





# **HALF-YEARLY ENVIRONMENTAL COMPLIANCE REPORT**

**For the period of April 2016 – September 2016**

**GVK POWER PLANT  
JEGURUPADU**

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## INTRODUCTION

### **235 MW (Phase-I) CCPP:**

The 235 MW (ISO) Combined Cycle Power Plant is situated in Jegurupadu Village, Kadiyam Mandalam, East Godavari District, Andhra Pradesh was constructed by GVK Industries Ltd., Secunderabad and is India's First Independent Power Project (IPP) to commence commercial operations. The combined cycle mode of the project has commenced operation on 20/06/1997. The station has a configuration of 3 Gas Turbines + 3 Heat Recovery Steam Generators + 1 Steam Turbine. The plant is designed for operations on Natural Gas (or) Naphtha (or) any combination of both fuels.

The plant is being operated at part load using Natural Gas Supplied by Gail (India) Ltd., and sometimes on Naphtha as per the instructions of APSLDC.

The project was accorded clearance by Andhra Pradesh Pollution Control Board (APPCB) vide letter # 14027/PCB/NOC/AEE/9/92-6884 dt. 16/04/1992 and by Ministry of Environment and Forests (MoE&F) vide letter # J-13011/16/90-IA.II dt. 29/10/1991.

**As per consequence of buy out of GVK Jegurupadu 235 MW (Phase -1) CCPP by APEPDCL from GVK industries Ltd. Plant operation was handed over to DISCOMS from 18:00hrs of 22nd April 2016.**

### **228 MW (Phase-II) CCPP:**

The 228 MW Combined Cycle Power Plant is an Extension project to the existing 235 MW CCPP situated in Jegurupadu Village. Extension Project has a configuration of 1 GT + 1 HRSG + 1 Steam Turbine.

The Phase-II Extension was commissioned in January 2006 and commercial Operation Date Declared on 14/04/2009.

APPCB has accorded Consent for operation (CFO) of these plants under Water Act & Air Act vides Order No. APPCB/VSP/RJY/289/CFO/HO/2014-267 Dt.19/04/2014 and is valid up to 30/09/2016 and Environmental clearance by Ministry & Environment of Forest (MoEF) vide letter no.J-13011/4/2000-I.A.II (T) dt. 02/11/2000.

In compliance to the above consent, the company has developed a lush environmental green belt in the project site with an area of about 160 acres and In complying with all the stipulation laid down by the various statutory bodies. In compliance to item #vi of the MoE&F's clearance. Environmental Monitoring is being carried out at the project site on monthly basis as per the norms laid down by MoE&F and are being submitted to APPCB every month. The company has formulated an Environmental Management Cell to monitor the various environmental activities of the project and is proud to be a recipient of appreciation by various prominent personalities and organizations.

The environmental monitoring reports for the period April 2016 to September 2016 is prepared and submitted for the perusal of MoE&F in compliance with item-vi of MoE&F's clearance.

**GVK Jegurupadu Power Plant**  
**Compliances statement of the stipulation of MoEF**

Vide Ltr. No: J-13011/16/90-IA.III Dated 29-10-1991

Ref. No.J-13011/16/90-IA.III Dated 29-10-1991

Ref. No.J-13011/16/90-IA.III Dated 07-08-1992

Ref. No.J-13011/16/90-IA.III Dated 20-05-1993

S. No	Terms and Conditions	Compliance
i	Only natural gas should be used as the main feed stock. Use of Naphtha/HSD as an alternate fuel, as and when adequate natural gas supply is not available was cleared by the Ministry vide its letter #J-13011/16/19/-IA-III dated 20 <sup>th</sup> May 1993.	Complied
ii	“Zero discharge” concept with respect to liquid effluents should be followed and as such no liquid effluents will be allowed to be discharged in the water bodies. Treated liquid effluent should be used / recycled in the plant / Irrigation of the green belt;	The liquid effluent generated is treated and used for green belt.
iii	Adequate steps should be taken for prevention and control of fire and explosion hazards likely to be caused due to storage and use of inflammable material like natural gas	Complied
iv	Suitable rehabilitation measures should be provided to the affected families who are dependant for their livelihood on excavation work in the area	Complied
v	The NOx emissions should not exceed the specified standard of 50ppm.	Complied
vi	The gaseous emissions from various units should conform to the standards prescribed by the concerned authorities from time to time. At no time the emissions level should go beyond the stipulated standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should be shut down and should not be restarted until the control measures are rectified to achieve the desired standards / efficiency. The minimum of 4 air quality-monitoring stations should be selected on the basis of modelling exercise and the locations of human settlements. Further stack emissions should be monitored by setting up automatic stack monitoring device. The data of stack emissions and ambient air quality should be sent to the State Pollution Control Board once in 3 months and to this Ministry once in 6 months.	Complied
vii	A green belt of adequate width (not less than 100 meters) and density should be provided all around the power station.	Complied
viii	A separate Environmental Management cell with suitably qualified staff to carry out the various functions should be set up under the control of a senior Executive, who will report directly to the head of the organization.	Complied. Cell reconstituted and meeting held.
ix	The funds earmarked for environmental protection measures should not be diverted for any other purposes.	Complied
x	The colony may be located preferably on the North / Northwest side rather than on the Northeast as proposed. This would minimize NOx and Noise Pollution problems. However, If the colony is to be located in Northeast, a thick green belt should be provided between the main plant and the colony.	Complied. Thick green belt provided in and around colony and between plant and colony.
xi	The Ministry may add additional conditions if required from environmental angle, or revoke the clearance if the Implementations of the conditions is not satisfactory.	Agreed
xii	The above conditions will be enforced inter-alia under the provisions of the water (Prevention and control of Pollution) Act, 1974. The Air (Prevention and control of Pollution) Act, 1981 and The Environment (Protection) Act, 1986 along with their amendments.	Complied. CFO and Hazardous waste authorization obtained from APPCB

**Jegurupadu Expansion Power Project**  
**Compliance statement of the stipulation of MOEF**

Vide letter no. J-13011/4/2000-I.A.11 (T) Dt. 02.11.2000 and amendment date 13.06.2013

S.No.	Particulars	Compliance
(i)	All the conditions stipulated by the Andhra Pradesh State Pollution Control Board vide their letters No. 230/PCB/C. Estt/RO-RJY/EE-N/57-2000/62 dated: 20-04-2000 should be strictly implemented.	Complied.
(ii)	No additional land would be acquired for Stage-II of the project.	Complied.
(iii)	A stack of 70 m height should be installed with continuous stack monitoring devices.	Complied.
(iv)	NOX emission should not exceed 75 PPM.	Complied.
(v)	Withdrawal of water from Godavari river should not exceed 13,432 m <sup>3</sup> /d. Closed circuit cooling device should be provided to ensure the minimum water use in the project.	Complied. Recirculation type CW system with induced draft cooling tower provided.
(vi)	Use of naphtha should be restricted @ 500 MT/d till the company obtains full quantity of natural gas to operate the plant on 100% natural gas. An amendment to EC was made as per the MoEF order dt 13.06.2013 for use of alternate fuel HSD as top up fuel till 100% gas supply is available for the power plant.	Complied.
(vii)	Noise level should be limited to 75 dB(A) and regular maintenance of equipment is undertaken. For people working in the area of generator halls and other high noise areas, ear plugs should be provided.	Complied. The gas turbine and steam turbine are enclosed in the building and acoustic enclosures are provided to minimize noise from these machines.
(viii)	Afforestation should be undertaken in the project area in a phased manner. The green belt created should have a tree density of 1500 – 2000 per ha. The species should be suitably selected and the guidelines prepared by CPCB in this regard should also be followed.	Complied.
(ix)	Regular monitoring of the air quality should be carried out in and around power plant. The monitoring records should be properly maintained. A six monthly report with proper analysis should be submitted to this Ministry / Regional Office/CPCB/SPCB.	Complied.
(x)	All effluents generated in various plant activities should be collected in the Central Effluent Treatment Plant at Central Monitoring basin and treated to ensure adherence to specified standards of discharge.	Complied.
(xi)	Necessary permission should be obtained from the Chief Controller of Explosives before commissioning the plant.	Complied.
(xii)	Regular mock drills should be carried out for checking on-site emergency plan prepared and also to ensure changes/improvements required in onsite emergency plan.	Mock drills are being conducted on quarterly basis.
(xiii)	A half-yearly report on the status of implementation of stipulated conditions should be submitted to Ministry / Regional Office / CPCB.	Complied.
(xiv)	Adequate financial provision should be made for implementation of environmental protection measures indicating item-wise break-up. These costs should be included as a part of project cost. The funds earmarked for	Complied. Environmental protection measures i.e., Dry low NOx burners, constructions of 70m stack with CMS, Noise protection,

	environmental protection measures should not be diverted for other purpose and year-wise expenditure should be reported to the Ministry.	effluent treatment, green belt development have been included in project capital cost.
(xv)	The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned, 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 at Website of the Ministry of Environment and Forests.	Complied.
(xvi)	The project authorities should inform the Regional Office as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	Complied.
(xvii)	Full cooperation should be extended to the scientists / Officers from the Regional office of the ministry at Bangalore / the CPCB / the SPCB who would be monitoring the compliance of the environmental status. Complete set of impact assessment report and the Management Plans should be forwarded to the Regional Office for their use during monitoring.	Complied.
(xviii)	A monitoring committee should be constituted for reviewing the compliance of various safeguard measures by involving recognized local NGOs, Pollution Control Board, Institutions, Experts etc.,	Complied.
(xix)	The project proponent shall upload the status of compliance of the conditions stipulated in the environmental clearance issued vide this Ministry's letter of even no. dated 02.11.2000 in its website and updated periodically and also simultaneously send the same by email to the Regional Office of the Ministry of Environment and Forests.	Being complied.
(xx)	Criteria pollutants levels including NO <sub>x</sub> , RSPM (PM <sub>10</sub> & PM <sub>2.5</sub> ), SO <sub>x</sub> (from stack & ambient air) shall be regularly monitored and results displayed in your website and also at the main gate of the power plant.	Results are being displayed at Main gate of the plant. Displayed in the website.
(xxi)	A long term study through a reputed institution to assess the cumulative impact of the power plants on the AAQ of the area shall be undertaken. The study shall in particular assess the impact of gas emission on the chemistry of atmosphere and the impact on radiation budget. It shall be ensured that the study takes in to account the worst seasonal atmospheric conditions.	The agencies for this are being identified.
(xxii)	Mass Spectrometer based Helium detector to detect the gas leakage shall be installed.	Complied. One Gas detection system is already in place in Gas Turbine area which contains Electrochemical cells and IR analytical instruments are used for gas leak detection.
(xxiii)	Scheme for harnessing solar power within the premises of the plant (particularly at available roof tops) shall be critically examined and status of implementation shall be submitted.	Action initiated. Preliminary feasibility study is in progress.
(xxiv)	Concentration for photochemical oxidants shall be monitored along with NO <sub>x</sub> and permanent monitoring stations shall be installed at appropriate location in consultation with the Central/State Pollution Control Board.	Action initiated.

## 463 MW Jegurupadu Combined Cycle Power Project

Compliance statement of the terms and conditions stipulated by APPCB in Renewal Consent & Authorization Order No. APPCB/VSP/RJY/289/CFO/HO/2014-267 Dt.19/04/2014

### SCHEDULE-A

S.No	Terms and Conditions of Authorization	Compliance
1	The applicant shall make applications for renewal of Consent (under water and Air Acts) and Authorization under HWM Rules at least 120 days before the date of expiry of this order, along with prescribed fee under Water and Air Acts for obtaining Consent & HW authorization of the Board and detailed compliance report.	Complied with. Change in renewal period Noted
2	Any person aggrieved by an order made by the State Board under Section 25, Section 26, Section 27 of Water act, 1974 or Section 21 of Air act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Andhra Pradesh Water rules, 1976 and Air Rules 1982, to such authority (herein after referred to as the Appellate Authority) constituted under Section 28 of the Water (Prevention and control of Pollution) Act, 1974 and Section 31 of the Air(Prevention and Control of Pollution) Act, 1981.	Noted
3	The industry shall immediately submit the revised application for consent to this Board in the event of any change in the raw material used, processes employed, quality of trades effluents & quality of emissions etc.	Noted
4	a) All the fugitive emissions shall be controlled with proper measures. b) The applicant shall also install the equipment such as wind speed recorder, wind direction recorder	Noted
5	The applicant shall not change or alter either the quality or the quantity or the rate of the discharge or the route of discharge and shall not change or alter either the prescribed quality or the rate of emission without the previous written permission of the Board.	Noted
6	The applicant shall, not later than 30 days from the date of issue of this consent order, certify in writing to the board that the applicant has installed or provided for an alternative electric power source sufficient to operate all facilities installed by the applicant, to comply with the terms and conditions of this consent. In absence of alternative electric power source sufficient to operate all facilities installed by the applicant, to comply with the terms and conditions of this consent, production shall be stopped.	Complied with.
7	Any up-set condition in any plant/plants of the industry, which result in, increased effluent discharge and/or violation of standards stipulated in this order or the emissions of any Air pollutant into the environment in excess of the standards laid down by the board, occurs or is apprehended to occur due to accident, or other unforeseen act or event, the person-in-charge of the premises, from where such discharge / emission occurs or is apprehended to occur shall forthwith intimate the fact of such occurrence or the apprehension of	Noted



	such occurrence to this Board, by fax / email under intimation to the Collector and Magistrate.	
8	In case of such episodal discharge / emissions mentioned in the item 6 above, the industry should take immediate action to bring down the discharge / emission below the limits prescribed in this order.	Noted
9	A good house keeping shall be maintained both within the factory and in the premises. All hoods, pipes, valves, sewers and drains shall be leak proof. Floor washings shall be admitted into the effluent collection system only and shall not be allowed to find their way into storm drains or open areas.	A good house keeping is maintained within the plant and the premises. As per guidelines the management had taken steps to maintain leak proof from any pipes, valves and sewers etc. All buildings floor-washing drains are connected to effluent collection system.
10	a) The industry shall carryout analysis of wastewater discharge or emissions through chimneys, for the parameters mentioned in schedule-B of this order at regular intervals. b) The industry shall maintain following records to accessible to the Board, whenever required.  1. Analysis reports of wastewater / emissions. 2. Log book for operation of pollution control systems. 3. Inspection book.	As per guidelines wastewater discharge and stack emissions are being analyzed at regular intervals for the parameters mentioned in schedule – B of the consent order. Wastewater and emissions analysis reports, logbook of effluent treatment systems and inspection book are being maintained.
11	The applicant shall set up THREE Ambient Air Quality Monitoring Stations for continuous recording of relevant critical parameters mentioned in schedule-B as per the CPCB guidelines and submit monthly reports.	Three Ambient Air Quality Monitoring Stations were installed for continuous recording of relevant parameters as per the CPCB guidelines and reports are being submitted on monthly basis.
12	Separate power connection with energy meter shall be provided for the Pollution Control Equipments and record of power consumption and chemicals consumption for the operation of pollution control equipment shall be maintained separately.	A separate power connection with energy meter was provided for pollution control equipment and maintaining consumption register for chemicals and power.
13	The applicant shall comply with the directive/orders issued by the Board in this order and at all subsequent times without any negligence on his part. The applicant shall be liable for such legal action against him as per provisions of the Law/Act in case if non-compliance of any order/directive issued at any time and/or violation of the terms and conditions of this consent order.	Noted
14	The applicant shall furnish to the visiting officer and / or the Board any information regarding the construction, installation or operation of the effluent treatment system / air pollution control equipment / secured storage area of Hazardous waste and such other particulars as may be pertinent for preventing and controlling pollution.	Being Followed
15	The industry is liable to pay compensation for any environmental damage caused by it, as fixed by the Collector and District Magistrate as Civil liability.	Noted

16	All the rules & regulations notified by Ministry of Environment and Forest, Government of India in respect of management, handling, transportation and storage of hazardous chemicals and waste shall be followed.	Being followed.
17	All the rules & regulations notified by Ministry of Law and Justice, Government of India regarding Public Liability Insurance act, 1991 shall be followed.	Noted
18	The occupier shall educate the workers and nearby public of possible accidents and remedial measures.	Educating the workers through Safety training classes.
19	For any accident or spillage of hazardous wastes causing damage to the Environment, the occupier or the transporter as the case shall be held responsible.	Noted
20	In case of closure of industry, the un-used / not consumed raw materials falling under the category of Hazardous Chemical Rules, 1989 and Amendment Rules, 2003 shall be removed and sold to other units within 90 days from the date of closure to prevent any possibility of occurrence of an accident. In case the above hazardous chemicals have lost their properties originally acquired, then they shall be treated, as Hazardous Waste and they should be disposed off only to the agencies authorized by APPCB in a safe manner.	Noted
21	The occupier shall prepare / update Emergency preparedness plan for safe handling of hazardous waste from time to time and submit the same to APPCB. Emergency preparedness plan must be implemented immediately whenever there is fire, explosion or release of hazardous waste or hazardous waste constituents, which could endanger to human health or environment.	Complied With
22	Packaging, labelling and transport of hazardous waste shall be in accordance with the provisions of the rules issued by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time. The packaging and labelling shall be based on the composition and hazardous constituent of the waste, however, all Hazardous Waste containers should be provided with a general label.	Adequate precautions are being taken during transportation of the waste oils for disposal of the same to the vendors approved by APPCB.
23	The driver who transports Hazardous Waste should be well acquainted about the procedure to be followed in case of an emergency during transit. The transporter shall carry a Transport Emergency (TREM) Card (as given in the guidelines for Management and Handling of Hazardous Wastes) duly filled by the Hazardous Waste Generator.	The waste oils are being transported to the vendors approved by APPCB.
24	Containers / Container Liners of Hazardous Chemicals and Hazardous Wastes should be thoroughly detoxified before selling to APPCB authorized agencies. Proper records specific to each Hazardous Chemical / Hazardous Waste containers / Container Liners should be maintained in the following way. i. Number of containers received. ii. Date and method of detoxification iii. Name of agencies to whom containers were sold with quantities. iv. Transportation particulars.	Not applicable

25	No Hazardous Wastes shall be mixed with any other wastes nor shall be discharged to a common and other internal and external sewerage or other drainage system without prior approval of APPCB.	Complied with
26	If HDPE bags are used for storing Hazardous Wastes, it should be ensured that they are perfectly sealed mechanically or double hot sealed. If MS/HDPE bags or drums are used for storing Hazardous Wastes, these drums / bags should be ensured that they are perfectly sealed.	Not applicable
27	The person authorized shall not rent, lend, sell transfer or otherwise transport the Hazardous wastes without obtaining prior permission to the State Pollution Control Board.	Noted
28	Any unauthorized change in personnel, equipment as working condition as mentioned in the application by the person authorized shall constitute a breach of his authorization.	Noted
29	The industry shall comply with the provisions of Batteries (Management & Handling) Rules, 2001.	Complied with
30	The industry shall put up two sign boards (6x4 ft. each) at publicly visible places at the main gate. The first signboard shall provide information on specific conditions of CFO and Hazardous Waste Authorization. The second signboard shall display online data on quality and nature of hazardous chemicals being used in the plant, as well as water, air emissions and solid waste generated within the factory premises.	Complied
31	The applicant shall exhibit the consent & HW Authorization order of the Board in the factory premises at the prominent place for the information of the inspecting officers of the different departments.	Complied
32	Notwithstanding anything contained in this conditional letter or consent, The Board hereby reserves the right and power under Section 27(2) of the water (Prevention & Control of Pollution) Act, 1974 and its amendments thereof and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and its amendments thereof to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Acts by the Board.	Noted
33	The authorization issued under Hazardous Waste (Management and Handling) Rules, 1989 and its amendments thereof, shall comply with the provision of the Environment (Protection) Act, 1986.	Noted
34	The industry may explore the possibility of tapping the solar energy for their energy requirements.	Feasibility study is in progress

## Compliance Statement for APPCB'S Consent Order

Consent Order No: APPCB/VSP/RJY/289/CFO/HO/2014-267 Dt.19/04/2014

### SCHEDULE – B

#### Special Conditions:

S.No	APPCBS Terms &Condition	Status of compliance																														
1.	<b>The effluent discharged shall not contain constituents in excess of the tolerance limits mentioned below :</b>																															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Outlet</th> <th style="width: 35%;">Parameter</th> <th style="width: 50%;">Limiting Standards</th> </tr> </thead> <tbody> <tr> <td rowspan="11" style="text-align: center;">1&amp;2</td> <td>Temperature</td> <td>Not more than 5<sup>0</sup>C higher than the intake</td> </tr> <tr> <td>pH</td> <td style="text-align: right;">6.5 - 8.5</td> </tr> <tr> <td>Free Available Chlorine</td> <td style="text-align: right;">0.50 mg/l</td> </tr> <tr> <td>Suspended Solids</td> <td style="text-align: right;">100.00 mg/l</td> </tr> <tr> <td>Total Dissolved Solids</td> <td style="text-align: right;">2100.00 mg/l</td> </tr> <tr> <td>Oil &amp; Grease</td> <td style="text-align: right;">10.00 mg/l</td> </tr> <tr> <td>Copper(Total)</td> <td style="text-align: right;">1.0 mg/l</td> </tr> <tr> <td>Iron(Total)</td> <td style="text-align: right;">1.0 mg/l</td> </tr> <tr> <td>Zinc</td> <td style="text-align: right;">1.00 mg/l</td> </tr> <tr> <td>Chromium(T)</td> <td style="text-align: right;">0.20 mg/l</td> </tr> <tr> <td>Phosphate</td> <td style="text-align: right;">5.00 mg/l</td> </tr> <tr> <td>BOD</td> <td style="text-align: right;">30 mg/l</td> </tr> </tbody> </table>	Outlet	Parameter	Limiting Standards	1&2	Temperature	Not more than 5 <sup>0</sup> C higher than the intake	pH	6.5 - 8.5	Free Available Chlorine	0.50 mg/l	Suspended Solids	100.00 mg/l	Total Dissolved Solids	2100.00 mg/l	Oil & Grease	10.00 mg/l	Copper(Total)	1.0 mg/l	Iron(Total)	1.0 mg/l	Zinc	1.00 mg/l	Chromium(T)	0.20 mg/l	Phosphate	5.00 mg/l	BOD	30 mg/l	Complied, The results are within the limits		
Outlet	Parameter	Limiting Standards																														
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	Phosphate	5.00 mg/l																														
BOD	30 mg/l																															
2.	<b>The industry shall take steps to reduce water consumption to the extent possible and consumption shall NOT exceed the quantities mentioned below in KLD:</b>																															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">S.No.</th> <th style="width: 35%;">Purpose</th> <th style="width: 15%;">Phase -I</th> <th style="width: 15%;">Phase -II</th> <th style="width: 25%;">Total</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Process &amp; DM Plant</td> <td style="text-align: center;">71</td> <td style="text-align: center;">211</td> <td style="text-align: center;">282</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Cooling makeup at 100 % PLF</td> <td style="text-align: center;">6263</td> <td style="text-align: center;">8304</td> <td style="text-align: center;">14567</td> </tr> <tr> <td style="text-align: center;">3.</td> <td>Domestic</td> <td style="text-align: center;">103</td> <td style="text-align: center;">25</td> <td style="text-align: center;">128</td> </tr> <tr> <td style="text-align: center;">4.</td> <td>Gardening</td> <td style="text-align: center;">186</td> <td style="text-align: center;">NIL</td> <td style="text-align: center;">186</td> </tr> <tr> <td></td> <td><b>Total</b></td> <td style="text-align: center;"><b>6655</b></td> <td style="text-align: center;"><b>8540</b></td> <td style="text-align: center;"><b>15195</b></td> </tr> </tbody> </table> <p>The industry shall maintain separate water meters and for the above areas separately and maintain records</p>	S.No.	Purpose	Phase -I	Phase -II	Total	1.	Process & DM Plant	71	211	282	2.	Cooling makeup at 100 % PLF	6263	8304	14567	3.	Domestic	103	25	128	4.	Gardening	186	NIL	186		<b>Total</b>	<b>6655</b>	<b>8540</b>	<b>15195</b>	Complied, results are within limits
S.No.	Purpose	Phase -I	Phase -II	Total																												
1.	Process & DM Plant	71	211	282																												
2.	Cooling makeup at 100 % PLF	6263	8304	14567																												
3.	Domestic	103	25	128																												
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	<b>Total</b>	<b>6655</b>	<b>8540</b>	<b>15195</b>																												
3.	The industry shall file the water cess returns in Form-I as required under section (5) of Water (Prevention and Control of Pollution) Cess Act,1977 on or before the 5 <sup>th</sup> of every calendar month, showing the quantity of water consumed in the previous month along with water meter readings. The industry shall remit water cess as per the assessment orders as and when issued by Board.	Complied																														
4	The industry shall provide separate water meters with necessary pipeline for assessing the quantity of water used for each of the purpose mentioned below. <ol style="list-style-type: none"> <li>a. Industrial cooling, boiler feed.</li> <li>b. Domestic purpose</li> <li>c. Processing, whereby water gets polluted and pollutants are easily biodegradable.</li> <li>d. Processing, whereby water gets polluted and pollutants are not easily biodegradable.</li> </ol>	a, b and c are Complied. d not applicable.																														
5	The industry shall install on-line meters with integrated facility for measuring water consumption for different applications.	Complied																														
6	Online meters for temperature measurements and other parameters shall be installed at outlets of treated effluents.	Noted																														

<b>The emissions shall not contain constituents in excess of the prescribed limits mentioned below:</b>				
<b>Chimney No.</b>	<b>Parameter</b>	<b>Emission Standards</b>		
7.	1.	Particulate matter	115 mg/NM <sup>3</sup>	Complied, The results are within limits
		NO <sub>x</sub>	75 ppm	
	2.	Particulate matter	115 mg/NM <sup>3</sup>	
		NO <sub>x</sub>	75 ppm	
	3.	Particulate matter	115 mg/NM <sup>3</sup>	
		NO <sub>x</sub>	75 ppm	
	4.	Particulate matter	115 mg/NM <sup>3</sup>	
		NO <sub>x</sub>	75 ppm	
8	The industry shall comply with emission limits for DG sets of capacity up to 800 KW as per the Notification G.S.R.520 (E), dated 01.07.2003 under the Environment (Protection) Amendment rules, 2003 and G.S.R. 448 (E), dated 12.07.2004 under the Environment (Protection) second Amendment Rules,2004. In case of DG sets of capacity more than 800 KW shall comply with emission limits as per the Notification G.S.R.489 (E), dated 09.07.2002 at serial no.96, under the Environment (Protection )Act,1986		Noted	
9.	The industry should comply with ambient air quality standards of PM <sub>10</sub> (Particulate Matter size less than 10ug) – 100 ug/m <sup>3</sup> ; PM <sub>2.5</sub> (Particulate Matter size less than 2.5ug) – 60 ug/m <sup>3</sup> ; SO <sub>2</sub> – 80 ug/m <sup>3</sup> ; NO <sub>x</sub> – 80 ug/m <sup>3</sup> outside the factory premises at the periphery of the industry. Standards for other parameters as mentioned in the National Ambient Air Quality standards CPCB notification No.B-29016/20/90/PCI-I, dated 18.11.2009 <b>Noise Levels :</b> Day time ( 6 AM to 10 PM ) - 75 dB(A) Night time (10 PM to 6 AM ) - 70 dB(A)		Complied, the results are within the limits	
10.	The industry shall not increase the capacity beyond the permitted capacity mentioned in this order, without obtaining CFE & CFO of the Board.		Noted	
11	The industry shall operate STP for disposal of effluents and report the compliance to RO, Kakinada.		Complied	
12.	The industry shall restrict the withdrawal of water from river Godavari to 13432 M <sup>3</sup> /day. The industry shall submit the details of water consumption and waste water generation to RO, Kakinada every three months.		Complied	
13.	The industry shall submit the stack and Ambient Air Quality Monitoring reports to RO, Kakinada every three months.		Complied	
14	The industry shall submit the details of the calibration and frequency of Calibration of online stack monitoring equipment to the APPCB, R.O., Kakinada.		Complied	
15	The industry shall ensure that regular mock drills shall be carried out for checking on-site emergency plan prepared and also to ensure / improvements required in the plant.		Complied. Mock drills are being conducted on quarterly basis.	
16	The industry shall submit monthly monitoring reports to Board Office under copies to Regional Office and Zonal Office, Visakhapatnam		Complied	
17	The industry shall take all safety measures and provide fire fighting equipment in the plant.		Complied. Adequate firefighting equipment is provided.	

18	The industry shall maintain good house keeping within the plant premises.	Complied. Following good house keeping practices and regular Housekeeping committee inspection are being carrying out.
19	Green belt of adequate width and density shall be maintained along the boundary of the industry with minimum area of 33% of total area.	Complied
20	The industry shall take measures to meet the total water requirement as stipulated in E.C.	Noted
21	The industry shall comply with the directions issued by the Board from time to time.	Noted
22	The applicant shall submit Environment statement in Form V before 30 <sup>th</sup> September of every year as per Rule No.14 of E (P) Rules, 1986 & amendments.	Complied

## SCHEDULE – C

[see rule(4)]

### (CONDITIONS OF AUTHORISATION FOR OCCUPIER OR OPERATOR HANDLING HAZARDOUS WASTES)

S.No	APPCBS Terms &Condition	Status of compliance
1.	The industry shall give top priority for waste minimization and cleaner production practices.	Noted
2.	The industry shall not store hazardous waste for more than 90 days as per the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 and amendments therefore.	Complied
3.	The industry shall store Used / Waste Oil and Used Lead Acid Batteries in a secured way in their premises till its disposal.	Complied
4.	The industry shall not dispose Waste Oils to the traders and same shall be disposed to the authorized Re-processors / Recyclers.	Complied
5.	The industry shall dispose Used Lead Acid Batteries to the manufacturers / dealers on buyback basis.	Complied
6	The industry shall not dispose spent solvents/ mixed spent solvents to the traders	Noted
7	The industry shall take necessary practical steps to prevention of oil spillages and carry over of Oil from the premises.	Being Followed
8.	The industry shall maintain 6 copy manifest system for transportation of waste generated and a copy shall be submitted to Board Office and concerned Regional Office.	Noted and complied
9	The industry shall maintain good house keeping & maintain proper records for Hazardous Wastes stated in authorization.	Being Followed
10	The industry shall maintain proper records for Hazardous wastes stated in Authorization in FORM-3 i.e., quantity of incinerated waste, land disposal waste, recyclable waste etc., and file annual returns in Form-4 as per rule 22(2) of the Hazardous wastes (Management, Handling & Trans boundary Movement) Rules, 2008 and amendments thereof.	Complied
11.	The industry shall submit the condition wise compliance report of the conditions stipulated in Schedule A, B and C of this Order on half yearly basis to Board Office, Hyderabad and concerned Regional Office.	Noted
12	The industry shall dispose of e- waste to the authorized recyclers only	Noted and will be complied

**GVK JEGURUPADU COMBINED CYCLE POWER PLANT**  
235 MW (PHASE-I) & 228 MW (PHASE-II)  
JEGURUPADU VILLAGE  
EAST GODAVARI DIST  
ANDHRA PRADESH

**ENVIRONMENTAL MONITORING REPORTS**

**(From April 2016-September 2016)**



## TREATED EFFLUENT ANALYSIS

For the period of April 2016-September 2016 for Phase I & II

### Phase - I

Month	pH	SS ppm	TDS ppm	FRC ppm	O&G ppm	PO4-3 ppm	Iron ppm	Copper ppm	Zinc ppm	Total cr ppm	Cr+6	B.O.D
April 2016	7.87	35	955	0.15	BDL	1.2	0.43	BDL	0.055	BDL	BDL	10.15
May2016	7.9	36.6	970	0.1	BDL	1.15	0.44	BDL	0.053	BDL	BDL	10.06
June 2016	7.87	35.5	965	0.12	BDL	1.17	0.42	BDL	0.05	BDL	BDL	10.12
July 2016	7.87	35.5	965	0.15	BDL	1.15	0.42	BDL	0.045	BDL	BDL	10.1
August 2016	7.9	35.5	962	0.10	BDL	1.22	0.42	BDL	0.05	BDL	BDL	10.1
September 2016	7.87	35.0	965	0.13	BDL	1.20	0.42	BDL	0.05	BDL	BDL	10.1

### Phase - II

Month	pH	SS ppm	TDS ppm	FRC ppm	O&G ppm	PO4-3 ppm	Iron ppm	Copper ppm	Zinc ppm	Total cr ppm	Cr+6	B.O.D
April 2016	-	-	-	--	-	-	-	-	-	-	-	-
May2016	-	-	-	--	-	-	-	-	-	-	-	-
June 2016	-	-	-	--	-	-	-	-	-	-	-	-
July 2016	-	-	-	--	-	-	-	-	-	-	-	-
August 2016	-	-	-	--	-	-	-	-	-	-	-	-
September 2016	7.85	35	970	0.15	BDL	1.25	0.43	BDL	0.055	BDL	BDL	10.15

**Phase-II:** Plant under shut down due to nil gas supply to the plant  
 Plant operated with E-Bid RLNG Gas from 16<sup>th</sup> September to 30<sup>th</sup> September

## AMBIENTY AIR QUALITY LOCATION WISE

For the period of April 2016-September 2016

MONTH	SOUTH EAST(Colony)				SOUTH WEST(BPCL)				NORTH WEST(Gail)			
	PM10 (ug/m3)	PM2.5 (ug/m3)	SOX (ug/m3)	NOX (ug/m3)	PM10 (ug/m3)	PM2.5 (ug/m3)	SOX (ug/m3)	NOX (ug/m3)	PM10 (ug/m3)	PM2.5 (ug/m3)	SOX (ug/m3)	NOX (ug/m3)
April 2016	34.8	22.5	11.8	15.5	38.3	26.5	11.4	14.8	38.0	22.2	11.4	15.7
May2016	40.0	25.7	11.7	16.0	41.6	24.7	11.5	14.7	40.4	24.1	12.1	15.9
June 2016	41.3	28.6	11.5	15.1	40.1	23.1	12.0	15.7	39.8	24.4	11.5	15.4
July 2016	46.4	20.4	11.2	14.4	43.3	18.5	11.2	14.9	43.4	17.5	11.6	15.1
August 2016	43.8	23.8	11.2	13.6	43.6	21.1	12.6	14.4	42.7	22.2	11.4	14.7
September 2016	44.0	23.7	11.7	12.8	45.3	21.2	13.3	14.5	43.6	22.4	12.0	13.4

MONTH	NORTH EAST(Temple)				NORTH(Transform)				SOUTH (Fire Station)			
	PM10 (ug/m3)	PM2.5 (ug/m3)	SOX (ug/m3)	NOX (ug/m3)	PM10 (ug/m3)	PM2.5 (ug/m3)	SOX (ug/m3)	NOX (ug/m3)	PM10 (ug/m3)	PM2.5 (ug/m3)	SOX (ug/m3)	NOX (ug/m3)
April 2016	37.4	24.4	11.5	15.4	36.7	25.2	11.4	15.1	39.6	26.9	11.5	15.9
May2016	41.9	30.4	11.8	15.7	42.9	30.2	12.2	15.6	42.0	26.7	12.1	16.2
June 2016	40.6	23.2	11.2	14.3	43.4	26.9	12.1	15.7	42.2	27.5	11.6	15.0
July 2016	44.1	20.9	11.1	14.5	47.4	21.0	12.3	14.7	47.9	22.2	11.8	15.6
August 2016	40.7	19.6	11.2	13.9	46.6	23.0	12.3	14.2	49.9	26.3	13.7	16.1
September 2016	41.4	20.8	11.3	12.7	45.6	22.6	12.4	13.4	50.9	26.4	14.5	15.9

## STACK EMISSIONS

For the period of April 2016-September 2016 for Phase I & II

### Phase-I

Units: PPM at 15% Oxygen

Month	HRSG-1 NOx ppm	HRSG-2 NOx ppm	HRSG-3 NOx ppm
April 2016	64	Under shutdown	65
May2016	52	55	Under shutdown
June 2016	56	58	53
July 2016	58	60	Under shutdown
August 2016	54	56	58
September 2016	55	57	59

### Phase II

Units: PPM at 15% oxygen

Month	HRSG NOx ppm
April 2016	---
May2016	---
June 2016	---
July 2016	---
August 2016	--
September 2016	41.5

**Phase-II:** Plant under shut down due to nil gas supply to the plant

Phase II plant operated with E-Bid RLNG Gas from 16<sup>th</sup> September to 30<sup>th</sup> September

### Permissible Limits as per CPCB Maximum Level at 15% Oxygen

NOx Emission Limit - 75PPM

## WEATHER DATA

For the period of April 2016-September 2016

S. No	Month & year	Mean daily average of Temp.			Mean daily average of R. Humidity			Total month rain fall cm
		Maxi	Min	Ave.	Maxi	Min	Ave.	
1	April 2016	33.90	30.86	32.15	71.37	61.51	67.29	Nil
2	May2016	45.40	22.97	33.00	96.66	22.61	64.73	14.35
3	June 2016	43.03	24.47	25.57	99.72	28.84	52.69	10.30
4	July 2016	30.37	24.12	29.40	99.78	43.84	80.35	06.10
5	August 2016	33.90	26.92	29.96	90.21	59.73	76.26	06.90
6	September 2016	34.98	23.99	29.49	99.81	48.41	74.11	14.30

## NOISE LEVELS

For the period of April 2016-September 2016 for Phase I & II

### PHASE - I

Month & year	GT-1	GT-2	GT-3	ST	120M From Turbine
April 2016	79.3	Under shutdown	79.0	79.2	50.4
May2016	79.2	79.1	Under shutdown	79.1	50.3
June 2016	79.1	79	79.4	78.9	50.2
July 2016	78.7	78.6	Under shutdown	78.6	50.1
August 2016	79.6	78.4	78.9	78.6	50.6
September 2016	79.6	78.4	78.9	78.6	50.6

### PHASE - II

Month & year	GT	ST	120M From Turbine
April 2016	-	-	-
May2016	-	-	-
June 2016	-	-	-
July 2016	-	-	-
August 2016	-	-	-
September 2016	78.4	78.3	50.3

**Phase – II:** Plant under shut down due to no gas supply to the plant  
Phase II plant operated with E-Bid RLNG Gas from 16<sup>th</sup> September to 30<sup>th</sup> September

**NOTE - SPOT NOISE LEVELS AT 1 METER DISTANCE FROM TURBINE IN db. (A)**

**MAXIMUM PERMISSIBLE NOISE LEVELS AS PER CPCB FOR COMBINED CYCLE UNITS:**

90db (A) 1 Meter Distance from the Turbine  
60db (A) 120 Meter Distance from the Turbine

# RAW WATER CONSUMPTION AND WASTE WATER GENERATION

For the period of April 2016-September 2016 for Phase I & II

## Phase - I

Month	Raw Water Consumption(m3)	Waste Water Generation (m3)	Domestic Effluent Treated (m3)
April 2016	45796	8952	70
May2016	83079	11985	67
June 2016	124608	17277	70
July 2016	140787	22078	75
August 2016	194828	38030	83
September 2016	184868	36820	207

## Phase II:

Month	Raw Water Consumption(m3)	Waste Water Generation (m3)
April 2016	-	-
May2016	-	-
June 2016	-	-
July 2016	-	-
August 2016	-	-
September 2016	79936	12816

**Phase – II:** Plant under shut down due to no gas supply to the plant.

Phase II plant operated with E-Bid RLNG Gas from 16<sup>th</sup> September to 30<sup>th</sup> September