रामगुण्डम
RAMAGUNDAM

Ref.No:09/EMG/E-10/2020/ 1732 **Date: 17.06.2020**

To

THE DIRECTOR
Regional Office (SEZ)
Ministry of Environment Forests & Climate Change,
1st and 2nd Floors, Handloom Export Promotional Council,
4 Cathedral Garden Road,
Nungambakkam, Chennai – 560 034.

Respected Sir,

Sub: Six Monthly Compliance Report of EC issued to NTPC Ramagundam - Reg

We are herewith submitting the six monthly compliance reports for EC given to our station pertaining to the period October 2019 to March 2020. Also we are submitting the ambient air quality data, stack emission data, dust concentration data and others for the period along with this report.

Thanking you

Yours faithfully
For NTPC Ltd

17/6/20

(RADHA MOHAN K.N.S.)
AGM (EMG&AU)

E/a

The Environmental Engineer,
Telangana State Pollution Control Board,
Regional Office – Ramagundam,
Jyothinagar, Peddapalli (Dist), Telangana, India - 505215

20/06/2020
Office of the Environmental Engineer Telangana State Pollution Control Board Regional Office, Ramagundam, H.No. 3-Special S-3, NTPC, TTS, Near Zilla Parishad High School OTHINAGAR - 505 215, Dist. Peddapalli (T.S.)

STATUS OF IMPLEMENTATION OF CONDITIONS STIPULATED IN ENVIRONMENTAL CLEARANCE

NAME OF THE PROJECT: RAMAGUNDAM STPP STAGE-III (1X500MW)

LETTER NO: OMNOJ-1301/20/94-IA-II DATED 25/09/1995.

S. No.	STIPULATIONS	STATUS as on 31.03.2020
1.	All the conditions stipulated by the State Pollution Control Board shall be implemented effectively.	All the conditions stipulated by the State Pollution Control Board are being implemented effectively.
2.	A stack of height not less than 275 meters shall be provided along with stack monitoring devices.	Stack height of 275 meter with stack monitoring facilities have been provided.
3.	The Electrostatic Precipitators having efficiency of not less than 99.8 percent shall be installed.	ESP having more than 99.8% efficiency have been provided.
4.	The particulate emission shall not exceed the prescribed limit of 150 mg/Nm^3 at any time.	Particulate Emissions are being maintained within the prescribed limit by Telangana SPCB.
5.	Space provision shall be made for installation of FGD plant, if felt necessary, at future time.	Adequate Space has been provided in the layout for installation of FGD plant in future. Preliminary engineering activities are being taken up for provision of FGD in Stage-III as per the directions given by CPCB vide letter dated December 11, 2017.
6.	Regular monitoring of air quality (at least two days a week) in and around the power plant shall be carried out and records maintained. Periodic report (on six monthly basis) on air quality shall be submitted to this Ministry.	Ambient Air Quality monitoring for the station for PM_{10}, $PM_{2.5}$, SO_2 and NO_x is being carried out twice a week at 3 locations identified with SPCB through MOEF&CC recognized laboratory and record maintained. Other parameters as per NAAQ standards are being monitored and submitted along with this report.
7.	Recycling and reuse of ash pond effluents shall be undertaken to the extent possible. There shall be no direct discharge into the river Godavari.	The station has AWRS along with treatment system and the ash pond water is treated and reused to the maximum extent. AWRS augmentation scheme has been developed for additional pipelines to maximize the recirculation of ash pond water. Trial run and commissioning of pumps expected in August'2020..
8.	The proposed study on leaching of heavy metals from the ash pond to ground water will be undertaken early and report furnished to this Ministry. Based on the results of the study, corrective measures if any felt necessary shall be implemented.	A geo-hydrological study under the Indo-Dutch collaboration has been completed. The report was submitted to MOEF&CC on 02.06.1997.

S. No.	STIPULATIONS	STATUS as on 31.03.2020
9.	NOC from State Pollution Control Board shall be obtained and furnished.	No Objection Certificate (NOC) was obtained and submitted to MoEF&CC on 23.08.1999.
10.	Dust suppression and dust extraction devices shall be installed in the coal handling areas to ensure that the level of dust is well within the prescribed limits.	Dust Suppression and Extraction System in coal handling areas are provided to ensure that the level of dust is well within the prescribed limits.
11.	Closed circuit cooling with induced draft cooling tower shall be provided.	Closed cycle cooling system with induced draft cooling towers has been provided.
12.	The workers in the high noise areas will be provided with ear protection devices.	The workers in the high noise area are provided with appropriate ear protection devices.
13.	A workable plan for ash Utilization starting with at least 20% in the first year and gradually increasing by 10 during subsequent years so as to achieve 100% Utilization by the end of the ninth year shall be prepared and submitted to this Ministry within six months.	The stage III has been provided with 100% Dry ash extraction system since the inception stage itself. The dry ash is being issued to manufacturers of cement, RMC and brick/blocks. Balance ash of Stage III is being issued to mine stowing and clay brick manufacturers. Revised Ash Utilization Plan submitted to MoEF&CC on 03.08.2000 and the same is being implemented. In compliance to the latest fly ash notification dated 03.11.2009, revised action plan has also been submitted. In FY 2019-20, the station has achieved ash utilization of 118.23%. For 100% ash utilization, station has created following facilities. 1. Station has installed Dry Ash Extraction System. Also Rail loading facilities commissioned in unit 4&5 to meet the distance customer's demand. 2. Pond ash is utilized in mine stowing purpose, ash dyke raising, clay brick units, etc.
14.	In order to conserve water at thermal power station, efforts should be made to utilize the treated water to the maximum extent possible.	1. The treated DM effluent, Coal settling ponds effluent and plant effluent are reused for ash handling. The cooling tower blow down is reused in dust suppression system and as service water. 2. To conserve precious water a closed circuit cooling water system with induced draft cooling towers has been adopted. For further reducing water consumption, cooling water treatment is being carried out by chemical dosing to operate the cooling water system at increased COC.
15.	Liquid effluents shall be treated to conform to the standards prescribed by	An integrated Effluent Treatment Plant (ETP) cum Ash Water Recirculation System

S. No.	STIPULATIONS	STATUS as on 31.03.2020
	State/Central Pollution Control Board.	(AWRS) has been provided at the station. All effluents from plant area are finally treated and effluent confirming to the standards by SPCB/CPCB.
16.	Adequate measures for protection against various hazards such as fire, shall be taken to the satisfaction of the respective authorities concerned.	Extensive Fire detection and protection system are provided to the satisfaction of the respective authorities concerned.
17.	Green belt of adequate width shall be developed all around the power plant by selecting suitable species in consultation with the authorities of State Forest Department.	Green belt in and around the plant and township has been developed.
18.	As the liquid effluents are finally being discharged into river Godavari, a study on bio-magnification of heavy metals in the aquatic life may be taken up and the report submitted to this Ministry.	The study was undertaken through M/s. Shriram Institute of Industrial Research, Delhi and the report has been forwarded to MoEF&CC vide letter dated 16.08.2004.
19.	During ash pond reclamation, the selection of species to be planted may be made very carefully taking into consideration the nature of the soil and the total climatic conditions in consultation with the authorities of the State Forest Department.	A pioneering attempt of growing selected species like *Casuarinas Equisetifolia, Acacia Auriculiformis, Cassia Siamea, Eucalyptus Globules* on the ash directly has already been successfully implemented in the abandoned temporary ash pond of RSTPS (before 1990). In the present ash pond reclamation has not yet started. Shall be complied as and when the ash pond is reclaimed.
20.	Stack data to be furnished within three months.	Data is regularly being furnished through six monthly compliance reports. Continuous emission monitoring system (CEMS) for gaseous emissions also has been installed and being monitored continuously.
21.	Information on change of emission load with ESP field failures may be furnished.	Adequate care has been taken in the ESP design and function to ensure emission within stipulated standards all the times. Prior information is given to TSPCB, wherever ESP fields/passes taken into isolation for maintenance.
22.	Copy of the confirmation regarding coal linkage to be provided.	Coal linkage had been accorded vide letter dated 02.09.1999. A copy of this letter is submitted to MoEF&CC on 03.08.2000.
23.	Only washed coal shall be used for the project. Fuel; analysis of the washed coal so used shall be carried out every month and records maintained. The analysis report shall form part of the six monthly report to be submitted to this Ministry.	Permission has been granted for uses of raw coal vide MoEF&CC letter dated 14.12.1998.

S. No.	STIPULATIONS	STATUS as on 31.03.2020
24.	Reduction in fresh water requirement may be examined taking into account the plant as a combined unit by adopting suitable size of the condenser, flow rate and drift.	The closed cooling water system along with dedicated treatment system for CW water enabled the COC increase, which has reduced the water requirement. Blow down of CW system is used for equipment cooling and service water purpose before joining plant effluent.
25.	Separate funds should be allocated for implementation of environment protection measures along with item wise breakup. These costs should be included as part of the project cost. The funds earmarked for the environmental protection measures should not be diverted for other purposes and year wise expenditure should be reported to this Ministry.	The funds on environmental protection measures along with item – wise break-up is provided in the project cost. The total funds earmarked for environmental protection has not been diverted for other purposes.
26.	Regional office of this Ministry at Bangalore will monitor the implementation of above conditions.	Noted.
27.	The project authorities shall submit to this Ministry a half yearly report on the implementation of the stipulated conditions and environmental safeguards.	Six monthly EC Compliance Report for the period October 2019 to March 2020 is submitted herewith.

STATUS OF IMPLEMENTATION OF CONDITIONS STIPULATED IN ENVIRONMENTAL CLEARANCE

NAME OF THE PROJECT: RAMAGUNDAM STPP STAGE-III (1X500MW)
LETTER NO.J.13011/20/94-I AII (T) DT.NOVEMBER 8, 2000

S. NO.	STIPULATIONS	STATUS as on 31.03.2020
1.	All the stipulations made in our environmental clearance letter dated 25th September, 1995 referred to above should be strictly implemented	Compliance status of Letter No: OMNOJ-1301/20/94-IA-II Dated 25/09/1995 is given in the table above.
2.	100% fly ash utilization should be ensured by 9th year as per the broad utilization Plan submitted along with NTPC's communication no. CC: ESE: 3100:2000: GEN: 4B dated 3rd August 2000.	The Stage III has been provided with 100% Dry Ash Extraction System since the inception stage itself. The dry ash is being issued to manufacturers of cement, RMC and brick/blocks. Balance ash of Stage III is being issued to mine stowing and clay brick manufacturers. Revised Ash Utilization Plan submitted to MoEF&CC on 03.08.2000 and the same is being implemented. In compliance to latest fly ash notification dated 03.11.2009, revised action plan has also been submitted. In FY 2019-20, the station has achieved ash utilization of

		118.23%. For 100% ash utilization, station has created following facilities. Station has installed Dry Ash Extraction System. Rail loading facilities commissioned in unit 4&5 to meet the distance customer's demand. Pond ash is utilized for mine stowing purpose, ash dyke raising, clay brick units, etc.
3.	The findings of the study on Bio-magnification of heavy metals in the aquatic life due to discharge of liquid effluents into Godavari river should be submitted along with the Management Plan within one year.	The study was undertaken through M/s. Shriram Institute of Industrial Research, Delhi and the report has been forwarded to MoEF&CC vide letter dated 16.08.2004.
4.	A copy of the Geo-hydrological study under Indo-Dutch collaboration should be submitted along with the plans for necessary corrective measures to avoid leaching of heavy metals from ash pond area to ground water.	A Geo-hydrological study under the Indo-Dutch collaboration has been completed. The report was submitted to MOEF&CC on 2nd June, 1997. (A detailed study to understand Geology of N2 Ash Pond as recommended in the Indo-Dutch Report has been completed.)
5.	Rs.162.38 crores earmarked for environmental measures should not be diverted for any other activity and provision should be made for additional funds, if required.	The earmarked amount of environmental measures was not diverted for any other activity. Any additional funds required for environmental mitigation measures would be met from miscellaneous fund kept in the Operation & Maintenance fund of the project.

RECOMMENDATIONS GIVEN BY MOEF FOR IMMEDIATE CORRECTIVE ACTIONS (F.No.EP/12.1/109/AP/1430 dtd-05.10.2015)

S. No.	RECOMMENDATIONS OF RO, MoEF&CC	COMPLIANCE STATUS AND ACTION PLAN
i.	Condition in EC-6: Regular monitoring of air quality (at least two days a week) in and around the power plant shall be carried out and records maintained. Periodic report (on six monthly basis) on air quality shall be submitted to this ministry. Certified compliance: Ambient air quality monitoring is being carried out twice in a week by third party at 3 locations identified with SPCB and records are being maintained. However, third party monitored AAQ parameters are not confirmed to the latest NAAQ standards. Further the unit has installed 3 online continuous AAQ monitoring stations	Third party AAQ monitoring f\or the parameters of PM_{10}, $PM_{2.5}$, SO_2, and NO_X are being carried out through MoEF&CC recognized labs on weekly twice basis, and data is submitted to MoEF&CC and state PCB. The parameters are conforming to latest NAAQ standards.

	which are connected to the server of state PCB. The monitored AAQ data is well within prescribed limits. The monitored data is being submitted along with six monthly compliance report to the MoEF&CC.	
ii.	Condition in EC-7: Recycling and Re-use of ash pond effluents shall be undertaken to the extent possible. There shall be no direct discharge into river Godavari. Certified compliance: It appears that 70% of ash pond water is being treated and reused for ash handling. However part of ash pond water is being discharged without treatment to the nearby agricultural fields.	Station has installed AWRS for all its units where in ash water to the maximum extent is brought back, treated and reused. AWRS augmentation scheme has been developed for additional pipelines to maximize the recirculation of ash pond water. Trial run and commissioning of pumps expected in August'2020.
iii.	EC-13 Certified compliance: Reportedly Ash utilization plan submitted. However PA has not achieved 100% ash utilization. As informed by PA in the year 2014-15 the unit has achieved 64.4% of ash utilization.	During 2019-20, station has utilised 118.23% of ash. For 100% ash utilisation, station is putting all efforts, which has resulted in several new areas for ash utilisation like mine stowing, pond ash use in clay bricks, etc. • Dry fly ash from ESP/ Silo to cement and RMC industries • Station is issuing dry fly ash to fly ash brick and block units free of cost in line with MOEF&CC notification. • Ash is issued from ash pond free of cost in line with MOEF&CC notification to SCCL for mine stowing, clay brick units. • Geoploymer concrete road of 1.35km constructed. • For 100%AU, rail Loading facility with closed wagons installed and commissioned, in unit 4 and 5 (2x 500MW). Separate Parking yard for ash vehicles & Separate entry gate for ash vehicles facilitated to reduce the cycle time. Customer interaction meetings are being conducted for all existing and potential future customers sector–wise from time to time. Regular meetings are being held with the brick plants (both fly ash and clay bricks) and they are being motivated to use fly ash for brick manufacturing. 5 number of ash brick plants are being operated by us for in-house consumption and requirement from outside. • Also SCCL has agreed to give their Medipalli OCP for ash filling after abandoning the same. Hydrogeology\Biotic studies are completed.
iv.	EC-15 Certified compliance: An integrated effluent treatment cum ash water recirculation system (AWRS) has	Sufficient care is taken during design and O&M that effluent parameters are well within limits during the maintenance of clarifier as two

	been provided. All effluents from plant area are finally treated and treated effluent confirmed to the discharge standards. However, during the visit inadequate treatment of effluent was observed due to maintenance of clarifier. Further the parameters monitored for the inlet and outlet of the ETP are not in uniform manner and it needs to be analysed on daily basis. Domestic effluents are being treated in the STP.	clarifiers are available. The effluent parameters are monitored daily basis. Online monitoring of ETP outlet through Effluent Quality Monitoring System has been installed. Transmitting data to TSPCB and CPCB on continuous basis.
v.	Certified compliance: Presently ash pond reclamation has not yet started, since it is under use. PA assured to comply with the condition.	Shall be complied.
vi.	Certified compliance: Stack emissions are being monitored by MoEF&CC approved third party and data is being furnished along with six monthly compliance reports. Further continuous on-line stack monitoring has been installed and connected to the server of state PCB. However in the continuous stack monitoring system, project authority needs to monitor gaseous emission also apart from SPM	Continuous Emission Monitoring System installed to monitor gaseous emission along with PM and Transmitting data to TSPCB ad CPCB on continuous basis.
vii.	Certified compliance: PA informed they have spent more than the earmarked amount. However no separate account is being maintained under environmental protection measures.	Capital nature expenditure of environment is already captured separately.
viii.	Certified compliance: PA submitted hard copy of six monthly compliance report to the MoEF&CC. Soft copy of the six monthly compliance report has not been submitted to RO of the MoEF &CC regularly. Six monthly compliance report needs to be submitted by Project Authority both in hard and soft copies along with monitored data to the Regional office of MoEF&CC. The same needs to be uploaded on the website of the company and periodically	Periodically compliance report are submitted to RO of the MoEF&CC.
ix.	Certified compliance: Treated water is partly utilized for ash handling/ash slurry pumping and partly discharged in to River Godavari. It appears that unit do not have dedicated pipeline till the discharge point of the river rather the treated water of the unit getting mixed up with domestic waste water drainages before confluence into the river Godavari. Necessary corrective action needs to be taken to avoid conflict in near future regarding treatment of effluents by M/s.NTPC.	AWRS augmentation scheme has been developed for additional pipelines to maximize the recirculation of ash pond water. Trial run and commissioning of pumps expected in August'2020.

Table 1: Ambient Air Quality Monitoring Data from October 2019 to March 2020

Month/Year	Location	Concentration (µg/m³)*			
		PM_{10}	$PM_{2.5}$	SO_2	NO_X
OCTOBER'19	Balancing Reservoir	65	29	18	22
	Ramagundam Pump House	63	27	18	22
	Guest House	60	26	17	20
NOVEMBER'19	Balancing Reservoir	67	26	20	22
	Ramagundam Pump House	70	30	18	24
	Guest House	60	23	16	20
DECEMBER'19	Balancing Reservoir	65	26	18	21
	Ramagundam Pump House	69	30	20	22
	Guest House	63	26	17	21
JANUARY' 2020	Balancing Reservoir	60	27	19	22
	Ramagundam Pump House	70	30	20	24
	Guest House	60	24	16	20
FEBRUARY'2020	Balancing Reservoir	65	27	19	22
	Ramagundam Pump House	66	32	19	24
	Guest House	62	25	16	21
MARCH'2020	Balancing Reservoir	66	29	19	23
	Ramagundam Pump House	67	30	16	20
	Guest House	60	23	15	18
	24 hours limit	**100**	**60**	**80**	**80**

**monthly average of 24hr monitoring.*

Table 2 : 3rd Party Stack Monitoring Data from October 2019 to March 2020

DATE	PM (mg/Nm³)						
	Unit -1	Unit -2	Unit -3	Unit -4	Unit -5	Unit -6	Unit -7
OCTOBER'19							
	91.4	93.7	92.6	96.9	99.4	91.6	48.6
NOVEMBER'19							
	90.6	92.7	94.8	S/D	97.7	89.9	48.3
DECEMBER'19							
	86.4	90.5	92.6	S/D	94.8	82.4	50.0
JANUARY'19							
	89.5	91.9	94.2	96.3	96.8	85.5	46.5
FEBRUARY'19							
	92.4	94.5	94.2	52.4	98.3	89.6	48.4
MARCH'19							
	79	86	79	96	98	99	S/D

Table 3 : Dust Monitoring Data (PM_{10}) from October 2019 to March 2020

DATE	LOCATION	Dust Concentration (PM10) in µg/m³
OCTOBER'19		
09.10.2019	ESP Stage –I area	67
10.10.2019	DAETP Stage-I	64
11.10.2019	Burner Floor Stage-II	73
12.10.2019	Bricks Plant	85
14.10.2019	Ash Pond Area	72
15.10.2019	Mill Area Stage-I	69
NOVEMBER'19		
05.11.2019	ESP Stage –II area	75
06.11.2019	DAETP Stage-II	82
07.11.2019	Burner Floor Stage-I	85
08.11.2019	Bricks Plant	70
09.11.2019	Ash Pond Area	68
11.11.2019	Mill Area Stage-II	80
DECEMBER'19		
06.12.2019	ESP Stage –I area	74
07.12.2019	DAETP Stage-I	69
09.12.2019	Burner Floor Stage-II	66
11.12.2019	Bricks Plant	78
12.12.2019	Ash Pond Area	62
13.12.2019	Mill Area Stage-I	71
JANUARY'20		
06.01.2020	ESP Stage –II area	71
07.01.2020	DAETP Stage-II	78
08.01.2020	Burner Floor Stage-I	80
09.01.2020	Bricks Plant	75
10.01.2020	Ash Pond Area	64
11.01.2020	Mill Area Stage-II	83
FEBRUARY'20		
04.02.2020	ESP Stage –I area	64
05.02.2020	DAETP Stage-I	73
06.02.2020	Burner Floor Stage-II	60
07.02.2020	Bricks Plant	69
11.02.2020	Ash Pond Area	68
12.02.2020	Mill Area Stage-I	76
MARCH '20		
04.03.2020	ESP Stage – II Area	68
05.03.2020	DAETP Stage -II Area	72
06.03.2020	Burner Floor Stage – I	84
07.03.2020	BRICK PLANT	79
10.03.2020	ASH POND AREA	69
11.03.2020	Mill Area Stage – II	77

Table 4 : Other AAQMS Parameters Data from October 2019 to March 2020

	O3	Pb	CO	NH3	AS	Ni	C6H6	B(a)P
	ng/m³	(µg/ m³)	ng/ m³	(µg/ m³)	ng/ m³	ng/ m³	(µg/ m³)	ng/ m³
OCTOBER'19								
Balancing Reservoir	13.9	<0.01	0.36	<20	<1	<1	<0.01	<0.01
Ramagundam Pump House	12.0	<0.01	0.3	<20	<1	<1	<0.01	<0.01
Guest House	11.5	<0.01	0.32	<20	<1	<1	<0.01	<0.01
NOVEMBER'19								
Balancing Reservoir	14.3	<0.01	0.42	<20	<1	<1	<0.01	<0.01
Ramagundam Pump House	12.9	<0.01	0.33	<20	<1	<1	<0.01	<0.01
Guest House	12.8	<0.01	0.38	<20	<1	<1	<0.01	<0.01
DECEMBER'19								
Balancing Reservoir	12.6	<0.01	0.39	<20	<1	<1	<0.01	<0.01
Ramagundam Pump House	9.8	<0.01	0.28	<20	<1	<1	<0.01	<0.01
Guest House	10.6	<0.01	0.32	<20	<1	<1	<0.01	<0.01
JANUARY'20								
Balancing Reservoir	13.9	<0.01	0.41	<20	<1	<1	<0.01	<0.01
Ramagundam Pump House	12.6	<0.01	0.32	<20	<1	<1	<0.01	<0.01
Guest House	12.2	<0.01	0.35	<20	<1	<1	<0.01	<0.01
FEBRUARY'20								
Balancing Reservoir	15.1	<0.01	0.46	<20	<1	<1	<0.01	<0.01
Ramagundam Pump House	13.5	<0.01	0.38	<20	<1	<1	<0.01	<0.01
Guest House	14.08	<0.01	0.38	<20	<1	<1	<0.01	<0.01
MARCH'20								
Balancing Reservoir	13.2	<0.01	0.26	<20	<1	<1	<0.01	<0.01
Ramagundam Pump House	12.1	<0.01	0.35	<20	<1	<1	<0.01	<0.01
Guest House	12.6	<0.01	0.29	<20	<1	<1	<0.01	<0.01