



GUJARAT STATE ELECTRICITY CORPORATION LIMITED

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By E-mail to CPCB & GPCB and uploading at Parivesh Portal
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Ref. No.: GSECL/WTPS/EEEC/Env/Unit 7/EC/

Date:

To,
Regional Officer,
Ministry of Environment & Forest & Climate change,
Integrated Regional Office,
A wing Room no -407 & 409,
Aranya Bhavan, Near CH-3 Circle,
Sector -10 A, Gandhinagar-382010,

Sub: Submission of half yearly statistics of the various data regarding stack emission Ambient air quality and effluent samples of Wanakbori T.P.S.

Ref: Environmental clearance vide letter no. J-13011/13/93/IA/III dtd. 19/04/94, for Unit No.7 of WTPS : Point no.2 (xiv).

Dear Sir,

In reference to above please find enclosed herewith half yearly statistics of the various data regarding effluent quality, stack emission and ambient air quality and their comparison with the specified norms, for Wanakbori TPS for the period of Oct '2022 to March '2023 as Annexure – I to III.

Thanking you,

Yours Faithfully,

Chief Engineer (C&O)

GSECL: WTPS

Encl.: As above.

Compliance of the EC condition Unit - 7

No.	Condition framed in Environment Clearance	Compliance of the conditions	compliance status
2	Condition & safeguards for implementation		
I	Stack height should be provided as per MOEF's notification dated 19/5/93.	Stack height of unit no 7 is 220 meter, which is as per the MOEF's requirement.	Complied
II	ESP/ alternate dust collecting equipment with operational efficiency of not less than 99.8% should be provided so that the PM emission should not exceed 150 mg/Nm ³ failing which plant should be shut down. Adequate redundancies should be provided so that partial failures do not result in exceeding the limit mentioned above. Arrangement for interlocking of ESP/alternate equipment would be desirable.	ESP provided with operational efficiency 99.76%. BAPCON & RAPCON system are provided for automatic control of ESP rectifier parameters for optimum working of ESP. The average emission of PM from unit 7 almost remains within prescribed limit of 100 mg/Nm ³ . Opacity meter is provided to monitor the particulate matter emission level. Online analyzer for measurement of SO ₂ & NO _x parameters in flue gas emission is also provided in unit no 7. Real time results are being transmitted to CPCB server.	Complied
III	Space provision for installation of desulphurization plant should be made so that the same could be provided, if required in future from environment angle.	Adequate space provision is kept nearby ESP area, for installation of desulphurization plant if required in future at unit no. 7.	Complied
IV	Liquid effluents including cooling water emanating from the plant, ash pond & other area should be properly treated to conform to the standard stipulated by SPCB or MOEF whichever is more stringent.	Pumps are provided & wastewater from effluent sump outlet & composite outlet is reutilized, as per requirement in ash plant & for gardening use. Zero liquid discharge scheme (ZLD) is implemented for ash dyke effluent. Annexure-I attached herewith.	Complied
V	The project authority should prepare a comprehensive EIA report including air quality data of all season & submit within a year.	Revalidation of EIA report was submitted in the year 1999.	Complied
VI	The cooling towers were to be replaced by modern one so that the water requirement does not increase.	Natural draft cooling tower of 112 meter height is provided for optimum water requirement.	Complied
VII	In order to arrest the heavy concentration of liquid effluent, to be properly treated as per stipulated standard.	Liquid effluent is being properly treated to achieve stipulated standard, before discharging or utilizing. Flow meter & online analyzer for pH, TSS & Temperature parameters are provided at ETP and Composite Outlet.	Complied

VIII	Time frame for carrying out the mitigation measure mentioned in the sec-9 of the rapid EIA to be submitted within one month.	Time frame mitigation measures were complied as suggested in the comprehensive EIA report for unit no. 7. WTPS having ISO-14001 certification (Environment management system). 14 nos. of percolating wells are constructed for rain water harvesting scheme at WTPS area. PVC cabins with fixed glass window are provided in high noise areas in plant. Dry fog dust control system (DFDCS) is provided in coal handling plant.	Complied
IX	The project authority should furnish a workable plan for full utilization of fly ash for the approval of the appraisal committee/MOEF Provision of fly ash collection should be made by the dry system.	Fly ash from ESP, economizer & APH is being collected in silo of unit 7 & given to ash lifters for cement and brick manufacturing.	Complied
X	A green belt of not less than 50 meters width & adequate density should be raised all around the plant & right from the construction stage. Plantation around the ash pond area should also be provided.	Adequate nos. of sapling is planted in plant area and ash dyke area to control fugitive pollution.	Complied
XI	The requirement of land for ash disposal should be based on ash utilization plan. Recycling & reuse of ash pond effluent should be done so as to achieve zero discharge to the maximum extent possible.	Zero liquid discharge scheme is provided for ash dyke discharge.	Complied
XII	Continuous dust monitoring system should be provided in each stack/duct & calibrated at least once in a week. Monitoring of stack emission of SO ₂ /NO _x should be done at least once in a month.	Opacity meters & SO ₂ / NO _x analyzer for continuous measurement are installed in all units. Calibration is being done on auto mode & as per requirement. Monthly monitoring of PM, SO ₂ & NO _x is carried out through outside agency. Real time results are displayed on CPCB server. Annexure-II attached herewith.	Complied
XIII	Efforts should be made to minimize evaporation losses of water to the extent possible.	Closed cycle cooling water system is adopted for all units. Evaporation of water from cooling water depends up on weather atmosphere condition.	Complied
XIV	Adequate monitoring station for ambient air & water quality should be provided in consultation with the SPCB. Levels of pollutants (SPM, SO ₂ ,NO _x) should be monitored on regular basis & record maintained. The parameters for water quality including ground water contamination in the vicinity area should be monitored & the records maintained.	WTPS has installed weather monitoring station. Necessary data like air temperature, relative humidity, wind speed, wind direction are recorded & maintained. Data of underground borewell water, up stream water, down stream water, effluent discharge, stack monitoring, and ambient air quality monitoring with meteorological data is submitted to CPCB/GPCB. Annexure-III&IV attached herewith.	Complied
XV	A separate environment cell with suitable 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.	WTPS has constituted separate EEEEC (Environment Energy Efficiency Cell) section headed by Superintending Engineer (Operation).	Complied

3	The condition stipulated may be varied or new conditions may be added or the clearance evoked , if necessary, in the interest of environment protection and if there is any change in the project profile, non satisfactory implementation of the stipulated condition etc.	WTPS has also installed unit no. 8 of 800 MW capacity & Compliance of Environment clearance is regularly submitted to MoEF & CC.	Complied
4	The stipulations will be implemented, among others under the Water act, the Air act, the Environment Protection act, and the PLI act.	Noted.	Complied
5	Necessary funds should be provided in the project for implementation of the above mentioned conditions and environment safeguards. The funds earmarked for the environmental protection measures should not be diverted for other purposed and year wise expenditure should be reported to this Ministry.	The necessary fund is allotted & expensed towards activities & works pertain to environmental safe guards. The year wise expenditure report for environment measures is enclosed for the year 2022-2023 as Annexure 4.	Complied

ANNEXURE - I													
AVERAGE EFFLUENT QUALITY AND COMPARISON WITH THE STANDARDS													
DURING OCT- 2022 TO MARCH - 2023													
Sr. No.	Stream Identity	Parameters	Units	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Average from Oct 22 to March 23	Standards (Specified Norms)	% Deviation from the Standard.	
1	Boiler Blowdown	Suspended Solids	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	<5	BDL	100	---
		Oil & Grease	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	---
		Total Copper (as Cu)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---
		Total Iron (as Fe)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---
2	Cooling Water Blow down	Free available Chlorine	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.5	---	
		Zinc (as Zn)	mg/l	0.13	0.15	0.16	BDL	BDL	0.11	0.14	1	-86.00	
		Hexavalent Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	---	
		Total Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	---	
		Phosphate (as P)	mg/l	BDL	BDL	BDL	BDL	BDL	1.2	1.20	5	-76.00	
3	Combined Effluent												
3.1	Composite sample	pH	---	8.31	7.69	7.57	8.13	7.81	8.2	7.95	6.5-8.5	---	
		Oil & Grease	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	---	
		Suspended Solids	mg/l	18.4	15.7	37.2	49	28	25	28.88	100	-71.12	
		Hexavalent Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	---	
		Total Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	---	
		Total Copper (as Cu)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---	
		Total Iron (as Fe)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---	
		Zinc (as Zn)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---	
Phosphate (as P)	mg/l	BDL	BDL	BDL	BDL	BDL	2.2	BDL	5	---			
3.2	Effluent sump outlet sample	pH	---	8.1	8.46	8.33	8.43	8.11	7.9	8.22	6.5-8.5	---	
		Oil & Grease	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	---	
		Suspended Solids	mg/l	43.2	57.7	72.6	49	86	91	66.58	100	-33.42	
		Hexavalent Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	---	
		Total Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	---	
		Total Copper (as Cu)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---	
		Total Iron (as Fe)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---	
		Zinc (as Zn)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---	
Phosphate (as P)	mg/l	1.8	2.1	2.7	BDL	BDL	1.3	1.98	5	-60.40			
4	Ash dyke discharge	pH	---	ZLD	ZLD	ZLD	ZLD	ZLD	ZLD	-	6.5-8.5	-	
		Oil & Grease	mg/l	ZLD	ZLD	ZLD	ZLD	ZLD	ZLD	-	10	-	
		Suspended Solids	mg/l	ZLD	ZLD	ZLD	ZLD	ZLD	ZLD	-	100	-	
5	Colony treated sewage	BOD	mg/l	10.4	11.5	14.3	17.34	18.75	11.7	14.00	20	-30.00	
		Suspended Solids	mg/l	31.5	24.3	21.9	10	14	17	19.78	30.0	-34.07	
		Residual Chlorine	mg/l	0.18	0.19	0.24	BDL	BDL	0.8	0.35	0.5	-30.00	

Effluent quality monitored by M/s. Greenleaf Envirotech Pvt. Ltd., Surat & M/s. Enviro Action consultancy which are NABL/MoEF recognized laboratories. BDL: Below detectable limit, ZLD- zero liquid discharge

ANNEXURE - II
AVERAGE STACK EMISSION QUALITY AND COMPARISON WITH THE STANDARDS
DURING OCT- 2022 TO MARCH - 2023

Unit no.	Parameters	Units	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Average from Oct 22 to March 23	Standards (Specified Norms)	% Deviation from the Standard.
Unit 1	Particulate matter	mg/Nm ³	FSD	FSD	FSD	124	FSD	84.28	104.14	100	4.14
	Sulphur dioxide	mg/Nm ³	FSD	FSD	FSD	937	FSD	739.57	838.29	600	39.72
	Nitrogen oxides	mg/Nm ³	FSD	FSD	FSD	266	FSD	394.78	330.39	600	-44.94
Unit 2	Particulate matter	mg/Nm ³	FSD	124	133	AOH	109	111.17	119.29	100	19.29
	Sulphur dioxide	mg/Nm ³	FSD	976	1011	AOH	1040.81	1036.84	1016.16	600	69.36
	Nitrogen oxides	mg/Nm ³	FSD	229	319	AOH	367.58	364.34	319.98	600	-46.67
Unit 3	Particulate matter	mg/Nm ³	117	118	FSD	136	126	114.58	122.32	100	22.32
	Sulphur dioxide	mg/Nm ³	927	919	FSD	843	942.45	938.97	914.08	600	52.35
	Nitrogen oxides	mg/Nm ³	358	262	FSD	242	340.14	318.84	304.20	600	-49.30
Unit 4	Particulate matter	mg/Nm ³	COH	COH	COH	COH	COH	COH	#DIV/0!	100	#DIV/0!
	Sulphur dioxide	mg/Nm ³	COH	COH	COH	COH	COH	COH	#DIV/0!	600	#DIV/0!
	Nitrogen oxides	mg/Nm ³	COH	COH	COH	COH	COH	COH	#DIV/0!	600	#DIV/0!
Unit 5	Particulate matter	mg/Nm ³	114	105	FSD	122	114	110.57	113.11	100	13.11
	Sulphur dioxide	mg/Nm ³	823	734	FSD	889	1092.31	1196.17	946.90	600	57.82
	Nitrogen oxides	mg/Nm ³	382	286	FSD	278	380.9	366.24	338.63	600	-43.56
Unit 6	Particulate matter	mg/Nm ³	82	83	97	94	102	94.12	92.02	100	-7.98
	Sulphur dioxide	mg/Nm ³	877	752	968	969	968.57	1115.26	941.64	600	56.94
	Nitrogen oxides	mg/Nm ³	318	206	311	272	371.73	471.73	325.08	600	-45.82
Unit 7	Particulate matter	mg/Nm ³	98	AOH	106	109	115	111.77	107.95	100	7.95
	Sulphur dioxide	mg/Nm ³	919	AOH	1028	871	989.67	1289.67	1019.47	600	69.91
	Nitrogen oxides	mg/Nm ³	357	AOH	341	314	312.5	412.5	347.40	600	-42.10
Unit 8	Particulate matter	mg/Nm ³	41	38	41	39	FSD	54.5	42.70	30	42.33
	Sulphur dioxide	mg/Nm ³	1048	1012	1157	1006	FSD	987	1042.00	100	942.00
	Nitrogen oxides	mg/Nm ³	423	383	396	363	FSD	359.22	384.84	100	284.84
	Mercury	mg/Nm ³	0.015	0.011	0.003	0.006	FSD	0.006	0.01	0.03	-66.67

Effluent quality monitored by M/s. Greenleaf Envirotech Pvt. Ltd., Surat & M/s. Enviro Action consultancy which are NABL/MoEF recognized laboratories. BDL: Below detectable limit, ZLD- zero liquid discharge

ANNEXURE : 3

AMBIENT AIR QUALITY RESULT DURING OCT 2022 TO MARCH 2023

Location	Parameters	Unit	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Timba	Particulate Matter-10 (PM 10)	microgram / m3	72.1	60.5	58.4	71.23	67.68	65.24
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	26.7	23.9	21.6	42.55	40.12	38.94
	SO ₂	microgram / m3	15.4	14.2	13.8	16.2	15.11	14.24
	NO ₂	microgram / m3	13.8	12.6	11.3	12.32	11.43	10.59
Sevaliya	Particulate Matter-10 (PM 10)	microgram / m3	74.9	63.1	61.8	79.63	76.55	79.18
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	21.6	22.4	20.1	46.68	44.34	46.24
	SO ₂	microgram / m3	15.2	13.8	12.5	15.02	14.14	15.43
	NO ₂	microgram / m3	17.6	15.3	14.7	16.52	15.24	16.51
Coal plant in power station	Particulate Matter-10 (PM 10)	microgram / m3	91.1	81.8	78.6	89.68	85.92	82.56
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	48.4	45.5	43.2	58.11	56.21	24.79
	SO ₂	microgram / m3	23.7	21.9	19.5	27.59	25.88	24.78
	NO ₂	microgram / m3	22.2	17.4	15.8	17.71	16.51	15.24
Balasinor	Particulate Matter-10 (PM 10)	microgram / m3	82.4	69.7	67.6	68.34	65.22	62.15
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	24.1	26.2	24.3	35.44	33.41	31.32
	SO ₂	microgram / m3	20.3	22.5	21.4	20.12	18.69	17.4
	NO ₂	microgram / m3	17.9	18.9	15.9	15.11	14.82	13.55
Hostel in colony	Particulate Matter-10 (PM 10)	microgram / m3	60.2	48.3	46.5	64.47	61.78	64.32
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	25.8	23.1	21.2	29.89	31.27	32.86
	SO ₂	microgram / m3	19.5	17.4	15.7	17.91	18.94	19.98
	NO ₂	microgram / m3	21.7	19.9	17.1	16.3	17.36	18.63

Ambient air quality is monitored by M/s. Greenleaf Envirotech Pvt. Ltd. ,Surat & M/s. Enviro Action consultancy which are NABL/MoEF recognized laboratories.

Gujarat State Electricity Corporation Limited

Wanakbori Thermal Power Station

Details of Recurring Expenditure on Environmental Management during April 22 to March 23

Sr.No.	Expenses on environment works	Total Amount in Rs.	Remark, if any
1	Salaries of staff of Env. Cell.	3405857	Gross salary of Env. Staff
2	Payment to agency for		
	a) Stack & AAQ & effluent/water monitoring	437535	For monthly Environment sampling & analysis work.
	b) Used oil, Resin , e waste, Battery & other waste disposal	0	Hazardous & other waste storage, handling & disposal expenses
	c) Environment awareness programme	9300	World env. day celebration etc.
	d) Bio-medical waste management	111873	Paid to Bio medical waste lifting agency in hospital
	e) Maintenance & calibration of kits, inhouse sampling and analysis cost.	135111	For weather monitoring station & stack kit.
	f) Payment to Environment auditor	532600	Paid for env. auditing work
3	Payment to GPCB for		
	Consent fees to GPCB	812500	For env. sampling & consent fee
	Stack & effluent monitoring	135365	For sampling charges under statutory requirement
4	Ash handling plant unit 8	42800100	Cost of material , spares , O&M contracts for ash plant - unit 8
	a) O & M of ash handling plant (ARC) -1 to 7	48602784	Cost of material , spares , O&M contracts for ash plant.
	b) Maintenance of disposal lines		Supply of spares , Execution of maintenance work.
	c) Maintenance of silos		Supply of spares ,O&M of silo of unit 7& 8.
5	Plantation / Gardening at WTPS	2678847	Gardening lawn development & maintenance in colony area & cricket ground etc.
6	Ash dyke		
	a) Construction/Area grading	0	Raising of existing bund of ash dyke. RCC pedestal extension of ash pipe line and adjoining work.
	b) Maintenance of bunds etc	1476551	Routine maintenance & other related work at dyke area
	c) For land acquisition procedure	0	
7	Miscellaneous civil works for Environment	973245	Removal of unwanted vegetation,Drain route cleaning,debris cleaning, ET sump desilting work,Gardern area maintenance,Antiweed work,PVC cabin in unit 8 ,Miscellaneous work for env.
8	O & M of ESPs		Cost of electricity consumption is not considered.
	a) Mechanical	18884210	Supply of ESP internal material & execution of work. (with stack)
	b) Electrical	261548	Supply , repairing of elect. spares,execution & retrofit work in ESP in AOH
9	Attending of flue gas duct ,coal pipe puncture & bend leakages.	9054883	Replacement & maintenance of coal pipe, duct, bend , misc. etc
10	Analysis & material cost at chemical laboratory.	183638	Chemical , testing & calibration cost of equipment for water & effluent.
11	O & M of on-line analyser instrument monitors for stack gas & effluent.	1729553	AMC repairing, service & spares of opacity and SO2,NOx analyser including calibration gas. Spares for effluent online monitoring data system,water flow meter, CL2 gas leak detector and solenoid valve of ash plant.

12	Operation & maintenance of Neutralising pit of DM plant.	1257577	Lime , HCL, NaOH dosing / Mechanical maintenace work at N-pit in DM plant stage 2, unit 8.
13	Maintenance cost of dry fog system ,water sprinkler, control of fugitive dust at coal plant.	1851756	O&M / spare cost for dry fog dust suppression system and misc.maintenance of water sprinklers in coal plant area.
14	Maintenance of STP and ETP/Oxid. sump pumps & lines.	9227770	O&M of STP. Attending various E&M defects at ETP/STP auxillaries. Maintenance of pumps/pipeline for reuse of effluent, sampling pump.
Total expenditure for unit 1 to 8 in Rs.		144562602	