 50% Indian crude including B.H and 50% of imported crude should be maintained and implemented under normal conditions.	The stipulated policy has been changed. Capacity is 15.5 MMTPA after new projects and crude mix is chosen to improve the gross refining margin of the Refinery. The new project of grass root refining facilities (IREP) have been implemented with the EC consent (**J-11011/341/2011-IA-II (I)** dated **22.11.2012;** and Amendment dated **23.05.2014)** conditions of production and emission/effluent norms.
4	Sulphur Recovery Unit with more than 90% Sulphur recovery should be installed and commissioned before the expansion project is completed and precautions for its continuous operation must be taken. Techno-economic feasibility study for additional stand –by 'S' recovery system may be initiated after the installation of first unit.	Sulphur Recovery Unit with more than 90% sulphur recovery commissioned during March 1995. (Now dismantled) But additional Sulphur Recovery units with newer technology and higher efficiency of 99.9% have been commissioned as part of later projects viz. DHDS / CEMP - II / IREP.
5	Only LSHS should be used in boilers. The additional capacity for heaters, utility furnace must be based on LSHS use only. Low NOx burners should be used to avoid gaseous formation of NOx.	Complied. All burners are low NOx burners and NOx emissions are far below the described norms.
6	The gaseous emissions from various process units should conform to the standards prescribed by the concerned authorities from time to time. At no time the emission level should go beyond the stipulated standards. In the event of the failure of any pollution control system adopted by the unit,	Complied

	the respective unit should be put out of operation immediately and should not be restarted until the control measures are rectified to achieve the desired efficiency.	
7	Adequate number (a minimum of 7) of air quality monitoring stations should be set up in the down-wind direction as well as where maximum ground level concentration is anticipated. Stack emission should be monitoring by monitoring unit. The data on stack emission should be submitted to the State Pollution Control Board once in three months and to this Ministry once in six months along with the statistical analysis. The air quality monitoring stations should be selected on the basis of modelling exercise to represent the short term ground level construction.	As per letter No. J-11011/32/90-IA. II dated 19.05.1992. CRL (Now BPCL - KR) was directed to put up 4 Nos. of AAQMS. Based on wind rose pattern at BPCL - KR and modelling exercise conducted, 3 AAQMS were found to be sufficient for monitoring the pollutants from BPCL – KR. KSPCB's approval was obtained to put up these 3 stations in KR premises. 3 Nos. of AAQMS had been installed along with a Data Acquisition Centre and was commissioned in August 1997. Post CEMP- II project, commissioned in 2010 – 2011, BPCL KR has 5 AAQMS stations. The data from all the five AAQMS are being uploaded to CPCB servers. After the commissioning of the PDPP 2021, now BPCL – KR has 6 nos. of AAQ Monitoring Stations. The data from all AAQMS are being provided along with CEMP II clearance accorded vide MoEF&CC letter J-11011/369/2005-IA II (I) dated 2nd February 2006 and IREP EC Nos.J-11011/341/2011-IA-II (I) dated 22.11.2012 to KSPCB and MoEF& CC as per the recommended time interval. Stack emission data attached as Annexure I.
8	Fugitive emissions should be regularly monitored, and adequate provision should be made for the same.	Complied. One rate contract for the same has been issued and being done regularly (Once in quarter) and is being attended the identified leaks; if any and maintaining reports.
9	Fugitive emission of HC from storage tanks should be minimized by adopting the following measures: a) Provision of Floating Roof Tanks for volatile products b) Replacement of gland packing of pumps by means of mechanical seals. c) Use of submerged filling in product loading gantries	a). Complied. b). All the pumps except pumps in heavy oil or water service are provided with mechanical seals. c). Complied.
10	There should be no change in the stack design without the approval of the State Pollution Control Board. Alternate Pollution Control System and proper design in the stack should be	Complied

	provided to take care of excess emissions due to failure in any system of the plant.	
11	Total raw water consumption (industrial as well as township) should not exceed the present level (i.e.16800 m3/day).	Complied. Current consumption is within the revised figures as per consent for IREP. **(J-11011/341/2011-IA-II (I) dated 22.11.2012; and Amendment dated 23.05.2014)**
12	The project authorities must recycle wastewater to the maximum extent possible. The present practice of ETP effluent discharged into water logged areas should not be continued. The liquid effluent coming out of the plant should meet the stipulated standards and disposed through the channel only into the outfall point in Chitrapuzha river to be identified by the State Pollution Control Board. Flow of oil and grease into biological system should be avoided. Waste stream segregator should be installed before ETP.	Complied.
13	Adequate number of effluent quality (oil & grease, COD, BOD, suspended solids, phenols, sulphides, pH and flow) monitoring stations must be set up in consultation with State Pollution Control Board	Complied
14	No oily sludge should be generated and stored as was being done in the past.	As part of IREP project, BPCL-KR has commissioned a Delayed Coker Unit (DCU). Sludge generated is processed in this DCU and the product is Petcoke.
15	The project authority should prepare a well designed scheme for solid and hazardous wastes disposal generated from BPCL - KR (formerly CRL) taking into account the suggestions made by consultants in the EIA report. The plan for disposal duly approved from the State Pollution Control Board should be submitted to the Ministry within six months and adequate space should be provided for it, as far as possible on the premises itself.	Scheme for solid and hazardous waste disposal was approved by KSPCB. Scheme was subsequently submitted to MoEF &CC in March 1993. BPCL Kochi Refinery has implemented a scheme for recovery of oil from oily sludge. The oil recovery process consists of a series of physical separation processes. The oil recovered is reprocessed in the refinery process units. The sludge after the oil recovery is transferred for Bio remediation, which is a "The Energy and Resources Institute (TERI)" suggested method. Spent catalyst is disposed by either returning to the original supplier or selling to the recycler or is disposed in delayed Coker unit / approved agency of TSDF. ETP Chemical sludge is disposed in delayed Coker

		unit. Bio sludge from effluent treatment plant is used as manure in the different green parks
16	Green belt, 500 meters wide, as recommended by the consultants in their report should be developed and maintained. The treated effluent conforming to the standard should be used for green belt development plan considering attenuation factors, soil characteristics etc. should be prepared and submitted to this Ministry within 6 months.	Complied.
17	Relocate LPG spheres so that risk due to these remains within the plant area	Complied. As it was not feasible to relocate the LPG spheres, it had been desired by MoEF &CC to acquire land in the adjoining area where impact will be more. Accordingly, the adjoining land of 63 acres had been acquired by BPCL – KR (formerly CRL), that has been occupied by IOC, HPC and BPC area. Further, 75% of LPG / Propylene storage is in mounted bullets.
18	A detailed risk analysis study based on Maximum Credible Accident Analysis should be done and submitted to this Ministry once the process design / technology and lay out is frozen. Based on this, a Disaster Management Plan has to be prepared and after approval by the concerned Nodal Agency, should be submitted to this Ministry within six months.	Risk analysis study had been conducted and was submitted to MoEF &CC in October 1991. Disaster Management Plan was submitted to MoEF &CC in February 1992. BPCL – KR has an updated ERDMP.
19	Feasibility of using 20 tonner truck may be studied / assessed wherever road transport is being envisaged and report submitted to this Ministry in three months.	20 Tonner trucks are utilised wherever feasible.
20	The project authority must set up laboratory facilities for collection and analysis of samples under the supervision of competent technical personnel, who will directly report to the Chief Executive.	Complied.
21	A Separate Environment Management Cell with suitably qualified people to carry out various functions should be set up under the control of Senior Executive, who will report directly to the Head of the organization.	Already exists.

22	The funds earmarked for the environmental protection measures should not be diverted for other purposes and year-wise expenditure should be reported this Ministry.	Complied with. An estimated amount of Rs.74/- crores have been spent during implementation of Capacity Expansion Project towards environmental protection measures.

Annexure – 1

Stack emission data for the period of 1st October 2022 to 31st March 2023

PERIOD - 1st October 2022 to 31st March 2023														
Sl.no.	STACK / UNIT	No. of samples analysed	Permitted emission Nm3/hr.	Particulate matter mg/Nm3			Sulphur dioxide mg/Nm3			Emission rate Nm3/hr.			Percentage compliance	
				min	max	Avg.	min	max	Avg.	min	max	Avg.	SPCB	MoEF.
1	CH21	6	22000	8.6	17.90	12.58	70.60	505.20	311.95	90241	106399	97972.5	100	100
2	CH22	6	130000	6.4	12.80	9.42	128.20	625.60	327.22	23821	32409	27718.7	100	100
3	CH 223	6	150000	5.2	15.10	8.55	0.00	350.70	114.67	46012	72644	59698.0	100	100

Annexure - III

TREATED EFLUENT QUALITY DATA FOR THE HALF YEAR PERIOD

1st October 2022 to 31st March 2023

Effluent _ Outlet - A (monthly average value)								
Parameter	**limit**	**unit**	**Oct. 22**	**Nov. 22**	**Dec. 22**	**Jan. 23**	**Feb. 23**	**Mar. 23**
pH	6 - 8.5		7.4	7.4	7.4	7.3	7.3	7.9
TSS	100	ppm	16.0	14.0	14.0	9	14	19
Oil & Grease	5	ppm	4.0	3.6	3.2	3.6	3.3	3.3
BOD (3 day @27 C.)	15	ppm	15.0	12.0	14	13	13	15
Phenol	0.35	ppm	0.1	0.18	0.15	0.14	0.14	0.15
Sulphides	0.5	ppm	0.4	0.4	0.4	0.4	0.4	0.4
COD	125	ppm	110.0	36.0	45	40	38	61

Effluent _ Outlet - B (monthly average value)								
Parameter	**limit**	**unit**	**Oct. 22**	**Nov. 22**	**Dec. 22**	**Jan. 23**	**Feb. 23**	**Mar. 23**
pH	6 - 8.5		7.2	7.2	7.3	7.25	7.1	7.2
TSS	100	ppm	12	11.0	12.3	11.4	10.4	9.5
Oil & Grease	5	ppm	3.2	3.2	3.4	3.25	3.25	3.3
BOD (3 day @27 C.)	30	ppm	12.5	12.0	13	12.5	13.4	12