



GUJARAT STATE ELECTRICITY CORPORATION LIMITED

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AN ISO-9001:2015, ISO-14001:2015, OHSAS 18001:2007 Certified Power Plant
CIN: U40100GJ1993SGC019988

By RPAD

Ref. No.: GSECL/WTPS/EEEC/Env/1445/Unit#7/7928

Date: 01 NOV 2022

✓ 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 compliance report of Environmental Clearance for WTPS-Unit no 07.

Ref: 1. Environmental Clearance issued by MoEF& CC vide letter No J-13011/13/93/IA/II dated 19.04.1994: Point no.2 (xiv).

Dear Sir,

In context to the captioned subject, please find half yearly compliance report (April 2022 to Sept 2022) of Environment Clearance issued by MoEF& CC for Unit no 07 at 'Wanakbori TPS with all documents

Thanking you,

Yours Faithfully,

all 31/12
Chief Engineer (C&O)
GSECL: WTPS

Encl.: As above.

Copy to :

CE (Gen) , GSECL , HO , Vadodara.....By mail.

Sub: Compliance report for conditions of environmental clearance issued by Ministry of Environment & Forest, New Delhi on 19/4/1994, for GSECL-WTPS unit no 7

No.	Condition framed in Environment Clearance	Compliance of the conditions
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.
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.
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.
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 partially 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.
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.
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.
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.
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.
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.

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.
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.
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.
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.
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.
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).
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.
4	The stipulations will be implemented, among others under the Water act, the Air act, the Environment Protection act, and the PLI act.	Noted.
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 yearwise 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 2021-2022.

Gujarat State Electricity Corporation Limited
Wanakbori Thermal Power Station

Details of Recurring Expenditure on Environmental Management during April 21 to March 22.

Sr. No.	Expenses on environment works	Total Amount Rs.	Remark, if any
1	Salaries of staff of Env. Cell.	4923741	Gross salary of Env. Staff
2	Payment to agency for	-	
	a) Stack & AAQ & effluent/water monitoring	443905	For monthly Environment sampling & analysis work.
	b) Used oil, Resin , e waste, Battery & other waste disposal	100123	Hazardous & other waste storage, handling & disposal expenses
	c) Environment awareness programme	2266	World env. day celebration etc.
	d) Bio-medical waste management	102636	Paid to Bio medical waste lifting agency in hospital
	e) Maintenance & calibration of kits, inhouse sampling and analysis cost.	63733	For weather monitoring station & stack kit.
	f) Payment to Environment auditor	265252	Paid for env. auditing work
3	Payment to GPCB for	-	
	Consent fees to GPCB	0	For env. sampling & consent fee
	Stack & effluent monitoring	79240	For sampling charges under statutory requirement
4	Ash handling plant	-	Separate Fly ash cell is working under ash handling plant.
	a) O & M of ash handling plant (ARC)	68515599	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	3405041	Gardening lawn development & maintenance in colony area & cricket ground etc.
6	Ash dyke	-	
	a) Construction/Area grading	232456	Raising of existing bund of ash dyke. RCC pedestal extension of ash pipe line and adjoining work.
	b) Maintenance of bunds etc	676250	Routine maintenance & other related work at dyke area
	c) For land acquisition procedure	-	
7	Miscellaneous civil works for Environment	232456	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	52260897	Supply of ESP internal material & execution of work. (with stack)

	b) Electrical	12734941	Supply , repairing of elect. spares,execution & retrofit work in ESP in AOH
9	Attending of flue gas duct ,coal pipe puncture & bend leakages.	9513177	Replacement & maintenance of coal pipe, duct, bend , misc. etc
10	Analysis & material cost at chemical laboratory.	151400	Chemical , testing & caliberation cost of equipment for water & effluent.
11	O & M of on-line analyser instrument monitors for stack gas & effluent.	2921281	AMC repairing, service & spares of opacity and SO2,NOx analyser incuding caliberation 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.	2659239	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.	1870466	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.	2712687	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.		190238922	

ANNEXURE - I
AVERAGE EFFLUENT QUALITY AND COMPARISON WITH THE STANDARDS
DURING APRIL 2022 TO SEPT - 2022

Sr. No.	Stream Identity	Parameters	Units	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Average from April 22 to Sep 22	Standards (Specified Norms)	% Deviation from the Standard.
1	Boiler Blowdown	Suspended Solids	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	100	---
		Oil & Grease	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	---
		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	---
2	Cooling Water Blow down	Free available Chlorine	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.5	---
		Zinc (as Zn)	mg/l	0.17	0.15	0.11	0.13	0.16	0.12	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	3.90	3.80	3.50	3.00	3.60	BDL	3.56	5	-28.80
3	Combined Effluent											
3.1	Composite sample	pH	---	8.65	8.25	8.36	8.15	8.33	7.38	8.19	6.5 -8.5	---
		Oil & Grease	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	---
		Suspended Solids	mg/l	49.9	41.9	43.9	39.7	30.8	19.6	37.63	100	-62.37
		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	BDL	BDL	5	---

3.2	Effluent sump outlet sample	pH	---	8.32	8.07	8.25	8.34	8.49	8.32	8.30	6.5-8.5		
		Oil & Grease	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	---
		Suspended Solids	mg/l	52.4	66.8	61.7	52.3	74.8	45.4	58.90	100	-41.10	
		Hexavalent Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	---
		Total Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	---
		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	---
		Zinc (as Zn)	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	---
		Phosphate (as P)	mg/l	2.10	2.80	2.60	2.40	2.70	1.70	2.38	5	-52.40	
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	ZLD	-	10	-
		Suspended Solids	mg/l	ZLD	ZLD	ZLD	ZLD	ZLD	ZLD	ZLD	-	100	-
5	Colony treated sewage	BOD	mg/l	26.70	20.50	17	12.4	10.4	9.9	16.20	20	-19.00	
		Suspended Solids	mg/l	10.50	19.40	22.6	26.7	33.5	15.4	21.35	30.0	-28.83	
		Residual Chlorine	mg/l	0.13	0.11	0.12	0.17	0.19	0.2	0.15	0.5	-70.00	

Effluent quality monitored by M/s. Greenleaf Envirotech Pvt. Ltd., Surat. BDL: Below detectable limit

ANNEXURE - II
AVERAGE STACK EMISSION QUALITY AND COMPARISON WITH THE STANDARDS
DURING APRIL 2022 TO SEPT - 2022

Unit no.	Parameters	Units	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Average from April 22 to Sep 22	Standards (Specified Norms)	% Deviation from the Standard.
Unit 1	Particulate matter	mg/Nm3	148	133	119	FSD	FSD	FSD	133.33	100	33.33
	Sulphur dioxide	mg/Nm3	932	917	1190	FSD	FSD	FSD	1013.00	600	68.83
	Nitrogen oxides	mg/Nm3	456	508	483	FSD	FSD	FSD	482.33	600	-19.61

Unit 2	Particulate matter	mg/Nm ³	131	FSD	135	110	131	FSD	126.75	100	26.75
	Sulphur dioxide	mg/Nm ³	963	FSD	908	970	898	FSD	934.75	600	55.79
	Nitrogen oxides	mg/Nm ³	406	FSD	469	345	465	FSD	421.25	600	-29.79
Unit 3	Particulate matter	mg/Nm ³	120	135	AOH	125	120	123	124.60	100	24.60
	Sulphur dioxide	mg/Nm ³	1025	931	AOH	1012	1025	918	982.20	600	63.70
	Nitrogen oxides	mg/Nm ³	506	489	AOH	379	403	248	405.00	600	-32.50
Unit 4	Particulate matter	mg/Nm ³	101	129	122	106	AOH	AOH	114.50	100	14.50
	Sulphur dioxide	mg/Nm ³	955	1074	1102	985	AOH	AOH	1029.00	600	71.50
	Nitrogen oxides	mg/Nm ³	442	423	431	415	AOH	AOH	427.75	600	-28.71
Unit 5	Particulate matter	mg/Nm ³	104	114	116	110	104	108	109.33	100	9.33
	Sulphur dioxide	mg/Nm ³	1013	909	994	802	946	731	899.17	600	49.86
	Nitrogen oxides	mg/Nm ³	492	506	425	432	483	278	436.00	600	-27.33
Unit 6	Particulate matter	mg/Nm ³	79	107	90	81	79	95	88.50	100	-11.50
	Sulphur dioxide	mg/Nm ³	885	902	893	826	805	798	851.50	600	41.92
	Nitrogen oxides	mg/Nm ³	440	472	431	377	426	215	393.50	600	-34.42
Unit 7	Particulate matter	mg/Nm ³	98	105	93	98	112	102	101.33	100	1.33
	Sulphur dioxide	mg/Nm ³	950	986	1092	1085	875	814	967.00	600	61.17
	Nitrogen oxides	mg/Nm ³	523	455	471	434	447	336	444.33	600	-25.95
Unit 8	Particulate matter	mg/Nm ³	FSD	67	59	AOH	59	49	58.50	30	95.00
	Sulphur dioxide	mg/Nm ³	FSD	1154	1358	AOH	1198	1001	1177.75	100	1077.75
	Nitrogen oxides	mg/Nm ³	FSD	405	410	AOH	407	384	401.50	100	301.50
	Mercury	mg/Nm ³	FSD	0.013	0.017	AOH	0.015	0.016	0.02	0.03	-33.33

Stack emission monitored by M/s. Greenleaf Envirotech Pvt. Ltd., Surat. (COH- Capital overhauling, RSD- Reserve shutdown)

ANNEXURE - III
AVERAGE AMBIENT AIR QUALITY AND COMPARISON WITH THE STANDARDS
DURING APRIL 2022 TO SEPT - 2022

Location	Parameters	Units	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Avg.	Standards (Specified Norms)	% Deviation from the Standard.
Timba	Particulate Matter-10 (PM 10)	microgram / m3	79.9	76.5	72.1	62.6	58.6	60.5	68.4	100	-31.63
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	29.3	25.4	23.6	20.5	24.1	25.3	24.7	60	-58.83
	SO ₂	microgram / m3	14.2	15.1	13.5	12	13.6	14.8	13.9	80	-82.67
	NOx	microgram / m3	17.3	17.6	15.7	13.6	11.9	12.1	14.7	80	-81.63
Sevalia	Particulate Matter-10 (PM 10)	microgram / m3	71.8	81.7	79.5	71.1	68.4	65.2	73.0	100	-27.05
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	39.1	27.6	24.8	19.9	22.1	23.7	26.2	60	-56.33
	SO ₂	microgram / m3	16.3	15.8	16.3	15.2	12.7	14.3	15.1	80	-81.13
	NOx	microgram / m3	18.4	18.2	17.4	14.3	13	16.6	16.3	80	-79.60
Coal plant	Particulate Matter-10 (PM 10)	microgram / m3	86.7	92.8	95.6	84.8	81	82.4	87.2	100	-12.78
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	49.5	58.8	61.7	53.7	48.6	47.6	53.3	60	-11.14
	SO ₂	microgram / m3	19.2	21.7	23.4	23.9	21.7	22.9	22.1	80	-72.33
	NOx	microgram / m3	13.1	18.6	19	18.2	15.6	17.1	16.9	80	-78.83
Balasinor	Particulate Matter-10 (PM 10)	microgram / m3	83.4	80.5	82.4	78.4	70.4	73.6	78.1	100	-21.88
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	35.3	25.6	26.7	22.4	23.5	25.8	26.6	60	-55.75
	SO ₂	microgram / m3	22.1	20.4	22.5	20.1	19.7	21.9	21.1	80	-73.60
	NOx	microgram / m3	19.1	17.2	19.3	21.4	20.5	19.4	19.5	80	-75.65
Hostel in colony	Particulate Matter-10 (PM 10)	microgram / m3	64.8	71.7	74.7	52.3	47.6	49.3	60.1	100	-39.93
	Particulate Matter-2.5 (PM 2.5)	microgram / m3	25.3	22.5	23.6	23.9	25.4	23.1	24.0	60	-60.06
	SO ₂	microgram / m3	18.3	17.8	19.8	20.4	17.3	18.5	18.7	80	-76.65
	NOx	microgram / m3	15.9	14.3	17	18.3	19.2	20.7	17.6	80	-78.04

Ambient air quality monitored by M/s. Greenleaf Envirotech Pvt. Ltd., Surat.