



नाचमेव जकले

भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS
& CLIMATE CHANGE

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F.No:4-21/2007(ENV)/

Date: 06/03/2017

To,

**Scientist 'F' &
Member Secretary (Thermal Projects)
IA Division
Ministry of Environment, Forest & Climate Change
Indira Paryavaran Bhawan,
Aliganj, Jorbagh Road,
New Delhi-110003**

Sub: 4X300 MW Thermal Power Plant at Jaigad, Ratnagiri District, Maharashtra of M/s.
JSW Energy (Ratnagiri) Ltd.-reg.

Ref:

1. MoEF letter F.No. J-13012/52/2006-IA-II(T) dated 17.05.2007

Sir,

I am directed to invite your kind attention on the above subject and letters under reference. Site inspection of the 4X300 MW Thermal Power Plant has been carried out on 30.12.2016. Following observations were made during the site inspection:

PA is taking effective steps for the implementation of conditions stipulated in environmental clearance. Flue gas desulphurization system has been installed in four units. Fly ash utilization is 100%. Continuous stack emission monitoring system has been provided for two stacks. Green belt has been created in and around the plant area. Water harvesting structures have been created at township and nearby villages. Plastic waste generated in the township is being converted into oil in the Waste Plastic Pyrolysis System. Housekeeping found to be good.

Following partial compliances were observed:

Condition no.vii:

As per the stack emission monitoring reports, the exit velocity of flue gas found to be less than 21m/sec.

Condition no. iv of EC amendment dated 16/04/2010:

Details regarding submission of the greenbelt development implementation plan to the Ministry not provided.

Condition no. vi of EC amendment dated 16/04/2010:

Ground water level is not being monitored regularly.

This issues with the approval of APCCF (Central), Regional Office, Nagpur.

A. Suresh Kumar
06/03/17
Suresh Kumar Adapa
Scientist 'D'

Encl: as above

Copy to:

1. Director RO HQ, Ministry of Environment, Forest & Climate Change, Government of India, 1st Floor Agni Wing, Indira Paryavaran Bhawan, Jorbagh Road, New Delhi-110 003
2. Director (Monitoring Cell), Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Aliganj, Jorbagh Road, New Delhi-110003
3. Associate Vice President, JSW Energy Limited, Village: Nandiwade, Post: Jaigad, Taluka & District Ratnagiri, Maharashtra-415614

A. Suresh Kumar
06/03/17
Suresh Kumar Adapa
Scientist 'D'

Monitoring the Implementation of Environmental Safeguards
Ministry of Environment, Forest & Climate Change
Regional Office (West Central Zone), Nagpur
Monitoring Report
Part – I
DATA SHEET

1.	Project Type: River-valley / Mining / Industry /Thermal / Nuclear / Other (Specify)	Thermal Power Plant
2.	Name of the Project	4X300 MW Thermal Power Plant of M/s. JSW Energy Ltd
3.	Clearance Letter (s) / OM No. and date	Environmental Clearance No. J-13012/52/2006-IA-II(T) dated. 17 May 2007
4.	Location a. District (s) b. State (s) c. Latitude d. Longitude	a. Ratnagiri. b. Maharashtra c. 17° 17' N Latitude d. 73° 20' E Longitude
5.	Address for correspondence a. Address of concerned Project Chief Engineer (with Pin Code & Telephone/ Telex/ Fax Numbers) : & Address of Executive Project Engineer / Manager (with pin code/fax numbers)	Mr. Kartikeya Misra JSW Energy Ltd., Village Nandivade, Post-Jaigad, Tal & Dist-Ratnagiri-415614 Ph: 02357 – 242501 to 5 Fax: 02357- 242508
6.	Salient features a. Of the Project b. Of the Environmental Management Plan	a. JSW Energy Ltd, Ratnagiri is 4 x 300 MW thermal power plant by utilising coal as a main fuel for the boilers JSW Energy Ltd, is first plant to commission the plant among the private sector which signed MOU with Maharashtra The Environment Management plan sets out the mitigation measures needed for Environmental management, both in the short and long term, but also the institutional requirements for implementation and defines the control measures for the predicted and anticipated adverse environmental impacts during construction, commissioning and normal operation. EMP includes four major elements: Commitment and Policy Planning Implementation Measurement & Evaluation b. The EMP is designed such that the project not only fulfill the statutory/ regulatory requirements and the stringent conditions laid by the MoEF in the Environmental Clearance condition, but also taking continuous steps to ensure the following: 1. Compliance with the air, water, soil and noise quality standards/ norms. 2. Conservation of natural resources to the extent possible, e.g. water and fuel.

		3. Maximize fly ash utilization. 4. Contribute to socio-economic development of the region.
	Breakup of the Project area a. Submergence Area: Forest & Non Forest b. Others	
	a. Total Plot Area	350 Hectares
	b. Built - Up Area (Including Road)	120 Hectares
	c. Open Space available	230 Hectares
	d. Green belt area	122 Hectares (out of 230 Hectares)
	Breakup of the Project affected population with enumeration of those losing houses/dwelling units only, agricultural land only, both dwelling units & both dwelling units & agricultural land & landless laborers/artisan a. SC, ST/Adivasis b. Others (Please indicate whether these figures are based on any scientific and systematic survey carried out or only provisional figures, if a survey carried out gives details and years of survey.)	The area is comes under notified Industrial area.
	Financial Details a. Project costs as originally planned & subsequent revised estimates and the year of price reference. b. Allocations made for Environmental Management Plan with item wise & yearwise breakup. c. Benefit Cost Ratio / Internal rate of Return and the year of assessment. d. Whether (c) includes the cost of Environmental Management as shown in the above. e. Actual expenditure incurred on the Project so far f. Actual expenditure incurred on the Environmental Management Plan so far	Initial project Cost was 4500 Cr the cost spent towards Environmental protection measures is 978 Cr the details are ESP 190.08 Cr Chimney 129.03 Cr FGD 393.97 Cr Ash handling System 127.29 Cr Cooling Towers 121.81 Cr HCSD 16.0 Cr Actual expenditure incurred so far are 5441.64 Cr
	Forest land requirement a. The status of approval for diversion of Forestland for non-forestry use b. The Status of clearing felling c. The status of compensatory Afforestation programme in the light of actual field experience	Not Applicable
	The status of clear felling in non-forest areas (such as submergence area of reservoir, Approach roads), if any with quantitative information	Not Applicable
	Status of construction a. Date of commencement (Actual	dates of synchronization and commercial operation are as follows,

	and/or Planned) b. Date of completion (Actual and/or Planned)	U#1: Synchronization- 21.06.2010 COD- 01.09.2010 U#2: Synchronization- 24.11.2010 COD- 30.12.2010 U#3: Synchronization- 28.04.2011 COD- 09.05.2011 U#4: Synchronization- 24.08.2011 COD- 16.10.2011
3.	Reasons for the delay if the project is yet to start	Not Applicable
4.	Dates of site visits a. The dates on which the Project was monitored by Regional Office on previous occasions, if any b. Date of site visit for this monitoring Report	13.11.2009 30.12.2016
5.	Details of correspondence with project authorities for obtaining action plan / information on status of compliance to safeguards other than the routine letters for logistic support for site visit. (The monitoring report may obtain the details of all the letters issued so far but the later reports may cover only the letters issued subsequently)	As under
Letter from RO		Reply from PA
7.12.2016: Letter issued for site inspection.		12.09.2016: PA submitted request for the certified compliance report

Compliance status of conditions stipulated in environmental clearance granted by MoEF vide letter no. J-13012/52/2006-IA-II(T) dated 17.05.2007 for 4X300 MW Thermal Power Plant at Jaigad, Ratnagiri District, Maharashtra

S. No.	Condition	Status of compliance
(i)	No Activities in CRZ Area will be taken up without requisite clearance under the provisions of the CRZ Notification, 1991.	Ministry of Environment and Forests granted CRZ clearance vide letter No.11-18/2007-IA-III dated 15.11.07 for laying intake and outfall system for the 1200 MW Thermal Power Plant.
(ii)	The detailed study regarding the impact of the project if any, on Alphanso mango, and marine fisheries as recommended in the report of Dr. B. S. Konkan Krishi Vidyapeeth (KKVD) shall be undertaken. Based on the same, additional safeguard measures as may be required will be taken by the proponent with prior approval of the Ministry of Environment and Forests. A copy of the report will be submitted to the Ministry. The cost towards undertaking the study and implementation of safeguard measures, if any, will be borne by the project.	<p>Complied.</p> <p>PA submitted that JSW entered a MoU with Dr. B. S. Konkan Krishi Vidyapeeth (KKVD) on 01.08.2007 and a budget provision of Rs.328 lakhs has been made. KKVD carried out impact assessment studies on Mango, Cashew and Marine life. The study was carried out in two phases:</p> <ol style="list-style-type: none"> 1. Two years' baseline (pre-commissioning) 2. Four years on going (post commissioning) <p>As per the study, there was no variation in the the values of vegetable growth, flowering, fruiting, percentage of vegetative shoots, flowering percent, percent fruit set, fruit yield and quality parameters of fruits of mango and cashew plantations.</p> <p>PA also submitted that till date an expenditure of Rs.322 lakhs has been made.</p>
(iii)	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO ₂ , if required at later stage.	<p>Complied.</p> <p>Flue gas desulphurization systems have been installed for all four units.</p>

(iv)	Cooling water blow down will be discharged from the cold water side and not from the hot water side.	Complied. The common blow down water from four units is being discharged from the cold end of the closed-loop cooling towers.
(v)	Coal with ash content not exceeding 12 % sulphur content not exceeding 0.6 % shall be used.	Complied. Imported coal is being used in the power plant. As per the analysis report of coal, ash content is less than 12% and Sulphur content is less than 0.6%
(vi)	Rain water harvesting should be adopted. Central Ground Water Authority/Board shall be consulted for finalization of appropriate rain water harvesting technology within a period of three months from the date of clearance.	Complied. Rain water storage structure of capacity 25,000 m ³ has been constructed near the project site. Also 176 water harvesting structures have been developed in 241 Ha in nearby villages. PP consulted the Central Ground Water Board vide letter dated 21.07.2007.
(vii)	Two bi-flue stacks of 220 m height each with exit velocity of at least 21m/s shall be provided with continuous online monitoring system.	Partly complied. Twin bi-flue stacks of 220 m. height each have been provided. Continuous emission monitoring system has been provided for the stacks. As per the monitoring data, the daily average exit velocity ranged from 17.7 to 21.2.
(viii)	High efficiency Electrostatic precipitator (ESPs) having efficiency of 99.9% shall be installed so as to ensure that particulate emissions do not exceed 100mg/Nm ³ .	Complied. All four units are provided with high collection efficiency ESPs and Flue Gas Conditioning system. As per the monitoring data, the particulate levels found to be under 50mg/Nm ³ .
(ix)	Fly ash shall be collected in dry form and its 100% utilization shall be ensured from the day of the commissioning of the plant. In case of emergency, fly ash may be disposed in the ash pond through HCSD	Complied. Ash utilization is 100%. PA submitted that MoUs have been made with Ultra Tech, Ratnagiri, and other local entrepreneurs for 100% fly ash utilization.

	system. Borrow earth shall not be taken from ash pond area for construction of ash dyke etc.	
(x)	Regular monitoring of ground water quality including heavy metals shall be undertaken around ash dyke and the project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Complied. Ground water quality is being monitored seasonally through MoEF recognized laboratory. As per the monitoring data, the heavy metal content found to be less than prescribed limit.
(xi)	Noise level shall be limited to 75 dB A. For people working in the high noise area, protective devices such as earplugs etc. shall be provided.	Complied. Ambient noise levels (equivalent) found to be less than 75 dB A. Personal protective equipment has been provided for people working in noisy area.
(xii)	A greenbelt shall be developed all around the plant boundary and ash dyke covering an area of 120 ha.	Complied. As per the details submitted, green belt has been developed over an area of 122 ha. with the plantation of 3,26,412 trees of species. The species include following: <ol style="list-style-type: none"> 1. Mango 2. Cashew 3. Coconut 4. Casurina 5. Kokam 6. Betel Nut 7. Others
(xiii)	Adequate protection measures shall be taken to protect the Jaigad fort, a notified Archeological site, from the adverse impact of the power plant, if any, in consultation with Archeological Survey of India (ASI).	Complied. PA carried out a study through National Environmental Engineering Research Institute (NEERI) on A study has been carried out through NEERI to study the impact on Jaigad Fort. As per NEERI report following measures have been implemented: <ol style="list-style-type: none"> 1. Twin bi-flue stacks of 200m. each

		<p>with continuous stack emissions monitoring system has been installed</p> <ol style="list-style-type: none"> 2. Electrostatic precipitator has been provided for each stack 3. Flue gas desulphurization system has been provided for each unit. 4. 100% ash utilization is being implemented <p>Also as per the monitoring data, ambient air quality levels at Jaigad Fort found to be within stipulated limits.</p>
(xiv)	Regular monitoring of the air quality shall be carried out in and around the power plant and records shall be maintained. Six monthly reports shall be submitted to this Ministry.	<p>Complied.</p> <p>Air quality monitoring is being carried out through MoEF recognized laboratory at three locations. As per the monitoring data, the air quality levels found to be within prescribed limits under national ambient air quality standards</p> <p>Three continuous air quality monitoring stations (AAQMS) have been installed in consultation with MPCB.</p> <p>PA is submitting the air quality monitoring data with six monthly compliance reports.</p>
(xv)	For controlling fugitive dust, regular sprinkling of water in vulnerable areas of the plant shall be ensured.	<p>Complied.</p> <p>Cement roads are made within the plant area.</p> <p>PA submitted that regular sprinkling of water is being carried out with the help of mobile water tankers in vulnerable areas to suppress the dust.</p>
(xvi)	The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which should be in the vernacular language of the locality concerned,	Advertisement regarding grant of EC was made in local Marathi newspapers, Tarun Bharat and Dainik Pudhari on 30/5/2007 and Indian Express, (English) Mumbai edition on 2/6/2007. PA submitted the details to

	informing that the project has been accorded environmental clearance and copies of clearance letters are available with the state Pollution Control Board/Committee and may also be seen in the Website of the Ministry of Environment and Forests in the http://envfor.nic.in .	Regional Office of the Ministry vide letter dated 23/10/2007.
(xvii)	A separate environment monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.	Complied. Environment monitoring cell has been established.
(xviii)	Half yearly report on the status of implementation of the conditions and environmental safeguards should be submitted stipulated to this Ministry, the Regional Office, CPCB and SPCB.	Complied. PA is submitting the six monthly compliance reports regularly.
(xix)	Regional Office of the Ministry of Environment & Forests located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Management Plan should be forwarded to the Regional Office for their use during monitoring.	Complied. PA submitted the details vide letter no.JSW-MOEF-RO1/1061/07-08 dated 23.10.2007 to RO, Bhopal.
(xx)	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Complied. PA submitted that an amount of Rs. 978.18 Cr. spent towards environmental protection measures till date. This includes cost incurred towards FGD installation & implementation of flue gas conditioning system
(xxi)	Full cooperation should be extended to the Scientists/Officers from the Ministry and its	PA agreed upon.

	Regional Office at Bhopal /The CPCB/The SPCB during monitoring of the project.	
Compliance to Amended EC Conditions dated. 16/04/10		
i.	Flue Gas De-Sulphurisation (FGD) system shall be installed before commissioning the project and action in this regard shall be submitted within three months to the Ministry.	<p>Complied.</p> <p>Flue gas desulphurization systems have been installed in all four units as per the following schedule:</p> <ol style="list-style-type: none"> 1. Unit 1 - 22 Feb 2013 2. Unit 2 - 14 Oct 2012 3. Unit 3 - 20 Dec 2012 4. Unit 4 - 12 Jan 2013 <p>PA submitted the action plan to the Ministry vide letter no. JSWERL/2010/001 dated 21.06.2010.</p>
ii.	Continuous monitoring of ambient air quality & marine/estuarine environment, plant health parameters & fisheries shall be carried out regularly for the entire life of the power plant & data submitted to the Regional Office of the Ministry & the concerned department in the state government. The data shall be evaluated periodically by a third party viz. College of fisheries (CoF), Konkan Krishi Vidyapeeth (KKV, Dapoli)	<p>Complied.</p> <p>Three numbers of continuous ambient air quality monitoring stations have been installed.</p> <p>Impact of thermal power plant on cashew and mango plantation is being studied regularly through Konkan Krishi Vidyapeeth (KKV), Dapoli.</p> <p>As per the study, there was no variation in the the values of vegetable growth, flowering, fruiting, percentage of vegetative shoots, flowering percent, percent fruit set, fruit yield and quality parameters of fruits of mango and cashew plantations.</p> <p>College of Fisheries, KKV, Dapoli carried out the coastal ecology studies during pre-commissioning and post-commissioning.</p> <p>As per the study:</p> <ol style="list-style-type: none"> 1. The soil pH, organic carbon and texture didn't show any deviation in the study period (post