



Inspection report of M/s Vindhyachal Super Thermal Power

Plant.NTPC

P.O., Vindhyanagar, Distt. Singrauli (M P)-486885

In compliance of CPCB letter No. B-33011/7/2006/IPC-II-TTP, dated November 13, 2017 M/s Vindhyachal Super Thermal Power Plant, N.T.P.C., P.O., Vindhyanagar, Distt. Singrauli (M P)-486885 was inspected by Dr. Y.K. Saxena (Scientist 'B', CPCB, Regional Directorate, Bhopal), Shri R. Bandewar (SLA, CPCB, Regional Directorate, Bhopal), Sh. Sunil Kolhatkar (JLA, CPCB, Regional Directorate, Bhopal) during 15-16/11/2017.

The detailed inspection report is as follows:-

01	Name of the industry & Address	M/s Vindhyachal Super Thermal Power Plant , N.T.P.C., P.O., Vindhyanagar, Distt. Singrauli (M P)-486885
02	Name of Contact person with designation Phone & Fax No:	R.K. Darbari AGM (EMG & AUD) Mob. No. : 9479482639 rkdarbari@ntpc.co.in Phone: 07805 247822 Fax. No.: 07805 247734
	Name of the CPCB officer and date of visit	Dr. Y.K. Saxena Scientist 'B' Shri Rameshwar Bandewar, SLA Shri Sunil Kolhatkar, JLA 15 - 16.11.2017

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03	Year of commissioning	Stage	Unit No	Date of commissioning	
		Stage-I	1	01.09.88	
			2	01.09.89	
			3	01.02.90	
			4	01.09.90	
			5	01.04.91	
			6	01.02.92	
		Stage-2	7	01.07.00	
			8	01.10.00	
		Stage-3	9	01.12.06	
			10	15.07.07	
		Stage-4	11	01.03.13	
			12	27.03.14	
Stage-5	13	30.10.15			
04	Category of Industry	Large			
05	Installed Capacity	Stage- I: 6 x 210 MW = 1260 MW			
		Stage - II: 2 x 500 MW = 1000 MW			
		Stage - III: 2 x 500 MW = 1000 MW			
		Stage - IV: 2 x 500 MW = 1000 MW			
		Stage - V: 1 x 500 MW = 500 MW			
		Total Station Capacity: 4760 MW			
06	Electricity Generated & raw material requirement				
	Description	Electricity Generated (MUs)	Raw material requirement per KWH		
			Coal (Kg/kwh)	Oil (ml/kwh)	Water (L/kwh)
	2014-15	29574	0.70	0.334	3.23
	2015-16	31321	0.693	0.386	3.5
	2016-17	32207	0.679	0.559	3.88

07 Process details with Material Balance:

In Thermal power plant boiler, coal combustion is taking place & in the process water present in the boiler tubes is converted into super heated steam by taking heat released from coal combustion. The super heated steam rotates turbine blades which are connected to the generator. This generator produce electricity which is further transmitted to different load centres. Super heated steam is cooled and condensed in condenser with the help of closed type cooling towers. Condensed water is recycled in the boiler again.

After coal combustion the fly ash produced is conveyed to ESP and from here fly ash is transferred to dry ash silos for its utilization in various products like brick manufacturing, Utilisation in cement industries, Road construction, mine filling etc. Unutilized fly ash is transported to ash dykes in slurry form through pipelines. Bottom ash is collected at the bottom of boiler furnace from where it is transported to ash dyke in slurry form by mixing water.

08 Water Consumption & Waste Water Generated

S.No		Water Consumption In KLD	Wastewater Generated In KLD	Water Consumption Per KWH
01	Process & Ash disposal	87300	29136	3.88
03	Cooling	242000		
05	Domestic	16900	3756	

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09 Effluent Treatment facilities provided & Disposal Details:

- a) Ash Pond water Recirculation System: Decanted water from ash pond is being pumped back to the plant area by using 3 pumps. This water is being used further in the ash handling system. There are 4 nos. of Ash water recirculation System are provided for recirculation of decanted water of ash pond which are as follows:

Stage 1 & 2 : 1 AWRS (Ash Water Recirculation System)

Stage 3: 1 AWRS (Ash Water Recirculation System)

Stage 4: 1 AWRS (Ash Water Recirculation System)

Stage 5 : 1 AWRS (Ash Water Recirculation System)

- b) Boiler Blow Down: Boiler blow down is recycled through ETP and recycled after treatment & reused in process within the premises.

- c) Cooling tower blow down: Cooling tower blow down is not generated only evaporation loss is maintained through raw water make up.

- d) Plant Waste Water: Plant waste water like floor washing are channelized through trenches to ETP and recycled after treatment & reused in process within the premises.

- e) Domestic Waste Water: Township waste water is treated through STP and utilised in horticulture.

10	Whether ETP facilities/adequate to achieve standards	There are 4 nos. of ETPs installed for the treatment of trade effluent of following capacity: <ul style="list-style-type: none">• ETP -1 for Stage -1 : 300 M3/h• ETP -2 for Stage -2&3 : 200 M3/h• ETP-3 for Stage -4 : 200 M3/h• ETP-4 for stage -5 : 100 m3/h			
11	Status of consents & Authorization (validity) Consents / authorisation letter is enclosed at Annexure-1	S. No.	Stage	Consent No	Validity
		1	Stage -1 -Air & Water	Con. No – AW - 10991,10989	31.08.2019

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	2	Stage -2 Air & Water	Con. No -AW -16707, 16709	30.06.2019
	3	Stage -3 Air & Water	Con. No. -AW -46387	30.11.2017
	4	Stage -4 Air & Water	Con. No. - AW-45540	30.06.2018
	5	Stage -5 Air & Water	Con. No. - AW -45673	31.07.2018
	6	Stage -4 Ash dyke -Air & Water	Con. No. - AW -46283	28.02.2018
	7	Authorization of Hazardous Waste	HWA No. 113 (789/HOPCB-HSMD/Rsin-03/2014)	10.01.2019

12 Fuel Consumption

S. No.	Type of Fuel	Fuel Consumption		
		2014-15	2015-16	2016-17
Q1	Coal	20.70 Lac MT	21.62 Lac MT	21.86 Lac MT
Q2	Furnace oil	9880 KL	9744 KL	13736 KL
Q3	Diesel	2275 KL	2325 KL	4293 KL

Details of Coal being utilised:

Year	Coal Consumption	Grade of coal	% Ash	% Sulphur	Calorific Value
2014-15	20.70 Lac MT	G10	35.28	0.3	3378
2015-16	21.62 Lac MT	G10	36.20	0.3	3415
2016-17	21.86 Lac MT	G10	34.95	0.3	3562

13 Stack Details:

S. No.	Stack Attached To	Power Generation Capacity (MW)	ESP Fields		Stack Ht (m)	Stack Dia (m)	Opacity Meter Provided
			Total	Operational			
Q1	Unit - I	210	28	28	220 meters	4.4	Yes
Q2	Unit - II	210	28	28			Yes
Q3	Unit - III	210	28	28			Yes

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04	Unit - IV	210	28	28			Yes
05	Unit - V	210	28	28			Yes
06	Unit - VI	210	28	28			Yes
07	Unit - VII	500	64	64	275 meters	6.5	Yes
08	Unit - VIII	500	64	64			Yes
09	Unit - IX	500	64	64	275 meters	6.5	Yes
10	Unit - X	500	64	64			Yes
11	Unit - XI	500	72	72	275 meters	6.5	Yes
12	Unit - XII	500	72	72			Yes
13	Unit - XIII	500	72	72	275 meters	6.5	yes
14	Whether APCDs provided are adequate to achieve standards	<div><div>1. The combustion gases of each unit of all 5 stages are de dusted through high efficiency Electro Static Precipitators & then are discharged into atmosphere through (total 13 no.) stacks of 220 m (06 nos.) & 275 m (7nos) height, respectively.</div><div>2. Flue Gas Desulfurization System (FGD) is installed in Unit # 13 (Stage - V).</div><div>3. Pilot project of installation of SCR in Unit # 13 (Stage - V) has been started and as informed by the industry this pilot plant shall be commissioned by 31.12.2017.</div><div>4. Industry has also informed that pilot project of SNCR is also going to be installed in Unit #13 (Stage - V) and after receipt of some imported material this pilot plant of SNCR shall be commissioned by 28.02.2018.</div><div>5. Tender for installation of FGD in Stage - III (Unit no. 9 & 10) and in Stage - IV (Unit no. 11 & 12) has been floated on 31.07.2017</div></div>					
A) Fly Ash Utilisation / Disposal							

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S. No	Utilisation for	Quantity(Lac MT)
01	Brick manufacturing	0.30
02	Cement Industries	0.39
03	Fly ash issued to outside brick plants	0.97
04	Ash Dyke Raising	7.53
05	Bottom ash cover in ash dyke & others	7.66
06	Fly ash used in landfill / wasteland development	1.12
	Total	17.96

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Inspection of Online Emission Monitoring System

Inspection of Online Emission Monitoring System										
Details										
S. No.	Particulars		Stack Name	Make		Model		CEMS Installation on	Date of Calibration	
	Detail of Continuous Emission Monitoring System (CEMS)	Latitude		Longitude	Opacity Meter	Gas Analyzer	Opacity Meter			Gas Analyzer
08	N24°06.076 E082°39.666		Stage-1	Unit 01 - 06	LAND Combustion	Fuji Electric Co. Ltd	4500 MKIII	ZRE	07.11.2015	27.09.2017
			Stage-2	Unit 07 - 08	LAND Combustion	Fuji Electric Co. Ltd	4500 MKIII	ZRE	15.05.2015	10.11.2017
			Stage-3	Unit 09 - 10	LAND Combustion	Fuji Electric Co. Ltd	4500 MKIII	ZRE	15.05.2015	11.11.2017
			Satge-4	Unit - 11 Unit - 12	SICK MAIHAK	SICK MAIHAK	DT50	S710	2013	22.08.2017 18.04.2017
			Stage-5	Unit 13	SICK MAIHAK	SICK MAIHAK	DT50	S710	25.11.2016	12.10.2017
09	Connectivity with server	SPCB	Jan'2017 through logic ladder							
	Starts on	CPCB	Jan'2017 through logic ladder							

10	Web address & Portal	SPCB https://ntpc.envirologiciq.com/		CPCB https://ntpc.envirologiciq.com/	
11	User Id	rkdarbari@ntpc.co.in		rkdarbari@ntpc.co.in	
12	Password	rk42205\$ar		Rkd2205\$ar	
13	Copy of monitoring results of last 30 days	Copy enclosed at Annexure-2			
14	Calibration schedule & protocol adopted	CEMS: 03 months			
15	Details of Concern Official engaged in this activity	GM (Control & Instrumentation) Department and his team along with monitoring team of chemistry department are performing calibration activity.			
16	Detail of Continuous Water Quality Monitoring System (CWQMS)	Location	Make	Model	Installed on
		1. EQMS Stage-1	Hack (pH & TSS) SCHIMADZU (BOD & COD)	SC200 TOC-4200	07.10.2015
		2. EQMS Stage-2&3	--do---	--do---	12.10.2015
		3. EQMS Stage-4	--do---	--do---	28.08.2015
		4. EQMS Stage -5	--do---	--do---	28.08.2015
					01.12.2017
					01.12.2017
					02.12.2017
					02.12.2017

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17	Connectivity with server Starts on	SPCB	Jan'2017 through logic ladder																	
18	Web address & portal	CPCB	Jan'2017 through logic ladder																	
19	User Id	SPCB	https://ntpc.envirologiciq.com/																	
20	Password	CPCB	rkdarbari@ntpc.co.in																	
21	Copy of monitoring results of last 30 days		Rkd2205\$ar																	
22	Calibration schedule & protocol adopted		Copy of monitoring results of EQMS is enclosed at Annexure-3																	
28	Continuous Ambient Air Quality Monitoring System		<p>EQMS: Yearly</p> <p>GM (Control & Instrumentation) Department and his team along with monitoring team of chemistry department are performing calibration activity.</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Make</th> <th>Model</th> <th>Installed on</th> </tr> </thead> <tbody> <tr> <td>1.AAQMS HINDI SCHOOL</td> <td rowspan="4">THERMO FISHER SCIENTIFIC</td> <td>1.PM 10 & PM 2.5 (FH62C14)</td> <td>10.12.2008 to 13.12.2008</td> </tr> <tr> <td>2.AAQMS NH-2</td> <td>2.SO2 (43I-BPSAA)</td> <td></td> </tr> <tr> <td>3.AAQMS MGR</td> <td>3.NOx (42I-BPMSDAA)</td> <td></td> </tr> <tr> <td>4.AAQMS PT PLANT</td> <td>4.CO2 (410I-DBZPDAA)</td> <td></td> </tr> </tbody> </table>	Location	Make	Model	Installed on	1.AAQMS HINDI SCHOOL	THERMO FISHER SCIENTIFIC	1.PM 10 & PM 2.5 (FH62C14)	10.12.2008 to 13.12.2008	2.AAQMS NH-2	2.SO2 (43I-BPSAA)		3.AAQMS MGR	3.NOx (42I-BPMSDAA)		4.AAQMS PT PLANT	4.CO2 (410I-DBZPDAA)	
Location	Make	Model	Installed on																	
1.AAQMS HINDI SCHOOL	THERMO FISHER SCIENTIFIC	1.PM 10 & PM 2.5 (FH62C14)	10.12.2008 to 13.12.2008																	
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	Connectivity with server starts on	SPCB	Jan'2017 through logic ladder																	
		CPCB	Jan'2017 through logic ladder																	

	Web Address	SPCB	CPCB
29	Details of Concern Official engaged in this activity	https://npsc.envirologicq.com/ GM (Control & Instrumentation) Department and his team is responsible for operation and maintenance of CAAGMS. GM (Control & Instrumentation) Department and his team along with monitoring team of chemistry department are performing calibration activity. Copy of Continuous Ambient Air Quality Monitoring System is enclosed at Annexure-4 More than 03 years data can be stored in the server which can be retrieved from the central server of the online monitoring instrument.	
30	Storage and retrieval of historical data of on-line.		

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OBSERVATIONS

Compliance Under Air Act :-

1. Unit is having valid air consents for all 5 stages & V-4 ash dyke.
2. The unit has provided the following air pollution control devices in all 13 units (1 to 5 stages).

Stage	Unit	Capacity	APCDs	No. of field	Installation Date	Stack height & diameter
Stage -1	Unit-1	210	ESP	28	1-Sep-88	220 m, 4.4
	Unit-2	210	ESP	28	1-Jan-89	220 m, 4.4
	Unit-3	210	ESP	28	1-Feb-90	220 m, 4.4
	Unit-4	210	ESP	28	1-Sep-90	220 m, 4.4
	Unit-5	210	ESP	28	1-Apr-91	220 m, 4.4
	Unit-6	210	ESP	28	1-Feb-92	220 m, 4.4
Stage-2	Unit-7	500	ESP	64	1-Jul-00	275m,6.5
	Unit-8	500	ESP	64	1-Oct-00	275m,6.5
Stage-3	Unit-9	500	ESP	64	1-Dec-06	275m,6.5
	Unit-10	500	ESP	64	15-Jul-07	275m,6.5
Stage-4	Unit-11	500	ESP	72	1-Mar-13	275m,6.5
	Unit-12	500	ESP	72	27-Mar-14	275m,6.5
Stage-5	Unit-13	500	ESP FGD	+ 72	30-Oct-15	275m,6.5

3. Flue Gas Desulfurization System (FGD)

FGD is installed with 100% flue gas conditioning in Stage - V, Unit # 13. Flue gas is taken to FGD first on 27.03.2017 with 01 booster fan and permanent system commissioning has been completed in July'2017.

Tender for installation of FGD in Stage - III (Unit no. 9 & 10) and in Stage - IV (Unit no. 11 & 12) has been floated on 31.07.2017.

Copy of tender is enclosed at Annexure-5

4. Selective Catalytic Reaction (SCR) & Selective Non Catalytic Reaction (SNCR):

- Installation of pilot plant for SCR is under progress and it shall be commissioned by 31.12.2017.
- For pilot plant of SNCR some equipment are awaited from Germany and it is expected to be commissioned by 28.02.2018.
- Based on the results of above pilot schemes for NOx reduction, the best technology will be adopted for NOx reduction

Copy of letters given by the industry is enclosed at Annexure-6

5. Continuous Emission Monitoring System (CEMS)

Unit has installed Continuous Emission Monitoring System (CEMS) in all 13 Units of all 5 stages for the SOx, NOx and PM.

Additionally, unit has installed online Hg monitoring system in Unit-13 Stage-5 on 16.10.2017. at the time inspection the system was under commissioning.

6. Continuous Ambient Air Quality Monitoring System (CAAQMS)

Industry has installed 4 nos of continuous ambient air quality monitoring stations in all 4 directions at following locations:

- NH₂ area
- Merry - Go - Round Office
- PT-Plant Area
- At Hindi School

Following parameters are being monitored by the station:

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- PM₁₀
- PM_{2.5}
- SO₂
- NO_x
- CO₂

8. Fugitive Emission:

Fugitive Dust Emission within plant Premises and around the coal handling plant & coal stockyard, adequate coal dust extraction & suppression system have been provided in various areas as per functional requirements as given below:

- Jet suppression system : for paddle feeder below track hopper.
- water sprinkler system : used in CHP area.
- For dust control in Coal conveyor belt, Closed Conveyor System has been provided to prevent dust emission & in all transfer points Dust Succession System provided & for coal storage closed area has provided.
- Belt conveyors are fully covered.

9. Ash Management

Following two types of ash is generated in the unit:-

- Fly Ash: Fly ash is conveyed from boiler to ESP through ID -Fan. From ESP is taken into buffer hopper from there it is sent to dry fly ash silos. From silos fly ash is disbursed in closed trucks to cement & other ash based industries. Unutilized fly ash is sent to ash dykes by mixing water in to fly ash & this slurry is transported to ash dyke through pipelines.
- Bottom Ash: Bottom ash is collected from the bottom of boiler furnace water is mixed in bottom ash to make slurry & this slurry is disposed into ash dyke through ash pipe lines.

Dry Ash Extraction System (DAES) Capacity	Stage - I (6 x 210MW)	Stage - II (2 x 500 MW)	Stage - III (2x 500 MW)	Stage - IV (2x 500 MW)	Stage - V (1x500MW)
Status	Under erection with	Existing	Existing	Under Erection	Existing

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	ESP R&M				
No. of Silos	04	03	02	04	02
Capacity of Silos	1000 m ³ each (Under erection)	500 m ³ each	1250 m ³ each	1000 m ³ each (Under erection)	1000 m ³ each
Operation Timings	--	Round the Clock	Round the Clock	--	Round the Clock
Provision of Rail Loading Facility	With Rail loading facility	Not Available	Not Available	With Rail loading facility	Not Available
Location of Ash Silos	Adjacent to Plant (outside the boundary wall)				

Name	2014 - 15	2015 - 16	2016 - 17
Coal Consumption (Lac MT)	207	216.23	218.55
Ash Generation (Lac MT)	73.11	78.29	76.39
Ash Utilization (Lac MT)	19.51	13.82	17.96

ASH UTILIZATION IN 2016 - 17

Sl. No.	Area of Utilization	Qty. (Lac MT)
1.	Fly ash issued to Industries (Cement & Asbestos)	0.39
2.	Fly ash issued to outside brick plants	0.97
3.	Fly ash used for brick manufacturing at NTPC Vindhyachal	0.30
4.	Fly ash used for Ash Dyke Raising	7.53
5.	Fly ash used in Landfill / Wasteland development	1.12
6.	Bottom ash cover in Ash Dyke & Others	7.66
	TOTAL	17.96

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10. The units of Stage - I (6 x 210 MW) of the industry is commissioned during the year 1988 to 1992 and the units of Stage - 2 (2 x 500 MW) was commissioned during the year 2000. These units are more than 17 to 25 years old. As per the conditions given in earlier air consent renewed by MPPCB, the industry is maintaining stack particulate matter emission levels below 150 mg/Nm³ and 100 mg/Nm³ respectively for Stage - 1 and Stage - 2.

However, as per latest renewal of air consent given by MPPCB to the industry the PM emission limit is given as 50 mg/Nm³.

As informed by the industry vide letter 060/EMG/2017 dated 15.11.2017 they have taken up the matter with MPPCB vide their letter dated 31.10.2015, 10.04.2017 and requested MPPCB that above plants are old and meeting of revised emission norms with existing ESP is not possible. Industry has further informed MPPCB that they have already started Renovation & Modernization of ESPs of Stage - I & II also which shall be completed by 31.03.2018 and requested MPPCB to amend the air consent condition and give PM emission limit as 150 mg/Nm³ and 100 mg/Nm³ respectively for Stage - 1 and Stage - 2. Industry has also submitted its above request to MPPCB through Narmada XGN portal of MPPCB on 10.04.2017.

Copy of letters given by the industry is enclosed at Annexure-7

11. During the inspection dated 15-16/11/2017 manual monitoring was conducted in all 13 units (5-stages). The manual monitoring results and the On-Line monitoring data are compared as below:-

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M/s Vindhyachal Super Thermal Power Plant, N.T.P.C., P.O., Vindhyachal, Distt.
Singrauli (M P)
15-16/11/2017

Date of monitoring: 15-16/11/2017	Parameter	Manual Monitoring Results (mg/Nm ³)	Online real time monitoring (mg/Nm ³)	Prescribed emission standards as per consent (mg/Nm ³)
Unit-1 (Stage-1)	SO ₂	1181.0	1084.13	No Limit
	NO _x	465.0	460.41	No Limit
	PM	44.0	88.57	50
Unit-2 (Stage-1)	SO ₂	1146.0	608.72	No Limit
	NO _x	563.0	694.77	No Limit
	PM	84.0	71.58	50
Unit-3 (Stage-1)	SO ₂	1166.0	1032.60	No Limit
	NO _x	603.0	580.13	No Limit
	PM	75.0	107.99	50
Unit-4 (Stage-1)	SO ₂	1138.0	866.07	No Limit
	NO _x	569.0	777.15	No Limit
	PM	98.0	72.13	50
Unit-5 (Stage-1)	SO ₂	1172.0	1085.39	No Limit
	NO _x	572.0	654.03	No Limit
	PM	98.0	101.62	50
Unit-6 (Stage-1)	SO ₂	1083.0	977.02	No Limit
	NO _x	580.0	682.79	No Limit
	PM	90.0	65.51	50
Unit-7 (Stage-2)	SO ₂	1175.0	1233.83	No Limit
	NO _x	459.0	472.96	No Limit
	PM	42.0	59.64	50

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Unit-8 (Stage-2)	SO ₂	1078.0	908.76	No Limit
	NO _x	503.0	543.55	No Limit
	PM	46.0	40.57	50
Unit-9 (Stage-3)	SO ₂	1204.0	846.54	200
	NO _x	392.0	355.67	300
	PM	35.0	45.04	50
Unit-10 (Stage-3)	SO ₂	1189.0	1141.36	200
	NO _x	322.0	338.07	300
	PM	33.0	44.24	50
Unit-11 (Stage-4)	SO ₂	1175.0	91.19	No Limit
	NO _x	428.0	125.33	No Limit
	PM	45.0	25.12	150
Unit-12 (Stage-4)	SO ₂	1266	94.70	No Limit
	NO _x	490.0	111.58	No Limit
	PM	39.0	24.41	150
Unit-13 (Stage-5)	SO ₂	189.0	170.63	200
	NO _x	1204	224.82	300
	PM	20.0	38.87	50

Copy of analysis Report is enclosed at Annexure-8

- As per the consent issued by MPPCB the Particulate Matter (PM) emission from stack is above the limit in the Unit Nos., 02, 03, 04, 05 and 06.
- SO₂ emission from stack is above the limit in Unit Nos. 09 and 10 as per consent limit.
- NO_x emission from stack is above the limit in Unit Nos. 09, 10 and 13 as per consent limit.

Compliance Under Water Act :-

1. Unit is having valid water consents for all 5 stages & V-4 ash dyke.
2. NTPC Vindhyachal Super Thermal Power Station has installed 13 nos. of cooling towers (01 for each unit) of closed cycle type for cooling of process water. Water in

the cooling tower is recycled in the system for cooling process.

3. Effluent Treatment Plant:

- Unit has installed 4 nos. of ETPs located behind stage -1 , behind stage -3, behind stage -4 & adjacent to stage 5. Water from boiler blow down, condenser cooling, floor washing etc are taken into these ETPs for treatment, the treated wastewater has been reused in process water within the premises. ETP installed for the treatment of trade effluent of following capacity:
 - ETP -1 for Stage -1 : 300 M³/h
 - ETP -2 for Stage -2&3 : 200 M³/h
 - ETP-3 for Stage -4 : 200 M³/h
 - ETP-4 for stage -5 : 100 m³/h
- At the time of visit it was found that treated effluent is not being discharged outside the factory premises.
- Industry has installed online effluent quality monitoring system (EQMS) in ETP – 1, ETP – 2 and ETP – 3 a for parameters pH, Conductivity, BOD, COD, TSS, Oil & Grease and Temp. Online monitoring results are sent to servers of CPCB & MPPCB. In ETP – 4 (Stage – 5) EQMS has been installed but the data is not communicated to the servers of CPCB and MPPCB.

4. Sewage Treatment Plant (STP):

Industry has installed STP based on extended aeration process of 6 MLD capacity. 6 nos of diffused aerators are installed for aeration treated domestic waste water being used in greenbelt development /gardening within the premises.

5. Coal Slurry Settling Pit (CSSP):

Industry has installed 02 nos. CSSP for treatment of effluent mixed with coal particles. Clear water from the CSSP is reused in water sprinkling in the coal yard.

6. Ash Dykes:

NTPC Vindhyachal has constructed 05 nos. of ash dykes of viz. V1, V2, V3A &

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V3B and V4. During visit I had found that no effluent is being discharged outside the ash dyke. Water from the ash dyke is being recycled to plant premises through Ash Water Recirculation System (AWRS).

DYKE	CAPACITY (Cubic Meter)
V1 - CAP	135
V2 - CAP	180
V3A - CAP	77
V3B - CAP	42
V4	120

Compliance Under Hazardous Waste:-

1. Unit is obtained valid Hazardous Waste Authorization for the plant which is valid up to 10.01.2019.
2. Industry has constructed Hazardous Waste Storage site as per Hazardous Waste (Management & Handling) Rules, the size of the room 20m x 4m (approx).
3. Hazardous Waste Display board is installed & the quantity of hazardous waste is displayed outside the room.
4. Drains & collection pit also constructed inside the hazardous waste storage room.
5. Details of hazardous waste authorization type & quantity of hazardous waste is also displayed at the factory gate.
6. Following disposal methods has been adopted by the industry for disposal of hazardous waste:
 - Used oil (5.1) soled to authorized recyclers.
 - Spent Resin (34.2) disposed of f through TSDF- Pithampur.
 - Discarded Container (33.3) soled to authorized recyclers.
7. During the time of visit only 18 MT Used oil store in hazardous waste room.

Other Observations:-

1. Unit has adequate environmental monitoring laboratory facility & qualified monitoring persons.
2. The industry has provided cemented road all over inside the plant & good housekeeping is being maintained.
3. Unit has planted more than 22 lacs plants of different species (Neem, Pipal, Pakar, Jetropha, Karanj etc) inside & outside the plant premises.
4. During the visit the unit was found mainataing Zero liquid discharge condition.
5. PTZ- camera & flow meters are not installed in all 4 ETPs & ash dyke areas.
6. Unit has installed 2 nos. of H₂ -plants (20 + 10 m³/h) capacity.
7. Unit has closed cycle cooling system.
8. Unit is drawing raw water from the discharge canal of NTPC Singrauli.
9. Unit has provided public display board system for AAQMS data.
10. Unit has not maintained proper calibration record of all Continuous Emission Monitoring System (CEMS), Continuous Ambient Air Quality Monitoring System (AAQMS) and Continuous Water Quality Monitoring System (CWQMS).

Suggestion:

1. Unit should install PTZ camera with night vision facility and flow meters and connect it with servers of CPCB & MPPCB.
2. Unit has should ensure to maintain proper calibration record of all Continuous Emission Monitoring System (CEMS), Continuous Ambient Air Quality Monitoring System (AAQMS) and Continuous Water Quality Monitoring System (CWQMS).
3. The industry shall take effective steps for utilization of fly ash as per fly ash notification.
4. Unit shall control Particulate Matter (PM) emission from stack in Unit Nos., 02, 03, 04, 05, 06 as per consent limit.