

OPG POWER GENERATION PVT. LTD.

CIN : U40109TN2005PTC055442

28-06-2016

OPGPG: EHS /2016-17/457

**The Joint Director**

Govt. of India  
Ministry of Environment and Forests  
Regional Office (Southern Zone)  
Kendriya Sadan, 4<sup>th</sup> Floor, E & F Wings  
Koramangala,  
Bangalore 560 034

Sir,

**Sub: Compliance Status, Bore Well Water Analysis and Ambient Air Quality Reports –  
Half Yearly Return – Reg.**

**Period: October 2015 to March 2016**

Ref: No.J-13012/111/2009-IA.II (T)

Ref: MoEF. Lr. No. J-13011/81/2007-IA.II (T), Dated: 31.03.2008

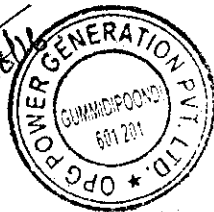
We herewith submit the half yearly Bore well water analysis report, Ambient Air Quality Monitoring report, Piezometer reading report and Compliance status report for the period from October 2015 to March 2016.

Thanking you

Yours faithfully,

For OPG POWER GENERATION PRIVATE LIMITED

G.Mohan  
EHS - Manager



Encl.:

1. Environmental Clearance No.J-13012/111/2009-IA.II (T) General Conditions – Compliance status as on 31<sup>st</sup> March 2016

Page 1 of 2

New No. 6, Sardar Patel Road, Guindy, Chennai - 600 032.  
Phone : +91 44 4291 1222, Fax : +91 44 4291 1209

2. Environmental Clearance No.J-13012/111/2009-IA.II (T) Special Conditions – Compliance status as on 31<sup>st</sup> March 2016
3. Environmental Clearance No.J-13012/111/2009-IA.II (T) Amendment for the augmentation from 160MW to 180MW Conditions – Compliance status as on 31<sup>st</sup> March 2016
4. MoEF. Lr. No. J-13011/81/2007-IA.II (T), Dated: 31.03.2008 Specific Conditions – Compliance status as on 31<sup>st</sup> March 2016.
5. Monthly Ash utilization Report – October 2015 to March 2016.
6. Bore well water Analysis report
7. TNPCB analysis reports for Sewage effluent, Bore well water, Industrial effluent (Recycled)
8. CSR Activity report
9. Rain Water Harvesting report
10. Third party analysis reports on AAQ and Stack
11. Report on control of Spontaneous combustion of coal
12. Fly Ash customer list
13. LDO storage License copy
14. Copy of Annual Environmental Statement for the Financial Year 2015-16 in form 5

CC.: The District Environmental Engineer, Thiruvallore District without Encl.



Environmental Clearance No: J-13012/111/2009-IA.II (T)

A- General Condition:

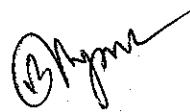
Compliance Status Update

S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
1.	Adequate safety measures shall be provided in the plant area to check /minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	Documents posted in our official website. The points are well taken care and we are having closed storage area with adequate compaction and spraying facility to minimize spontaneous combustion of coal.
2.	Storage facilities for auxiliary liquid fuel such as LDO and / HFO /LSHS shall be made in the plant area in consultation with Departments of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5% Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	We are using only LDO procuring from IOC. The Storage License copy is enclosed.
3.	Regular monitoring of ground water level shall be carried out by establishing a network of existing wells and constructing new piezometers Monitoring around the ash pond area shall be carried out particularly for heavy metals ( Hg , Cr , As , Pb) and records maintained and submitted to the Regional Office of this Ministry The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Regular monitoring of ground water is being carried out through TNPCB and the reports are enclosed.
4.	Monitoring surface water quantity and quality shall also be regularly conducted and records maintained. The monitored data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of flow of ground water and records maintained.  Monitoring for heavy metals in ground water shall be undertaken.	We are neither using any surface water for the unit nor discharging any liquid effluent from the plant.  Bore well water analyzing reports are enclosed. The result reveals that the ground water quality is improving.


S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
5.	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	Both the First Aid and Sanitation arrangement have been made for drivers, contract workers.
6.	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 75 dBA. For people working in the high noise area, requisite personal protective equipment like earplugs, ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non-noisy/less noisy areas.	<p>The followings are the measures taken to reduce the noise level</p> <p>All the noise generating equipment's were installed with silencers/anti-vibrating pads</p> <p>Proper PPE's are issued to the concerned and enforcing to wear.</p> <p>Audiometric and health checkup records are maintained in standard forms.</p>
7.	Regular monitoring of ambient air ground level concentration of SO <sub>2</sub> , NO <sub>x</sub> , PM 2.5 & PM 10 and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data shall also be put on the website of the company.	<p>2 AAQ monitoring stations were installed and the data is uploaded to the Care Air Centre.</p> <p>Annual AAQ monitoring by TNPCB or Board's approved third party is being carried out and reports are submitted to TNPCB.</p> <p>Copy of the report is enclosed.</p>
8.	Provision shall be made for the housing of construction labor (as applicable) within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	100 rooms were constructed for construction labor inside the premises with basic amenities.



S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
9.	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project , one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter , informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board /Committee and may also be seen at Website of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> .	Documents posted in our official website. Copy enclosed for ref.
10.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat , Zila Parisad / Municipal Corporation , urban local Body and the Local NGO , if any , from whom suggestions /representations ,if any , received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	The same has been submitted to the concerned panchayat.
11.	An Environment Cell shall be created at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the Cell shall directly report to the head of the organization.	An Environment Cell with the reporting To President - Operations is being functional.
12.	The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM , RSPM (PM2.5 & PM 10), SO2 , NOx (ambient levels as well as stack emissions )shall be displayed at a convenient location near the main gate of the company in the public domain.	The Stack emission and AAQ results are uploaded in the web site and being displayed at the gate as per guideline.



S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
13.	The environment statement for each financial year ending 31 <sup>st</sup> March in Form V as in mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of clearance conditions and shall also be sent to the respective Regional Officers of the Ministry by e- mail.	Form V is being submitted regularly to the Tamil Nadu Pollution Control Board.  Latest Copy is enclosed.
14.	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Regional Ministry of Environment and Forests, its Bangalore Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of the compliance of the environment of the environmental clearance conditions of their website and update the same periodically and simultaneously send the same by e- mail to the Regional Office, Ministry of Environment and Forests.	A half yearly report which comprises of the following is being sent to the Regional Ministry Office-  1. AAQ results 2. Ground water analysis results 3. Noise level results 4. Ash disposal details
15.	Regional Office of the Ministry of Environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental impact Assessment Report and Environmental Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring .Project proponent will up – load the compliance status in their website and up-date the same from time to time at least six monthly basis. Criteria pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.	The Stack emitting levels are being displayed at the main gate and the reports are being submitted to TNPCB/MOEF as per directions.



S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
16.	Separate funds shall be allocated for implementation of environmental protection measures along with item – wise break up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for another purposes and year –wise expenditure should be reported to the Ministry.	The guidelines and directions are strictly followed.  The expenditure done in this review period of Apr 2015 to Oct 2015 is Rs. 37.11 lakhs.
17.	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	The financial closure details for the year 2014-2015 have been submitted to the ministry.
18.	Full cooperation shall be extended to the Scientists /Officers from the Ministry /regional Office of the Ministry of Bangalore / CPCB / SPCB who would be monitoring the compliance of environmental status	The guidelines and instructions are being followed.



### PART- III

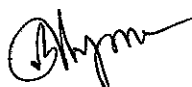
**Subject: - Environmental Clearance – 2 x77MW reg.**

**Reference: - MoEF. Lr. No. J-13011/81/2007-IA.II(T), Dated: 31.03.2008**

**A. SPECIFIC CONDITION:**

**Compliance Status Update**

S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> march 2016
i.	The total land requirement for the project shall be restricted to 79.105 acres.	The land area utilized for power plant is 73.435 acres.
ii.	Sulphur and ash contents in the coal to be used in the project shall not exceed 1.2% and 15% respectively.	The Indonesian coal used in this plant is having a maximum of 0.3% Sulphur and 10% Ash respectively.
iii.	Two stacks with continuous online monitoring equipments for SO <sub>2</sub> , NO <sub>x</sub> and particulate matter shall be provided. The height of the stacks shall be as per the standards prescribed under the Environment (protection) Rules in this regards or 140 m whichever is more. Exit velocity of flue gases shall not be less than 20.14 m/sec.	1-Common stack with online continuous monitoring system for SO <sub>2</sub> , NO <sub>x</sub> and SPM was installed. The height of the chimney is 140m and the exit velocity of flue gases is more than 20.14 m/s, which is meeting the requirement of the said Rules. . The online stack monitor has been linked with TNPCB CARE AIR centre for real time data transfer, LED display for stack emission data has been fixed in the main gate of the plant.
iv.	High efficiency Electrostatic Precipitator (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm <sup>3</sup> .	1. 99.9% Efficiency ESP has been installed to ensure the PM level is below 50 mg/Nm <sup>3</sup> . 2. Bag filters are installed in all the transfer towers of Coal. 3. Online data for SO <sub>x</sub> /NO <sub>x</sub> /SPM is being uploaded to TNPCB CARE AIR center
v.	Coal transportation will be done by rail up to Gummidipoondi Railway station and thereafter by road.	Coal will be transported from Chennai port to Gummidipoondi by Road since the rail transport was not feasible by railway. Clearance given by MoEF at the 54th meeting based on railways feedback.
vi.	Fly ash shall be collected in dry form and storage facility (silos) shall be provided.100 % fly ash utilization shall be ensured from day one. Unutilized bottom ash shall be disposed off in the ash pond in conventional slurry mode.	Separate Silos are provided for fly ash and bottom ash. The fly ash and bottom ash are collected in dry form and are entirely used in cement plants and brick making plants respectively. The reports are enclosed.





S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
vii.	Ash pond shall be lined with LDPE lining. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	Ash dyke was provided with three layers of LPDE lining.  100% ash is getting utilised in Cement Plants/Brick making plants. The reports are enclosed.
viii.	Adequate dust extraction system such as cyclones / bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	Yes water sprinkler / and 11 Bag filters at all transfer points have been provided in the coal storage /handling area to control the fugitive emission.
ix.	Water requirement shall not exceed 4.3m <sup>3</sup> /hr.	Clearance obtained from TNPCB for using ground water and the monthly reports are being submitted. Complied with the condition.

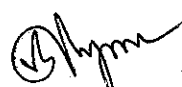
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**EC Conditions:**


**J-13012/111/2009-IA.II (T)**

**Amendment for the augmentation from 160 to 180 MW**

		<b>Compliance Status Update</b>
<b>S. No.</b>	<b>Stipulated Conditions</b>	<b>Compliance Status As on 31<sup>th</sup> March 2016</b>
1.	The matter for transportation of coal by rail shall be expedited. The progress made in this regard shall be submitted to the Ministry and its R.O from time to time	The detailed report from railways was submitted to the Ministry. The approval for the railway siding and the rail line up the plant includes the Rail over Road is in place. The land acquisition is in progress.
2.	A long term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute. Thereafter, mechanism for an in-built continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.	The detailed Coal and Ash analysis are being carried out by third party. Report copy is appended..
3.	Harnessing solar power within the premises of the plant particularly at available roof tops shall be undertaken and status of implementation shall be submitted periodically to the Regional Office of the Ministry.	Conversion of street lights to LED lamps is in progress. Conversion to solar base study and implementation is in progress.
4.	Fugitive emissions shall be controlled to prevent impact on agricultural or non- agricultural land.	Fogging and dust extraction systems are installed at all the probable locations.
5.	Fly ash shall not be used for agricultural purpose. No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media such that no leachate shall take place at any point of time. In case, the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained by the State Pollution Control Board and implementation done in close co-ordination with the State Pollution Control Board.	Noted and complied with.  100% Fly Ash and Bottom Ash is being utilised in Cement plants/Brick making plants and road projects. The report is annexed.



S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
6.	Green belt shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.	Noted and complied with.  30% green belt coverage as per direction was completed and nurturing is in progress..
7.	The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.	Environment Management System with Corporate is in place.  The plant is certified for ISO 14001 Environment Management System and OHSAS 18001 Occupational Health and Safety management System.

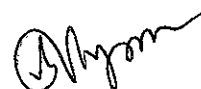


Environmental Clearance No: J-13012/111/2009-IA.II (T)

A- Special Condition:

Compliance Status Update

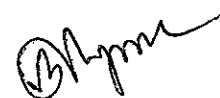
S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
1.	Vision document specifying prospective plan for the site shall be formulated and submitted to the Ministry within six month	Documents posted in our official website
2.	The project proponent shall take up the matter for transportation of coal by rail with the Railways. Progress made in this regard shall be submitted to the Registration Office of the Ministry from time to time.	Documents posted in our official website
3.	High Efficiency Electrostatic Precipitators (ESPS) Shall be installed to ensure that particulate emission does not exceed 50 mg/Nm <sup>3</sup> .  Adequate dust extraction system such as cyclones/ bag filters and water spray system in dusty areas such as cyclones/ bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	99.9% Efficiency ESP has Been installed to ensure the PM level below 50 mg/Nm <sup>3</sup> .  Bag filters are installed In all the transfer towers to control dust emission.  Online data for SO <sub>x</sub> /NO <sub>x</sub> /SPM is being uploaded to TNPCB website.
4.	Sulphur and ash contents in the coal to be used in the project shall not exceed 0.8% and 25% respectively at any given time. In case of variation of coal quality at any point of time fresh reference shall be made to MoEF for suitable amendments to environmental clearance condition wherever necessary.	We are importing coal from Indonesia which has the maximum sulphur % of 0.15 and indigenous coal is having the maximum sulphur % of 0.4.  We are ensuring that both the Sulphur and Ash content shall not exceed the prescribed norms. Documents posted in our official website



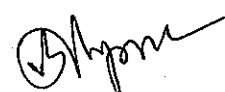
S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
5.	Stacks of 100 m and 120 m height respectively shall be installed and provided with continuous online monitoring equipment for SO <sub>x</sub> , NO <sub>x</sub> and PM <sub>2.5</sub> and PM 10. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack may also be monitored on periodic basis.	Stacks of 100m, 120m height respectively has been installed. Continuous online monitoring equipment for 1x80 MW and 1x180MW was installed and the data is being uploaded to TNPCB website.. Exit velocity is maintained always above 22 m/s.
6.	Existing de-generated water bodies (if any) in the study area shall be regenerated at the project proponents expenses in consultation with the state Govt.	We have conducted a Hydrogeological study of our own with a third party. Their recommendations are being implemented.
7.	Water requirement for running the plant to begin with shall be met from ground water after obtaining approval of the competent authority. However, the project proponent shall use harvested rain water in the long run. Air cooled condenser shall be installed for condensate cooling.	Ground water approval has been Obtained from SGWB for quantum of 540 & 1000 KLD. Harvested rainwater is mainly utilised for the process and Air cooled condensers are installed as per instruction.
8.	Hydro-geological status (quality and quantity) of ground water shall be reviewed annually from and institute / organization of repute to assess impact of surface water and ground regime (especially around ash dyke). In case and deterioration is observed specific mitigation measures shall be undertaken and reports / data of water quality monitored regulation and maintained shall be submitted to the Regional Office of the ministry.	The reports are posted in our official website. There is no deterioration in the ground water quality and the results are annexed.
9.	Source of water for meeting the requirement during lean season shall be specified and submitted to the Regional office of the ministry within three months.	Document posted in our official website. Harvested rainwater is used during the lean period.



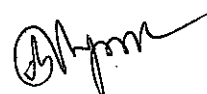
S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
10.	No water bodies (including natural drainage system in the area shall be disturbed due to activities associated with the setting up / operation of the power plant.	The natural drain of the plant is from south to north which we have not disturbed.  Storm water drains with infiltration wells have been made in the plant to enrich the ground water table in the plant without affecting the natural drain.
11.	A well designed rainwater harvesting shall be put in place before commissioning of the plant.  Central Groundwater Authority / Boards shall be consulted for finalization of appropriate rainwater harvesting technology / design within a period of three months from the date of this clearance and details shall be furnished.	A detailed study was made and the report was posted in our official website.  The recommendations are being implemented.
12.	The treated effluents conforming to the prescribed standards only shall be recirculated and reused within the plant.  Arrangement shall be made that effluents and storm water do not get mixed.  A sewage treatment plant shall be provided (as applicable) and the treated Sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt / plantation.	Noted and being ensured. TNPCB is also collecting surprise checks and collecting samples. The reports are annexed.  A clear demarcation has been made to avoid the mixing of effluent water with storm water in design itself.  Sewage treatment plant is in place and the treated water is being used in our green belt.
13.	Additional soil for levelling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	Noted and complied with.
14.	Utilisation of 100% Fly ash generated shall be made from day one of commissioning of the plant. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	100% Ash utilisation is ensured as per condition from day 1. The ash utilization details are annexed.




S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
15.	<p>Fly ash shall be collected in dry form and storage facility (silos) shall be provided.</p> <p>Unutilized fly ash shall be disposed off in the ash pond in the form of slurry form. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.</p>	<p>Separate silos are provided for Fly ash and bottom ash with adequate capacity.</p> <p>100% Ash is being utilized. The ash utilization and the analysis reports are annexed.</p> <p>No ash is dumped at any point of time.</p>
16.	<p>Ash pond (if any) shall be lined with HDP / LDPE lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.</p>	<p>Noted and complied with.</p> <p>Ash pond with proper 3 layer HDPE/LDPE lining has been made to ensure no leachate.</p> <p>The monitoring well water reports are annexed.</p>
17.	<p>Green Belt consisting of 3 tiers of plantations of native species around plant and at least 30 m width shall be raised. Tree density shall not less than 2500 per ha with survival rate not less than 80%.</p>	<p>More than 33% area is covered by green belt as per the condition.</p> <p>District Forest Officers are helping in selection of the species, nurturing and enhancement.</p>
18.	<p>The project proponent shall also adequately contribute in the development of the neighbouring villages. Special package with implementation schedule for providing fluoride free potable drinking water supplying the nearby village and schools shall be undertaken in a time bound manner.</p>	<p>Document is posted in our official website</p>
19.	<p>An amount of Rs. 4.8 Crores shall be earmarked as one time capital cost for CSR Programme.</p> <p>Subsequently a recurring expenditure of Rs. 0.96 Crores per annum till the operation of the plant shall be activities to be undertaken shall be submitted within one month along with road map for implementation.</p>	<p>Noted and complied with.</p> <p>Document is posted in our official website</p>



S. No.	Stipulated Conditions	Compliance Status As on 31 <sup>st</sup> March 2016
20.	While identifying CSR activities it shall be ensured that need based assessment for the nearby villages within study area shall be conducted to study economic measures with action plan which can help in upliftment of poor section of society. Income generating projects consistent with the traditional skills of the people shall be undertaken. Development of fodder farm, fruit bearing orchards vocational training etc. can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. Vocational training programme for possible self-employment and jobs shall be imparted to identify villagers free of cost.	Noted and complied with. Rotary club has been Invited to study the need base assessment for the nearby community. Document is posted in our official website
21.	It shall be ensured that in - built monitoring mechanism for the schemes identified is in place and annual social audit shall be got done from the nearest government institute of repute in the region the project proponent shall also submit the status of implementation of the scheme from time to time.	Noted and complied with. Document is posted in our official website.





	<b>OPG Power Generation Pvt Ltd., 2 x 77, 1 x 80, 1 x 180 MW TPP</b>	<b>Doc No: OPGPG/EHS / 01</b>			
<b>Doc title</b>	<b>Vision Document</b>	<b>Rev No.</b>	<b>1</b>	<b>Rev Dt.</b>	<b>04.04.2016</b>

### **About OPG:**

OPG Power owns manages and develops power generation plants in india.As the land scape of the power sectors in India continue to evolve , OPG has been able to play an increasing and effective role in the rapid industrialisation by meeting the power requirements of its customers in Tamil Nadu.

Capacity is being added in OPG Power Generation Private Limited – Gummudipoondi.

OPG Power already catering power to HT industrial and commercial consumers within Tamil nadu in terms of energy, demand as well as providing unrestricted power during peak hours and meeting the power shortfall of its customers.

OPG Power is one of the pioneers in the development of the Group captive Power plant model whereby generators are able to supply assured power to corporate and Industrial customers.

Our Capacity of plant at Gummudipoondi – Totalling of 414 MW.

1. 77 MW – Under Operational Since April 2010.
2. 77 MW - Under Operational Since 2012.
3. 80 MW – Under Operational Since 2013
4. 180 MW – Under Operational Since 2015


### **Our Mission:**

OPG's mission is to provide Reliable, Uninterrupted and Unrestricted power at competitive prices to HT Industrial and commercial consumers.

### **Our Vision:**

OPG's vision is to operate as an efficient, low cost producer maintaining the highest technical standards as well as well within the norms prescribed by environmental regulations.

*B. N. M.*

	OPG Power Generation Pvt Ltd., 2 x 77, 1 x 80, 1 x 180 MW TPP	Doc No: OPGPG/EHS / 01			
Doc title	Vision Document	Rev No.	1	Rev Dt.	04.04.2016

### Stack Monitoring system:

- Unit 1&2, 3 and 4 are connected with 140m, 100m and 120m height stack respectively to minimise the stack emission impact.
- Each unit is connected with high efficiency Electro Static Precipitators (ESP) to control the particulate emissions.
- The Stack SPM, SOx and NOx are continuously measured by online meters and are directly connected to Care Air Centre through SAMWI Software.
- LED Display has been fixed at our Main gate, to display the level of Stack emissions.

### Water system:

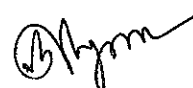
- The water required for the power plant is drawn from the bore wells located in the plant premises. Permission was obtained in two stages from ground water authority for drawing 540KLD and 1000KLD water respectively.
- Both the Effluent Treatment Plant is in service to achieve the Zero Liquid Discharge (ZLD) requirement.
- The sewage from the plant is treated through modern bioreactor based sewage treatment plant (STP) and the treated water is fully used in the green belt.
- All the taps installed with low flow fixtures for water conservation.
- Solid waste management has been implemented to segregate the waste.


### Green Belt:

- We have planted trees in 40 acres of native species like Neem, Pungan, Poovarasan, etc. in the plant and plant peripheries.
- Every year we are adding more than 2000 plants and maintaining meticulously.

### Ash Disposal:

- 100% of the Ash generated is sold to nearby cement plants and the monthly disposal details are submitted to the Board regularly.



	<b>OPG Power Generation Pvt Ltd., 2 x 77, 1 x 80, 1 x 180 MW TPP</b>	<b>Doc No: OPGPG/EHS / 01</b>			
<b>Doc title</b>	<b>Vision Document</b>	<b>Rev No.</b>	<b>1</b>	<b>Rev Dt.</b>	<b>04.04.2016</b>

### **Rain Water Harvesting:**

- The rain water in the plant is collected through the storm water drains and connected to infiltration wells built in the plant.
- In addition an open pond is maintained in the plant to maintain the ground water level.
- The ground water level is monitored by the 3 piezometer wells built in the plant.

### **Fugitive & Noise Emission Control:**

- The imported coal is stored in closed shed to control losses. The fugitive emission from the stack yard is controlled by water spraying.
- All the Coal transfer points are built with dust extraction system with spray to control fugitive emissions.
- The roads in the plant and nearby villages are cleaned by mega vacuum cleaner.
- All the HT motors are built with Anti vibrating pads, acoustic enclosures etc.

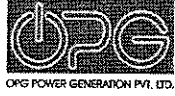
### **Hazardous Waste Management:**

- Used oil and cotton waste residues containing oil are the only hazardous waste generated from the plant.
- An authorisation is obtained for handling the waste and the generated wastes are sold to approved recyclers only as per the condition.
- The batteries are replaced on by back policy only.
- Solid waste Management has been Implemented to segregate the Waste.

*(Handwritten signature)*

# FLY ASH DETAILS

*B. Hyon*



MONTHLY FLYASH AND BOTTOM ASH  
GENERATION, UTILIZATION DETAILS

OCT 15

NAME AND ADDRESS OF THE SUPPLIER : OPG POWER GENERATION PRIVATE LIMITED  
MADHARPAKKAM ROAD, PERIYA OBULAPURAM VIL.  
GUMMIDIPOONDI 601 201

Accumulated quantity of ash at the start of the month

Fly Ash

1. Kept at Ash Dyke : NIL  
2. Kept at Silo : NIL

Bottom Ash

1. Kept at Ash Silo : NIL

**ASH GENERATION**

1	Quantity of Blended coal used during this month	140414.56 MT
2	Average ash content in the coal	9.37 %
3	Generation of Fly ash	10525 MT
4	Generation of Bottom Ash	2631 MT

**ASH DISPOSAL**

Fly Ash

1	To Cement Industries	10525 MT
2	To Brick Industries	NIL
3	Total disposal of Fly ash	10525 MT

Bottom Ash

1	To Brick Industries	2631 MT
---	---------------------	---------

**ASH ACCUMULATION**

1	Fly Ash Kept in Ash dyke	NIL
2	Fly Ash Kept in Silos	NIL
3	% of utilization	100%
4	Bottom Ash kept in Silos	NIL
5	% of utilization	100%

Fly ash sent to the following industries

1. Abhinaya agency
2. Lakshmi Agencies
3. Ultra Tech Cements Ltd
4. THirumalaI agencies
5. Pugalmathi & Co
6. Sri Praveen Enterprises
7. Vasantham Enterprises
6. OM Muruga
7. The India cements Ltd
8. Sri Ram construction
9. Munusamy & co
10. Sri Velavan Traders

*(Handwritten signature)*



MONTHLY FLYASH AND BOTTOM ASH  
GENERATION, UTILIZATION DETAILS

NOV 15

NAME AND ADDRESS OF THE SUPPLIER : OPG POWER GENERATION PRIVATE LIMITED  
MADHARPAKKAM ROAD, PERIYA OBULAPURAM VIL.  
GUMMIDIPOONDI 601 201

Accumulated quantity of ash at the start of the month

Fly Ash

1. Kept at Ash Dyke : NIL  
2. Kept at Silo : NIL

Bottom Ash

1. Kept at Ash Silo : NIL

**ASH GENERATION**

1	Quantity of Blended coal used during this month	94266.9 MT
2	Average ash content in the coal	9.22 %
3	Generation of Fly ash	6953 MT
4	Generation of Bottom Ash	1738 MT

**ASH DISPOSAL**

Fly Ash

1	To Cement Industries	6953 MT
2	To Brick Industries	NIL
3	Total disposal of Fly ash	6953 MT

Bottom Ash

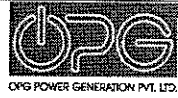
1	To Brick Industries	1738 MT
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**ASH ACCUMULATION**

1	Fly Ash Kept in Ash dyke	NIL
2	Fly Ash Kept in Silos	NIL
3	% of utilization	100%
4	Bottom Ash kept in Silos	NIL
5	% of utilization	100%

Fly ash sent to the following industries

1. Abhinaya agency
2. Lakshmi Agencies
3. Ultra Tech Cements Ltd
4. THirumalaI agencies
5. Pugalmathi & Co
6. Sri Praveen Enterprises
7. Vasantham Enterprises
6. OM Muruga
7. The India cements Ltd
8. Sri Ram construction
9. Munusamy & co
10. Sri Velavan Traders



MONTHLY FLYASH AND BOTTOM ASH  
GENERATION, UTILIZATION DETAILS

DEC 15

NAME AND ADDRESS OF THE SUPPLIER : OPG POWER GENERATION PRIVATE LIMITED  
MADHARPAKKAM ROAD, PERIYA OBULAPURAM VIL.  
GUMMIDIPOONDI 601 201

Accumulated quantity of ash at the start of the month

Fly Ash

1. Kept at Ash Dyke : NIL  
2. Kept at Silo : NIL

Bottom Ash

1. Kept at Ash Silo : NIL

**ASH GENERATION**

1	Quantity of Blended coal used during this month	122533 MT
2	Average ash content in the coal	10.5 %
3	Generation of Fly ash	10320 MT
4	Generation of Bottom Ash	2580 MT

**ASH DISPOSAL**

Fly Ash

1	To Cement Industries	10320 MT
2	To Brick Industries	NIL
3	Total disposal of Fly ash	10320 MT

Bottom Ash

1	To Brick Industries	2580 MT
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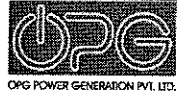
**ASH ACCUMULATION**

1	Fly Ash Kept in Ash dyke	NIL
2	Fly Ash Kept in Silos	NIL
3	% of utilization	100%
4	Bottom Ash kept in Silos	NIL
5	% of utilization	100%

Fly ash sent to the following industries

1. Abhinaya agency
2. Lakshmi Agencies
3. Ultra Tech Cements Ltd
4. THirumalaI agencies
5. Pugalmathi & Co
6. Sri Praveen Enterprises
7. Vasantham Enterprises
6. OM Muruga
7. The India cements Ltd
8. Sri Ram construction
9. Munusamy & co
10. Sri Velavan Traders

*(Signature)*



MONTHLY FLYASH AND BOTTOM ASH  
GENERATION, UTILIZATION DETAILS

JAN 16

NAME AND ADDRESS OF THE SUPPLIER : OPG POWER GENERATION PRIVATE LIMITED  
MADHARPAKKAM ROAD, PERIYA OBULAPURAM VIL.  
GUMMIDIPOONDI 601 201

Accumulated quantity of ash at the start of the month

Fly Ash

1. Kept at Ash Dyke : NIL  
2. Kept at Silo : NIL

Bottom Ash

1. Kept at Ash Silo : NIL

**ASH GENERATION**

1	Quantity of Blended coal used during this month	131856 MT
2	Average ash content in the coal	16.8 %
3	Generation of Fly ash	17808 MT
4	Generation of Bottom Ash	4452 MT

**ASH DISPOSAL**

Fly Ash

1	To Cement Industries	17808 MT
2	To Brick Industries	NIL
3	Total disposal of Fly ash	17808 MT

Bottom Ash

1	To Brick Industries	4452 MT
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**ASH ACCUMULATION**

1	Fly Ash Kept in Ash dyke	NIL
2	Fly Ash Kept in Silos	NIL
3	% of utilization	100%
4	Bottom Ash kept in Silos	NIL
5	% of utilization	100%

Fly ash sent to the following industries

1. Abhinaya agency
2. Lakshmi Agencies
3. Ultra Tech Cements Ltd
4. THirumalaI agencies
5. Pugalmathi & Co
6. Sri Praveen Enterprises
7. Vasantham Enterprises
6. OM Muruga
7. The India cements Ltd
8. Sri Ram construction
9. Munusamy & co
10. Sri Velavan Traders

*(Signature)*





MONTHLY FLYASH AND BOTTOM ASH  
GENERATION, UTILIZATION DETAILS

FEB 16

NAME AND ADDRESS OF THE SUPPLIER : OPG POWER GENERATION PRIVATE LIMITED  
MADHARPAKKAM ROAD, PERIYA OBULAPURAM VIL.  
GUMMIDIPOONDI 601 201

Accumulated quantity of ash at the start of the month

Fly Ash

1. Kept at Ash Dyke : NIL  
2. Kept at Silo : NIL

Bottom Ash

1. Kept at Ash Silo : NIL

**ASH GENERATION**

1	Quantity of Blended coal used during this month	136988 MT
2	Average ash content in the coal	16.44 %
3	Generation of Fly ash	22529.6 MT
4	Generation of Bottom Ash	5632.5 MT

**ASH DISPOSAL**

Fly Ash

1	To Cement Industries	22529.6 MT
2	To Brick Industries	NIL
3	Total disposal of Fly ash	22529.6 MT

Bottom Ash

1	To Brick Industries	5632.5 MT
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**ASH ACCUMULATION**

1	Fly Ash Kept in Ash dyke	NIL
2	Fly Ash Kept in Silos	NIL
3	% of utilization	100%
4	Bottom Ash kept in Silos	NIL
5	% of utilization	100%

Fly ash sent to the following industries

1. Abhinaya agency
2. Lakshmi Agencies
3. Ultra Tech Cements Ltd
4. THirumalaI agencies
5. Pugalmathi & Co
6. Sri Praveen Enterprises
7. Vasantham Enterprises
6. OM Muruga
7. The India cements Ltd
8. Sri Ram construction
9. Munusamy & co
10. Sri Velavan Traders

*Signature*



MONTHLY FLYASH AND BOTTOM ASH  
GENERATION, UTILIZATION DETAILS

MAR 16

NAME AND ADDRESS OF THE SUPPLIER : OPG POWER GENERATION PRIVATE LIMITED  
MADHARPAKKAM ROAD, PERIYA OBULAPURAM VIL.  
GUMMIDIPOONDI 601 201

Accumulated quantity of ash at the start of the month

Fly Ash

1. Kept at Ash Dyke : NIL  
2. Kept at Silo : NIL

Bottom Ash

1. Kept at Ash Silo : NIL

**ASH GENERATION**

1	Quantity of Blended coal used during this month	168923 MT
2	Average ash content in the coal	7.90 %
3	Generation of Fly ash	10682 MT
4	Generation of Bottom Ash	2671 MT

**ASH DISPOSAL**

Fly Ash

1	To Cement Industries	10682 MT
2	To Brick Industries	NIL
3	Total disposal of Fly ash	10682 MT

Bottom Ash

1	To Brick Industries	2671 MT
---	---------------------	---------

**ASH ACCUMULATION**

1	Fly Ash Kept in Ash dyke	NIL
2	Fly Ash Kept in Silos	NIL
3	% of utilization	100%
4	Bottom Ash kept in Silos	NIL
5	% of utilization	100%

Fly ash sent to the following industries

1. Abhinaya agency
2. Lakshmi Agencies
3. Ultra Tech Cements Ltd
4. ThirumalaI agencies
5. Pugalmathi & Co
6. Sri Praveen Enterprises
7. Vasantham Enterprises
6. OM Muruga
7. The India cements Ltd
8. Sri Ram construction
9. Munusamy & co
10. Sri Velavan Traders

# **BORE WELL ANALYSIS**



BORE WELL WATER ANALYSIS - October 2015

SI. No.	ANALYSIS	As	Unit	PHASE - I					PHASE - II							
				Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 6	Borewell 7	Borewell 8
1	pH	-	-	7.12	7.24	7.06	7.02	7.10	Not in Use	7.16	7.18	6.98	7.12	7.15	8.02	8.34
2	Conductivity	-	µs/cm	908	972	712	662	796	Not in Use	876	1002	705	688	610	732	784
3	Total Hardness	CaCo3	ppm	140	176	156	190	186	Not in Use	168	234	146	148	160	140	160
4	Calcium Hardness	CaCo3	ppm	62	82	72	88	102	Not in Use	92	136	82	84	88	76	88
5	Magnesium Hardness	CaCo3	ppm	78	94	84	102	84	Not in Use	76	98	64	64	72	64	72
6	Total Alkalinity	CaCo3	ppm	180	152	148	146	150	Not in Use	150	180	152	140	142	150	152
8	Silica	SiO2	ppm	22	18	22	20	28	Not in Use	16	18	14	15	18	14	14
9	Total Suspended Solids	-	ppm	4	6	2	4	2	Not in Use	6	4	4	10	4	4	6
10	Sodium	Na	ppm	20	24	18	16	18	Not in Use	26	22	20	12	16	12	14
11	Chlorides	Cl	ppm	24	22	20	12	20	Not in Use	24	16	18	16	18	14	12
12	Sulphates	So4	ppm	18	18	14	18	14	Not in Use	16	4	4	4	10	10	10



BORE WELL WATER ANALYSIS - November 2015

SI. No.	ANALYSIS	As	Unit	PHASE - I					PHASE - II							
				Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 6	Borewell 7	Borewell 8
1	pH	-	-	7.02	7.12	6.98	6.98	7.24	Not in Use	7.02	7.26	7.02	7.54	7.32	7.86	8.16
2	Conductivity	-	µs/cm	902	980	702	642	782	Not in Use	884	1086	698	668	608	724	760
3	Total Hardness	CaCo3	ppm	128	158	146	160	164	Not in Use	160	244	136	140	152	132	154
4	Calcium Hardness	CaCo3	ppm	56	78	66	78	76	Not in Use	78	114	64	72	72	72	84
5	Magnesium Hardness	CaCo3	ppm	72	80	76	82	88	Not in Use	82	130	72	68	80	60	70
6	Total Alkalinity	CaCo3	ppm	190	168	152	156	164	Not in Use	164	174	164	152	168	148	142
8	Silica	SiO2	ppm	21	16	26	22	34	Not in Use	18	20	18	18	22	18	18
9	Total Suspended Solids	-	ppm	2	4	1	0	4	Not in Use	4	2	2	14	2	2	4
10	Sodium	Na	ppm	18	28	21	20	20	Not in Use	32	32	16	14	20	18	16
11	Chlorides	Cl	ppm	26	28	22	16	22	Not in Use	30	22	18	18	16	16	14
12	Sulphates	So4	ppm	16	20	10	20	16	Not in Use	18	2	2	2	12	12	12

*Adhikari*



BORE WELL WATER ANALYSIS - December 2015

Sl. No.	ANALYSIS	As	Unit	PHASE - I					PHASE - II							
				Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 6	Borewell 7	Borewell 8
1	pH	-	-	6.92	7.02	6.98	7.32	6.98	6.98	6.92	7.24	6.98	7.60	7.58	7.62	8.20
2	Conductivity	-	µs/cm	882	998	688	620	740	740	862	1124	682	652	592	572	752
3	Total Hardness	CaCo3	ppm	102	170	116	140	136	136	114	226	122	132	136	116	150
4	Calcium Hardness	CaCo3	ppm	40	74	54	68	64	64	62	104	58	68	64	64	86
5	Magnesium Hardness	CaCo3	ppm	62	96	62	72	72	72	68	122	64	64	72	52	74
6	Total Alkalinity	CaCo3	ppm	184	178	160	164	182	182	182	186	174	164	182	140	158
8	Silica	SiO2	ppm	18	12	20	24	32	32	12	24	22	20	24,600	16	16
9	Total Suspended Solids	-	ppm	1	4	0	0	2	2	2	1	1	18	1	4	6
10	Sodium	Na	ppm	16	26.0	18.0	18.0	18.0	18.0	40.6	28.0	18.0	16.0	18.8	16	14
11	Chlorides	Cl	ppm	21	22.0	20.4	12.0	18.4	18.4	30.2	20.2	16.0	18.0	16.8	14	12
12	Sulphates	So4	ppm	14	18.0	10.0	18.0	14.0	14.0	16.0	1.0	1.0	1.2	14.0	10	10



BORE WELL WATER ANALYSIS - January 2016

Sl. No.	ANALYSIS	As	Unit	PHASE - I					PHASE - II							
				Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 6	Borewell 7	Borewell 8
1	pH	-	-	7.21	7.12	6.92	7.64	6.98	6.98	7.12	7.24	7.12	7.60	7.92	7.82	8.18
2	Conductivity	-	µs/cm	982	1022	678	640	740	740	988	1124	712	652	582	684	740
3	Total Hardness	CaCo3	ppm	128	180	114	120	136	136	124	226	132	134	136	114	160
4	Calcium Hardness	CaCo3	ppm	52	68	50	56	64	64	52	104	60	70	64	68	84
5	Magnesium Hardness	CaCo3	ppm	76	112	64	64	72	72	72	122	72	64	72	46	76
6	Total Alkalinity	CaCo3	ppm	192	192	172	182	182	182	192	186	186	182	182	152	164
8	Silica	SiO2	ppm	22	20.000	22.000	28.000	32.000	32.000	18	24	28	26	26,800	14	24
9	Total Suspended Solids	-	ppm	1	4	0	0	2	2	4	1	1	18	1	2	4
10	Sodium	Na	ppm	20	32.0	16.0	20.0	18.0	18.0	42.6	28.0	18.0	18.0	20.2	14	16
11	Chlorides	Cl	ppm	24	28.0	20.8	10.0	18.4	18.4	40.2	20.2	16.0	16.0	16.8	12	14
12	Sulphates	So4	ppm	16	16.0	12.0	16.0	14.0	14.0	18.0	1.0	1.0	1.2	14.8	12	10

*Myson*



**BORE WELL WATER ANALYSIS - February 2016**

Sl. No.	ANALYSIS	As	Unit	PHASE - I					PHASE - II					
				Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	
1	pH	-	-	7.68	7.72	7.52	8.08	7.52	8.02	7.68	8.12	8.24	8.12	8.69
2	Conductivity	-	µs/Cm	1052	1234	872	720	740	1452	780	692	612	712	780
3	Total Hardness	CaCo3	ppm	178	242	158	144	152	320	146	162	152	150	150
4	Calcium Hardness	CaCo3	ppm	78	86	72	70	70	152	68	78	72	88	80
5	Magnesium Hardness	CaCo3	ppm	100	156	86	74	82	168	78	84	80	62	70
6	Total Alkalinity	CaCo3	ppm	282	310	210	210	202	214	212	202	192	172	220
8	Silica	SiO2	ppm	34	32,000	42,000	32,000	40,000	40	42	38	40	18	44
9	Total Suspended Solids	-	ppm	1	8	0	0	4	1	1	26	1	4	4
10	Sodium	Na	ppm	32	60.2	20.8	24.0	16.8	36.0	24.0	20.0	22.8	18.0	17.7
11	Chlorides	Cl	ppm	30	62.8	26.2	12.0	20.2	28.8	20.0	20.0	30.8	12.0	24.6
12	Sulphates	So4	ppm	24	32.0	16.0	20.0	16.0	1.0	1.0	1.2	16.2	18.0	14.0

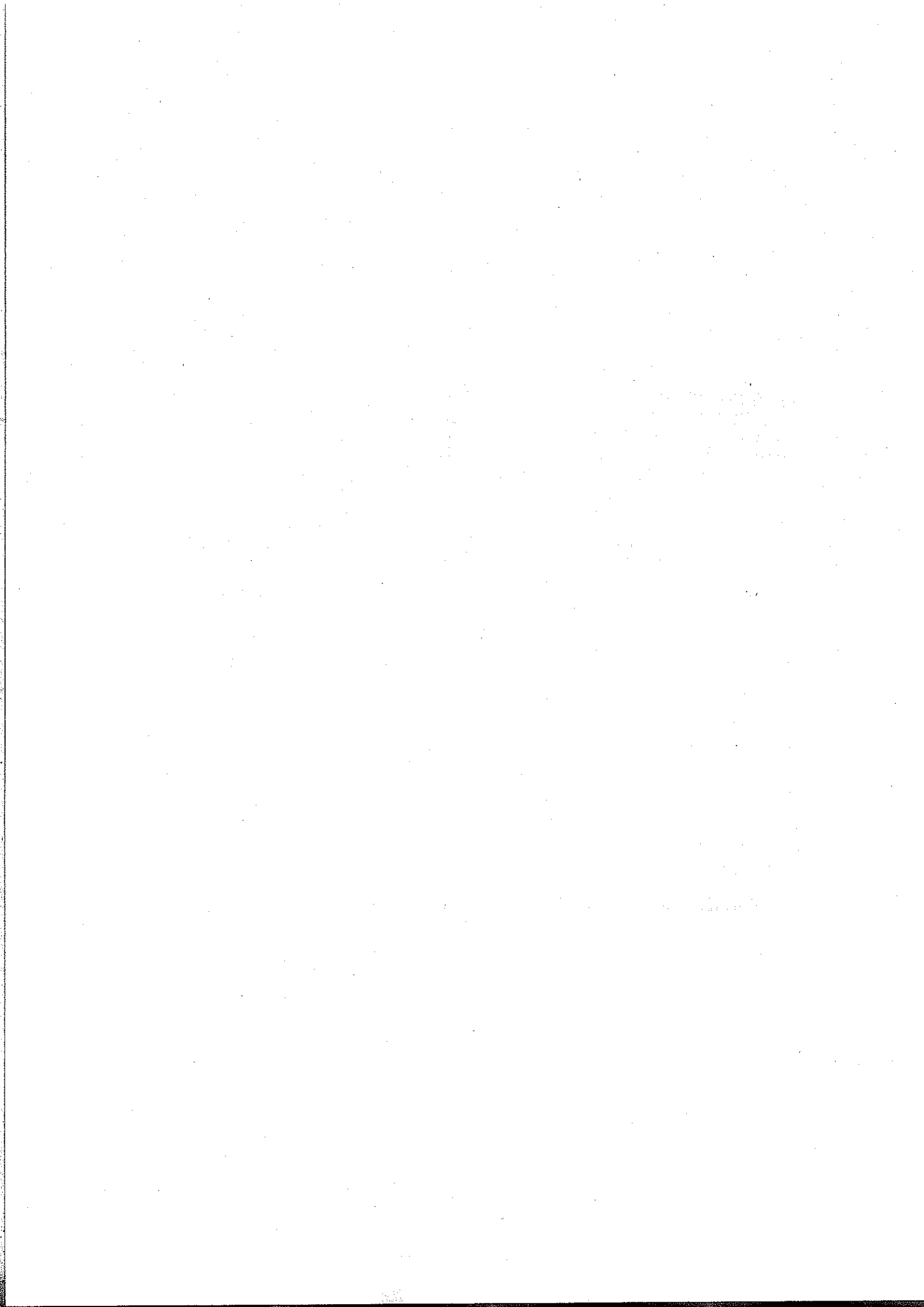


**BORE WELL WATER ANALYSIS - March 2016**

Sl. No.	ANALYSIS	As	Unit	PHASE - I					PHASE - II					
				Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	Borewell 1	Borewell 2	Borewell 3	Borewell 4	Borewell 5	
1	pH	-	-	7.75	7.93	7.63	8.21	8.68	8.15	7.79	8.32	8.47	8.02	8.42
2	Conductivity	-	µs/Cm	1174	1588	974	738	780	1504	776	707	663	710	772
3	Total Hardness	CaCo3	ppm	188	252	172	138	150	344	134	162	132	134	162
4	Calcium Hardness	CaCo3	ppm	76	70	80	74	80	166	62	82	66	78	90
5	Magnesium Hardness	CaCo3	ppm	112	182	92	64	70	178	72	80	66	56	72
6	Total Alkalinity	CaCo3	ppm	320	380	282	240	220	280	220	232	212	164	184
8	Silica	SiO2	ppm	39,060	35,532	47,050	37,667	43,920	47,236	46,540	40,397	44,283	20	38
9	Total Suspended Solids	-	ppm	1	6	0	0	4	1	1	27	1	4	2
10	Sodium	Na	ppm	36.5	63.6	24.8	27.0	17.7	38.0	26.9	22.1	29.4	16	18
11	Chlorides	Cl	ppm	34.9	65.5	28.4	15.3	24.6	32.3	20.9	21.9	38.4	10	20
12	Sulphates	So4	ppm	26.2	35.4	17.0	23.6	18.0	1.3	1.1	1.2	17.7	16	12

*Adyam*

# TNPCB ANALYSIS







**TAMILNADU POLLUTION CONTROL BOARD.**  
District Environmental Laboratory, Ambattur.

From  
**Dr.S.Sukumar.M.Sc.,M.Phil.,Ph.D.,**  
Chief Scientific Officer (Lab),  
District Environmental Laboratory,  
No.77-A South Avenue Road,  
Ambattur Industrial Estate, Ambattur,  
Chennai 600 058.

To  
**M/s.OPG Power Generation PVT LTD.**  
Obulapuram  
Gummidipoondi  
Tiruvallur Dt  
Pin Code-601 201

Lr.No.TNPCB/DEL/AMB/AIR/ 57 /AAQS/SM/2015-16.

Dated: 22/02/2016.

Sir,

Sub:

Furnishing of Report of Analysis of Ambient Air Quality/Stack Monitoring /  
Ambient Noise Level Survey-regarding.

Ref: 1.T.O.Lr.No TNPCB/DEL/AMB/CSO/365/15

Dated:15.10.2015.

2. Yr ltr. No.DEE/TNPCB/TLR/RL-0039/15 .

Dated: 26.10.2015.

3.Cash Receipt No.(Compliant Board Cost)

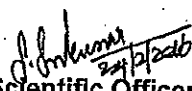
Dated: 26/12/2015

Rs.

\*\*\*\*\*

The Report of Analysis of Ambient Air Quality /Stack Monitoring/Ambient Noise Level  
Survey conducted in the vicinity of your Industry on 10-11/02/16. along with the Bill for Rs. 126300  
(Rupees One Lakh Twenty Six Thousand Three Hundred only)  
is furnished herewith.

Kindly acknowledge the receipt of the above without fail

  
Chief Scientific Officer(Lab)  
DEL, Ambattur

Encl: As above

Copy Submitted:

1. The Joint Chief Environmental Engineer (Monitoring) Chennai
2. The Director (Lab) TNPCB, Chennai.
3. The District Environmental Engineer, Thiruvallur (Dt).
4. To File.





## TAMILNADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Ambattur.

### Ambient Air Quality Survey Report

Report No. 57 /AAQS/2015-16

Dated: 22/02/2016.

1. Name of the Industry : M/s.OPG Power Generation PVT LTD.
2. Address of the Industry : Obulapuram  
Gummidipoondi  
Tiruvallur Dt
3. Date of survey : 10-11/02/16.
4. Duration of Survey : Eight hours
5. Category : Red Large
7. Consent Order No. : 18231
8. Time of survey started in Hrs : 12.30
9. Time of survey closed in Hrs : 20.30

shift-1

Ambient Temperature (°C)	Min	Max	Relative Humidity (%)	Min	Max
	23.0	30.5		62	74
Weather Condition	Clear Sky		Rain Fall (mm)	Nil	
Predominant Wind Condition	SW-NE		Mean Wind Speed (Km/hr)	9.1	

### Ambient Air Quality Survey Report of Analysis

Sl. No	Location	Direction *	Distance (m)	Height from GL (m)	Pollutants			
					Concentrations ( $\mu\text{g}/\text{m}^3$ )			
					PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>
1	On House top of Thiru Doss Perumal St PeriyaObulapuram	NNE	1500	5.0	---	65	11.2	13.4
2	On House top of Church, Kayalamedu.	NE	400	5.0	---	74	11.6	12.5
3	On House top of Thiru Shankar , Samireddy Kandigai.	ENE	2500	5.0	14	57	10.8	13.4
4	On House top of OPG Guest house ,Billakuppam.	SE	500	5.0	---	88	10.6	12.7
5	On top of scaffolding near Primary health center at S.R.Kandigai	SW	200	5.0	22	79	10.3	12.9
6	On House top of Thiru Suresh , Nagaraj Kandigai.	NW	250	5.0	---	83	10.9	12.0

Note: The Compliant survey was conducted in the presence of JCEE(Mointoring) Chennai,DEE-Thriuvallur,and AEE Thiruvallur of TNPCB

  
Chief Scientific Officer(Lab)  
DEL, Ambattur



# TAMILNADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Ambattur.

## Ambient Air Quality Survey Report

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Dated: 22/02/2016.

1. Name of the Industry : M/s.OPG Power Generation PVT LTD.
2. Address of the Industry : Obulapuram  
Gummidipoondi  
Tiruvallur Dt.
3. Date of survey : 10-11/02/16.
4. Duration of Survey : Eight hours
5. Category : Red Large
7. Consent Order No. : 18231
8. Time of survey started in Hrs : 20.30
9. Time of survey closed in Hrs : 4.30

Shift-2

Ambient Temperature (°C)	Min	Max	Relative Humidity (%)	Min	Max
	19.5	23.0		78	89
Weather Condition	Clear Sky		Rain Fall (mm)	Nil	
Predominant Wind Condition	WSW-ENE		Mean Wind Speed (Km/hr)	9.7	

### Ambient Air Quality Survey Report of Analysis

Sl. No	Location	Direction *	Distance (m)	Height from GL (m)	Pollutants			
					Concentrations (µg/m <sup>3</sup> )			
					PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>
1	On House top of Thiru Doss Perumal St PeriyaObulapuram	NNE	1500	5.0	---	79	10.3	12.5
2	On House top of Church, Kayalarmedu.	NE	400	5.0	---	89	10.9	12.9
3	On House top of Thiru Shanker , Samireddy Kandigai.	ENE	2500	5.0	27	75	10.6	13.6
4	On House top of OPG Guest house ,Billakuppam.	SE	500	5.0	---	89	11.8	14.8
5	On top of scaffolding near Primary health center at S.R.Kandigai	SW	200	5.0	32	83	10.8	11.3
6	On House top of Thiru Suresh , Nagaraj Kandigai.	NW	250	5.0	---	77	11.4	12.0

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22/2/2016

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Chief Scientific Officer(Lab)  
DEL. Ambattur

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# TAMILNADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Ambattur.

## Ambient Air Quality Survey Report

Report No. 57 /AAQS/2015-16

Dated: 22/02/2016.

1. Name of the Industry : M/s.OPG Power Generation PVT LTD.
2. Address of the Industry : Obulapuram  
Gummidipoondi  
Tiruvallur Dt
3. Date of survey : 10-11/02/16.
4. Duration of Survey : Eight hours
5. Category : Red Large
7. Consent Order No. : 18231
8. Time of survey started in Hrs : 4.30
9. Time of survey closed in Hrs : 12.30

Shift-3

Ambient Temperature (°C)	Min	Max	Relative Humidity (%)	Min	Max
	22.0	30.0		62	88
Weather Condition	Clear Sky		Rain Fall (mm)	Nil	
Predominant Wind Condition	SW-NE		Mean Wind Speed (Km/hr)	8.16	

### Ambient Air Quality Survey Report of Analysis

Sl. No	Location	Direction *	Distance (m)	Height from GL (m)	Pollutants			
					Concentrations (µg/m <sup>3</sup> )			
					PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>
1	On House top of Thiru Doss Perumal St. PeriyaObulapuram	NNE	1500	5.0	---	72	9.5	11.8
2	On House top of Church, Kayalarmedu.	NE	400	5.0	---	88	10.6	12.5
3	On House top of Thiru Shankar , Samireddy Kandigai.	ENE	2500	5.0	40	84	9.9	11.3
4	On House top of OPG Guest house ,Billakuppam.	SE	500	5.0	---	94	10.9	12.0
5	On top of scaffolding near Primary health center at S.R.Kandigai	SW	200	5.0	38	88	10.1	11.7
6	On House top of Thiru Suresh , Nagaraj Kandigai.	NW	250	5.0	---	53	10.8	10.6

*[Signature]*  
22/2/16

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Chief Scientific Officer(Lab)  
DEL. Ambattur



**TAMILNADU POLLUTION CONTROL BOARD**  
**District Environmental Laboratory, Ambattur.**

**Stack Monitoring Survey - Report of Analysis**

Report No 57 /SM/2015-16

Dated: 22/02/2016.

1. Name of the Industry : M/s.OPG Power Generation PVT LTD.
2. Address of the Industry : Obulapuram  
Gummidipoondi  
Tiruvallur Dt
3. Date of survey : 10/2/2016
4. Consent Order No. : 18231
5. Category : Red Large

**Stack Analysis Report**

Sl.No	Stack attached to	Stack Temp °C	Velocity in (M/sec)	Discharge rate in (Nm <sup>3</sup> /Day)	Pollutants (mg/Nm <sup>3</sup> )		
					PM	SO <sub>2</sub>	Nox
1	Boiler-320TPH Unit-2 (Generation Power-77MW), Fuel-Coal,APC-ESP.	158	25.1	39056173.1	35.4	190.0	132.0
	Boiler-320TPH Unit-3 (Generation Power-80MW), Fuel-Coal,APC-ESP.	143	24.1	12202383.9	37.6	232.0	149.0
2	Boiler-575TPH Unit-4 (Generation Power-180MW), Fuel-Coal,APC-ESP.	141	24.8	26072820.9	36.3	274	156.0

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22/2/2016

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22/2/2016  
Chief Scientific Officer(Lab)  
DEL, Ambattur

*[Signature]*



TAMILNADU POLLUTION CONTROL BOARD  
District Environmental Laboratory, Ambattur.

Ambient Noise Level Survey-Report of Analysis

Report No. 57

/NSL/2015-16

Dated: 22/02/2016.

1	Name of the Industry	M/s.OPG Power Generation PVT
2	Address of the Industry	Obulapuram Gummidipoondi Tiruvallur Dt
3	Date of survey	10-11/02/16.
4	Category & Consent Order No.	Red Large 18231
5	Land Use Classification	Industrial

Type of survey	Ambient	Time Of Survey	Day
Meteorological Conditions		Calm	

Logging Parameters

Instrument Used	Larsen & Davis	Serial No.	824A2033
Logging Interval	10 Minutes in each point	Measuring Range	50-110 dB(A)
Weighting	"A"	Time Weighting	Slow
Sound Incidence	Random	Time of survey in Hrs.	12.30-15.30

Shift-1

Location	Duration (m)	Distance (m)	Direction	Sound Level -dB(A)		
				L <sub>eq</sub>	L <sub>Min</sub>	L <sub>Max</sub>
Near Doss house at Periyaobulapuram	10	1500	NNE	48.5	46.3	54.2
Near Shanker house at Sami reddy kandigai	10	2500	ENE	58.1	52.6	67.8
Near OPG Guest house at Billakuppam	10	500	SE	51.2	47.8	57.6
Near Primary health center at S.R.Kandigai	10	200	SW	50.5	47.1	55.2
Near Suresh house at N.R.Kandigai	10	250	NW	59.0	54.5	70.1

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Chief Scientific Officer(Lab)  
DEL, Ambattur



TAMILNADU POLLUTION CONTROL BOARD  
District Environmental Laboratory, Ambattur.

Ambient Noise Level Survey-Report of Analysis

Report No. 57

/NSL/2015-16

Dated: 22/02/2016.

1	Name of the Industry	M/s.OPG Power Generation PVT
2	Address of the Industry	Obulapuram Gummidipoondi Tiruvallur Dt
3	Date of survey	10-11/02/16.
4	Category & Consent Order No.	Red Large 18231
5	Land Use Classification	Industrial

Type of survey	Ambient	Time Of Survey	Day
Meteorological Conditions		Calm	

Logging Parameters

Instrument Used.	Larsen & Davis	Serial No.	824A2033
Logging Interval	10 Minutes in each point	Measuring Range	50-110 dB(A)
Weighting	"A"	Time Weighting	Slow
Sound Incidence	Random	Time of survey in Hrs.	21.00-23.30

Shift-2

Location	Duration (m)	Distance (m)	Direction	Sound Level -dB(A)		
				Leq	LMin	LMax
Near Doss house at Periyaobulapuram	10	1500	NNE	47.2	45.1	52.1
Near Shanker house at Sami reddy kandigai	10	2500	ENE	55.4	50.2	64.5
Near OPG Guest house at Billakuppam	10	500	SE	50.5	47.8	56.2
Near Primary health center at S.R.Kandigai	10	200	SW	49.5	46.2	55.4
Near Suresh house at N.R.Kandigai	10	250	NW	56.8	51.2	68.5

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22/02/2016

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22/02/2016  
Chief Scientific Officer(Lab)  
DEL, Ambattur

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TAMILNADU POLLUTION CONTROL BOARD  
District Environmental Laboratory, Ambattur.

Ambient Noise Level Survey-Report of Analysis

Report No. 57

/NSL/2015-16

Dated: 22/02/2016.

1	Name of the Industry	M/s.OPG Power Generation PVT
2	Address of the Industry	Obulapuram Gummidipoondi Tiruvallur Dt
3	Date of survey	10-11/02/16.
4	Category & Consent Order No.	Red Large 18231
5	Land Use Classification	Industrial

Type of survey	Ambient	Time Of Survey	Day
Meteorological Conditions			Calm

Logging Parameters

Instrument Used	Larsen & Davis	Serial No.	824A2033
Logging Interval	10 Minutes in each point	Measuring Range	50-110 dB(A)
Weighting	"A"	Time Weighting	Slow
Sound Incidence	Random	Time of survey in Hrs.	08.30-10.30

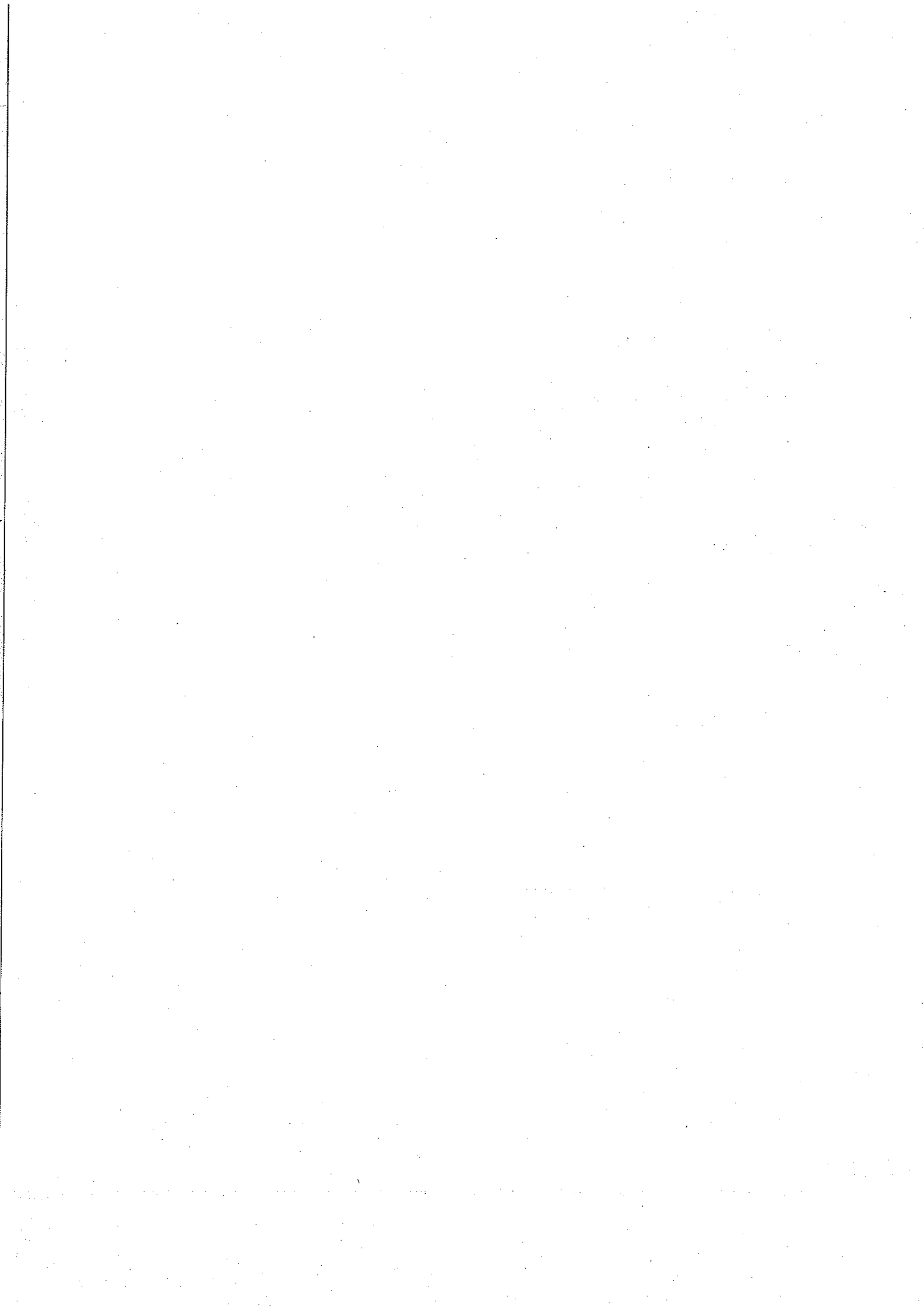
Shift-3

Location	Duration (m)	Distance (m)	Direction	Sound Level -dB(A)		
				L <sub>eq</sub>	L <sub>Min</sub>	L <sub>Max</sub>
Near Doss house at Periyaobulapuram	10	1500	NNE	49.5	47.1	55.8
Near Shanker house at Sami reddy kandigai	10	2500	ENE	59.2	53.1	68.2
Near OPG Guest house at Billakuppam	10	500	SE	52.1	50.5	60.1
Near Primary health center at S.R.Kandigai	10	200	SW	51.8	48.5	57.6
Near Suresh house at N.R.Kandigai	10	250	NW	60.1	55.2	71.2

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22/2/2016  
Chief Scientific Officer(Lab)  
DEL, Ambattur



# **CSR ACTIVITY**





## Minutes of Meeting

Purpose: CSR - Committee meeting for the year 2015-16

Date : 07.01.2016

Venue : Conference Hall, Admin Building

### Committee Members:

1. Mr.V.Thiyagarajan
2. Mr.Pandian
3. Mr.Sabari Gireaswaran
4. Mr.Velan
5. Mr.M.R.Saravanan
6. Mr.Chakkravarthi

### General:

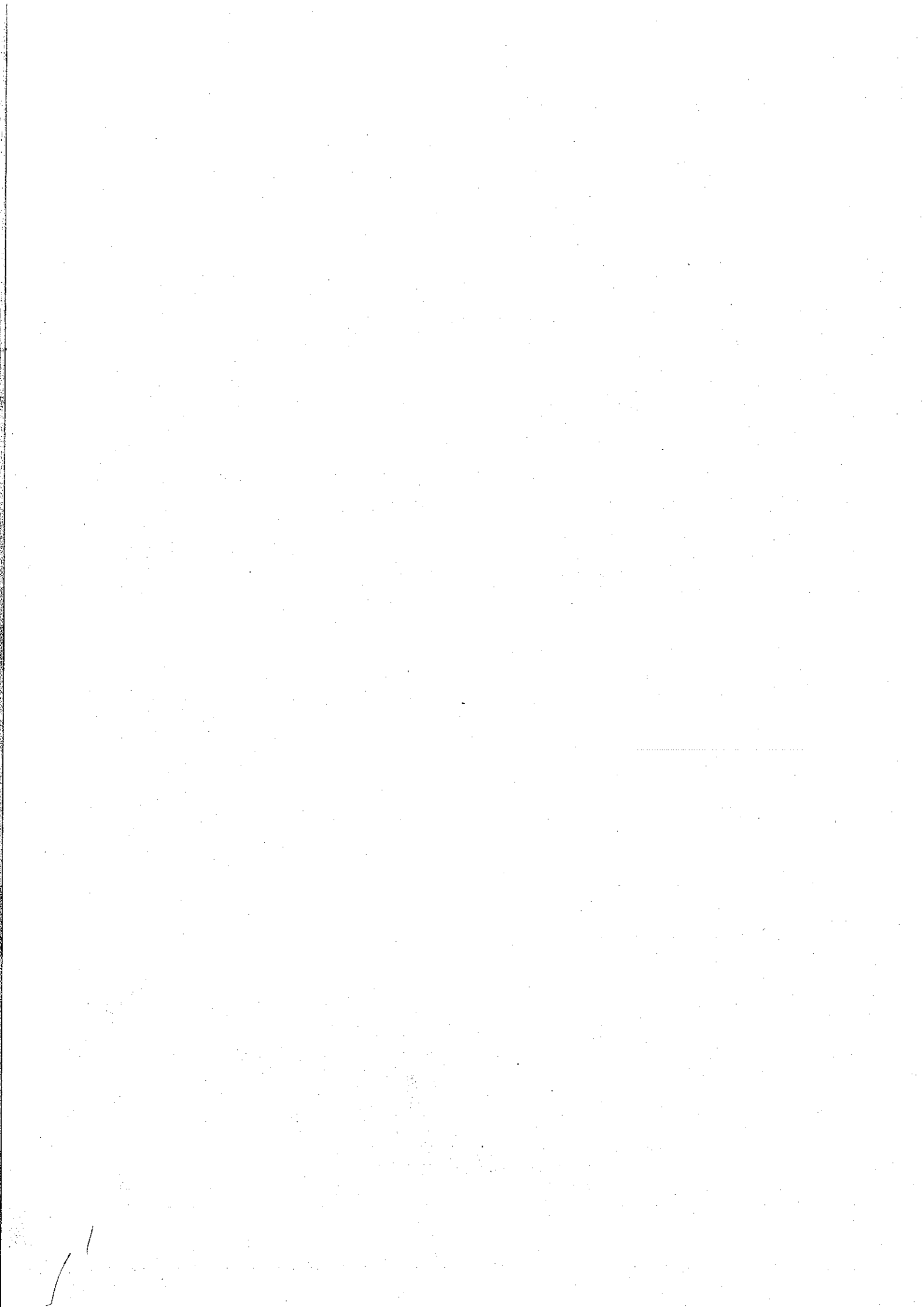
1. Committee approved to provide food, Rice bags and Dress materials to nearby villages who affected by flood during heavy raining.
2. To encourage sports activities among the youngster, committee recommended to conduct the same.
3. Decided to celebrate YOGA day every year at nearby villages.
4. Providing contribution to the upliftment of Historic temples.

### Education:

1. The regular attributes like school notebooks, bags, uniforms and shoes are decided to distribute to the local Govt school students during the school re-opening after summer holidays.
2. Education assistance to be provided for destitute children.
3. Decided to provide salary to teachers through Parent teacher association.
4. Approved to provide Education aid for adopted children.
5. Basic Library should be developed in all local Govt. schools by sponsoring books for the children to motivate the reading habits. Newspapers (The Hindu & Dinamani) should be sponsored to school library on daily basis to develop and encourage the reading habits and general knowledge of the students. Books contribution should be made by staffs in any number.

### Health:

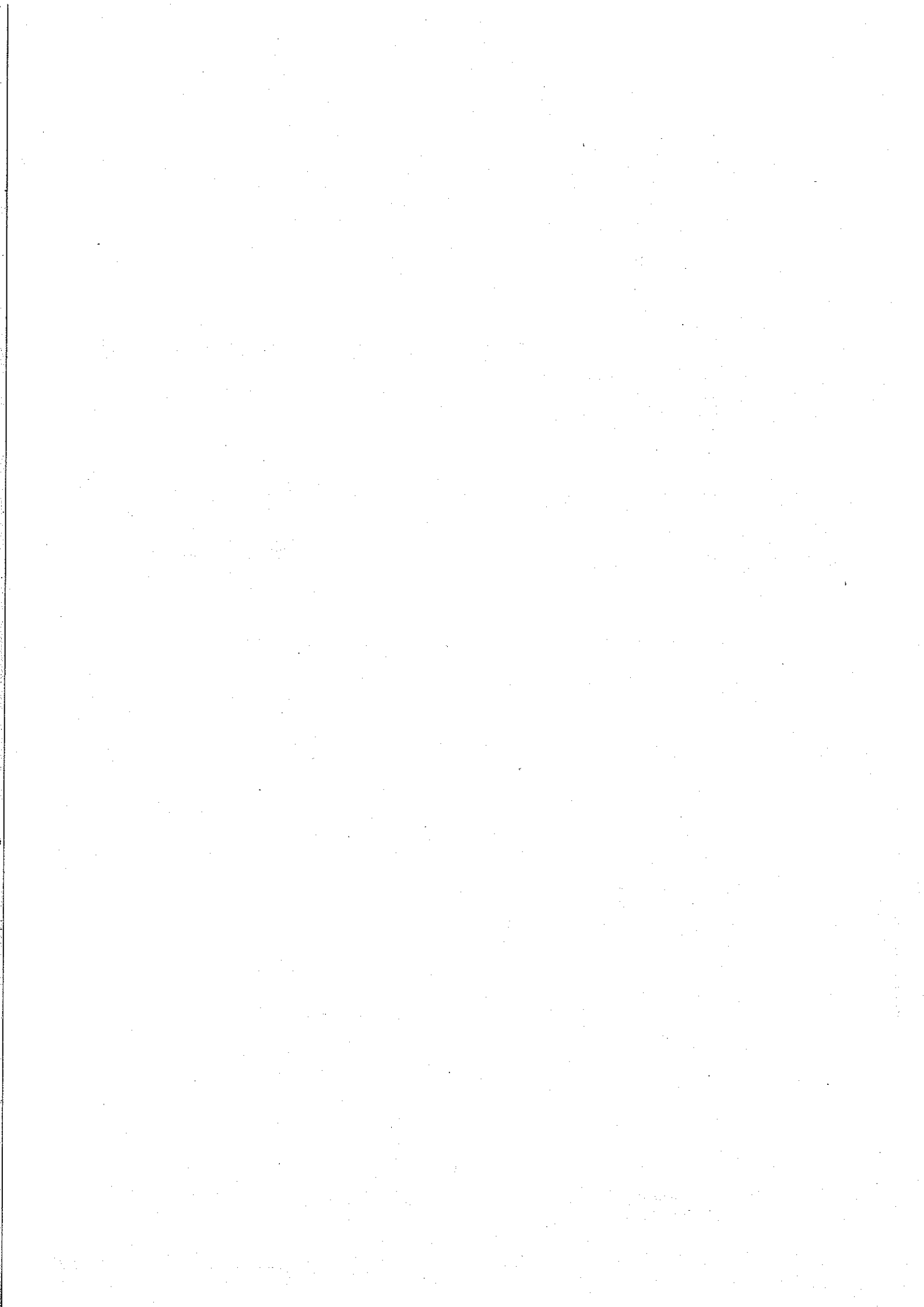
1. Committee monitoring the Free medical dispensary which is actively running in SR kandigai village throughout the year.
2. Committee recommended to conduct medical camp in nearby Govt schools on periodic basis based on the requirement.



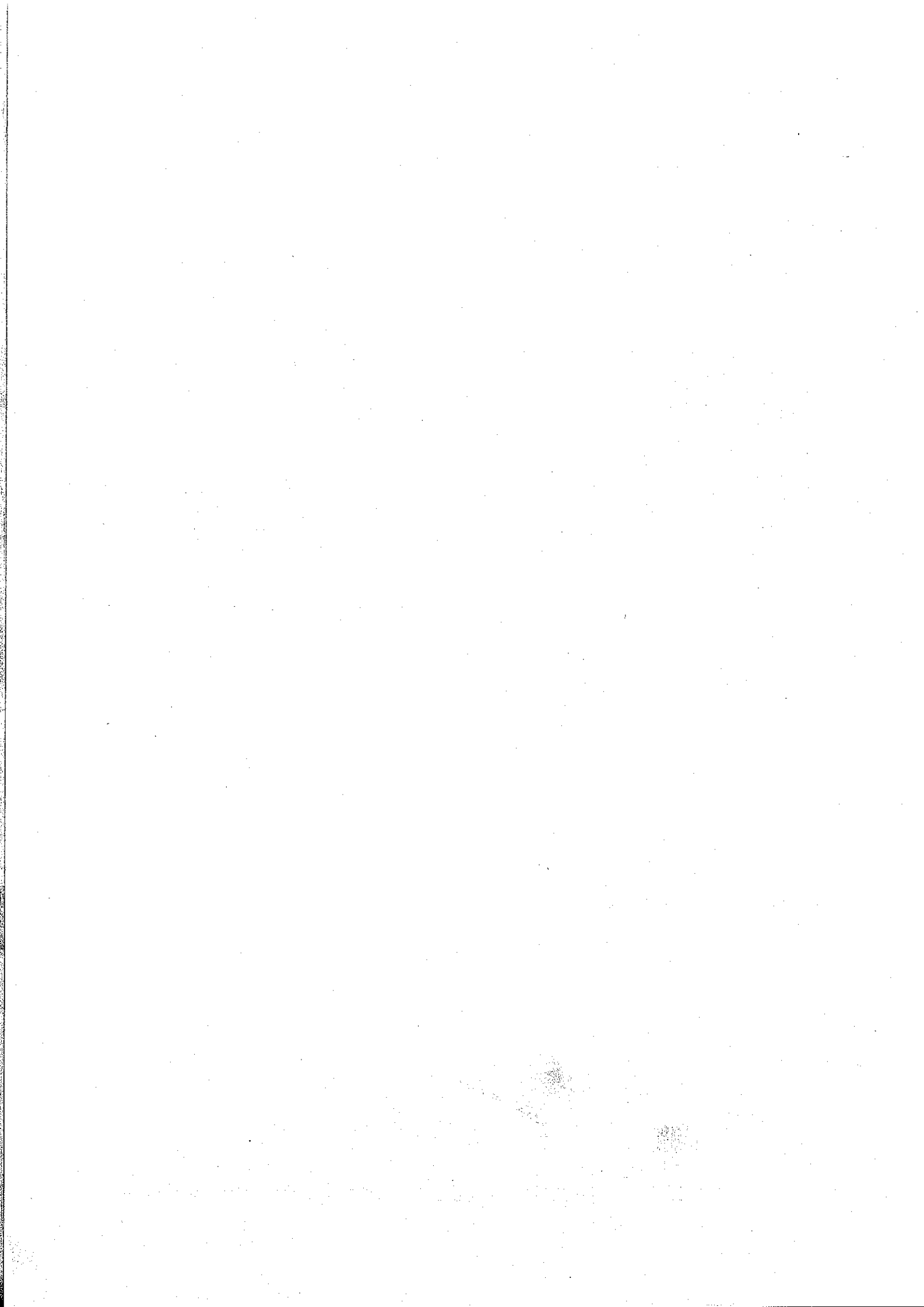
**OPG POWER GENERATION PVT LTD  
CSR EXPENDITURES FOR 2015 - 2016**

S.No.	Programme	Item Description	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	TOTAL	Annual Expenses	
1	Education	Uniform Materials for School children	-	-	-	-	-	-	-	2,625,486	
2		Uniform Materials Stitching Cost	-	-	-	-	-	-	-		
3		School Notebooks for School Children	-	-	-	-	-	-	-		
4		School Bags for School children	-	-	-	-	-	-	-		
5		School Shoes for School Children	-	-	-	-	-	-	-		
6		Education Assistance to school children	389,000	-	-	-	-	-	-		389,000
7		PTA Teachers Salary (11 Teachers)	59,000	59,000	59,000	59,000	59,000	59,000	354,000		
8		School Sports Meet Sponsor	-	-	-	-	-	-	-		-
9		Adopted Girl Children Education Aid	-	-	-	-	-	-	-		-
10	Medical	Doctor Salary (SDK)	45,000	55,000	55,000	55,000	55,000	55,000	320,000	1,450,502	
11		Plant Nurse Salary (SDK)	16,000	16,000	16,000	16,000	16,000	16,000	96,000		
12		P.O.P Dispensary Nurse Salary (SDK)	-	-	-	11,000	11,000	11,000	33,000		
13		Dispensary Medicines	-	73,448	77,590	118,157	-	-	269,195		
14		S.R.K Dispensary Nurse Salary	8,000	8,000	8,000	8,000	8,000	8,000	48,000		
15		S.R.K Dispensary Helper Salary	4,000	4,000	4,000	4,000	4,000	4,000	24,000		
16		S.R.K Nursing Services paid to Mr.Shyam	-	-	-	-	-	-	-		
17		S.R.K Dispensary Petrol Reimbursement (Dr & Nurse)	-	-	-	-	-	-	-		
18		Bio Medical Waste Removal	8,000	8,000	8,000	8,000	8,000	8,000	48,000		
19		Water Sprinkling for Dust Control	25,000	25,000	-	-	21,000	-	71,000		
20	Environment	Mechanical road sweeping Charges	1,474	-	-	-	-	-	1,474	251,318	
21		Tree Plantation inside Plant Area	-	-	-	-	-	-	-		
22		Cricket Tournament Sponsor	-	-	-	-	-	-	-		
23	Others	Sponsor for World Yoga Day	-	-	-	-	-	-	-	1,957,411	
24		Panchetti Temple Electrical Work	284,138	-	-	-	-	-	284,138		
25		Naidukuppam Temple Renovation	170,700	-	-	-	-	-	170,700		
26		S.R.Kandigai Temple Renovation	-	-	-	-	-	-	-		
27		Pethikuppam Temple Tiles Sponsor	-	-	-	-	68,398	-	68,398		
28		Food Distribution - S.R.Kandigai (Rain)	-	12,500	12,000	-	-	-	24,500		
29		Rice Bags Distribution (Rain)	-	-	993,675	-	-	-	993,675		
30		Dress Materials to Villagers (Rain)	-	-	-	-	260,000	-	260,000		
<b>Total</b>			1,010,312	2,60,948	1,233,265	2,79,157	489,398	182,000	3,455,080	6,284,717	

*Signature*



**THIRD PARTY ANALYSIS ON  
AAQ& STACK**





**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS as per IS 14543 : 2004

**AMBIENT AIR QUALITY SURVEY**

<b>Report No:</b>	ECI-NN-AAQ-57/09/2015	<b>Report Date:</b>	08.09.2015
<b>Customer Name &amp; Address</b>	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
<b>Customer Reference:</b>	4540001274 Dt: 27/07/2015	<b>Sample Reference No:</b>	ECI-NN-AAQ-57/09/2015
<b>Sample Drawn By:</b>	ECI	<b>Sample Received On:</b>	03.09.2015
<b>Sample Collected Date:</b>	01 & 02.09.2015	<b>Test Commenced On:</b>	03.09.2015
<b>Qty of Sample Received:</b>	Filter Papers & 25 ml Soln	<b>Test Completed On:</b>	07.09.2015
<b>Sample Description:</b>	Ambient Air	<b>Sampling Method:</b>	IS 5182:P14:2000(R.2005)
<b>Sample Mark:</b>	Near Lab		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQS (Industrial/Residential)
1.	Ammonia (as NH <sub>3</sub> )	µg/m <sup>3</sup>	2.4	IS 11255:P06:1999(Rf.2003)	400
2.	Arsenic (as As)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS-VGA Flame Method	6.0
3.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	< 1.0	IS 5182:P11:2006	5.0
4.	Benzo(a)Pyrene (BaP)	ng/m <sup>3</sup>	< 1.0	IS 5182:P12:2004	1.0
5.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
6.	Lead (as Pb)	µg/m <sup>3</sup>	< 0.1	IS 5182:P22: 2004	1.0
7.	Nickel (as Ni)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS Method	20
8.	Nitrogen Dioxide (as NO <sub>2</sub> )	µg/m <sup>3</sup>	20.8	IS 5182:P06:2006	80
9.	Ozone (as O <sub>3</sub> )	µg/m <sup>3</sup>	< 9.8	IS 5182:P09:1974	100
10.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	74.2	IS 5182:P23:2006	100
11.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	43.8	Lab SOP No: ECI-SOP-A-21 Based on EPA 40 CFR Part 50 & CPCB Guide Line 2011	60
12.	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	11.9	IS 5182:P02:2001	80

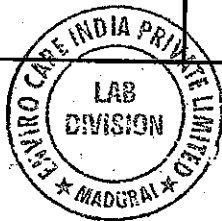
<--- End of Report --->

**Verified By:** *[Signature]*

**Remarks:** ---

**For ENVIRO CARE INDIA PRIVATE LIMITED**  
(Laboratory Division)

*[Signature]*  
**Authorized Signatory**



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e-mail: ecicbe@envirocareindia.com

Note: The results are only for this report. No other use of the results shall be made. This report is valid for 15 days from the date of issue. If the results are not reported within 15 days, the results will be treated as invalid. The responsibility of the client is to ensure that the results are used for the purpose intended. The results are not to be used for any other purpose. The results are not to be used for any other purpose. The results are not to be used for any other purpose.



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**TEST REPORT**

Accredited by **NABL** (Chemical & Biological)  
Recognized by **BIS** as per IS : 14543 : 2004

**AMBIENT AIR QUALITY SURVEY**

Report No	ECI-NN-AAQ-58/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No	ECI-NN-AAQ-58/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	01 & 02.09.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	07.09.2015
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)
Sample Mark	Near North Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQS (Industrial, Residential)
1.	Ammonia (as NH <sub>3</sub> )	µg/m <sup>3</sup>	1.2	IS 11255:P06:1999(Rf.2003)	400
2.	Arsenic (as As)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS-VGA Flame Method	6.0
3.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	< 1.0	IS 5182:P11:2006	5.0
4.	Benzo(a)Pyrene (BaP)	ng/m <sup>3</sup>	< 1.0	IS 5182:P12:2004	1.0
5.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI SOP SAM 08/CO Gas Detector (Instrument manual)	2.0
6.	Lead (as Pb)	µg/m <sup>3</sup>	< 0.1	IS 5182:P22: 2004	1.0
7.	Nickel (as Ni)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS Method	20
8.	Nitrogen Dioxide (as NO <sub>2</sub> )	µg/m <sup>3</sup>	17.2	IS 5182:P06:2006	80
9.	Ozone (as O <sub>3</sub> )	µg/m <sup>3</sup>	< 9.8	IS 5182:P09:1974	100
10.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	86.2	IS 5182:P23:2006	100
11.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	47.6	Lab SOP No: ECI-SOP-A-21 Based on EPA 40 CFR Part 50 & CPCB Guide Line 2011	60
12.	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	10.3	IS 5182:P02:2001	80

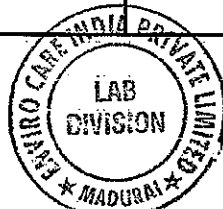
<--- End of Report --->

Verified By : *[Signature]*

Remarks : ---

**For ENVIRO CARE INDIA PRIVATE LIMITED**  
(Laboratory Division)

*[Signature]*  
**Authorized Signatory**



**A. Sheik Muzibur Rahuman**  
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e-mail : ecicbe@envirocareindia.com

1. The results are valid only if the sample is properly preserved and analyzed within the specified time period.  
2. Report shall not be considered as valid if the sample is not analyzed in the same format without the permission of the Laboratory.  
3. The time interval between the collection of the sample and the analysis should not be more than 15 days from the date of the report.  
4. The liability of the Laboratory is limited to the analytical work only.  
5. The results are not valid if the sample is not analyzed in the same format.



**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
 Recognized by BIS as per IS : 14547 : 2004

**AMBIENT AIR QUALITY SURVEY**

Report No.	ECI-NN-AAQ-59/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-AAQ-59/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	01 & 02.09.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	07.09.2015
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)
Sample Mark	Near 110 KVA(Switch Yard)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQS (Industrial/Residential)
1.	Ammonia (as NH <sub>3</sub> )	µg/m <sup>3</sup>	1.2	IS 11255:P06:1999(Rf.2003)	400
2.	Arsenic (as As)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS-VGA Flame Method	6.0
3.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	< 1.0	IS 5182:P11:2006	5.0
4.	Benzo(a)Pyrene (BaP)	ng/m <sup>3</sup>	< 1.0	IS 5182:P12:2004	1.0
5.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
6.	Lead (as Pb)	µg/m <sup>3</sup>	< 0.1	IS 5182:P22: 2004	1.0
7.	Nickel (as Ni)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS Method	20
8.	Nitrogen Dioxide (as NO <sub>2</sub> )	µg/m <sup>3</sup>	18.1	IS 5182:P06:2006	80
9.	Ozone (as O <sub>3</sub> )	µg/m <sup>3</sup>	< 9.8	IS 5182:P09:1974	100
10.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	83.1	IS 5182:P23:2006	100
11.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	40.2	Lab SOP No: ECI-SOP-A-21 Based on EPA 40 CFR Part 50 & CPCB Guide Line 2011	60
12.	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	7.9	IS 5182:P02:2001	80

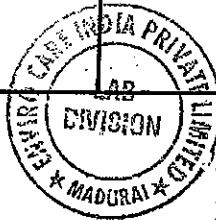
<--- End of Report --->

Verified By: *S. S. Sanyal*

Remarks : ---

For ENVIRO CARE INDIA PRIVATE LIMITED  
 (Laboratory Division)

*A. Sheik Muzibur Rahuman*  
 Authorized Signatory



**A. Sheik Muzibur Rahuman**  
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Note: 1. The results relate only to the test(s) listed.  
 2. Any discrepancy must be raised within 15 days of the date of issue of this report.  
 3. This report shall not be reproduced or where it is used in full or in part without the permission of the laboratory.  
 4. Dates and details of customer's test(s) will not be retained for more than 15 days from date of issue of this report.  
 5. Total liability of our laboratory is limited to the invoice amount.  
 6. Any dispute arising out of this report is subject to Madurai jurisdiction only.



*M/S. Sanyal*

**TEST REPORT**

Accreditation by **NABL** (Chemical & Biological)  
Recognized by **BIS** as per IS : 1854 : 2004

**AMBIENT AIR QUALITY SURVEY**

Report No.	ECI-NN-AAQ-60/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-AAQ-60/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	01 & 02.09.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	07.09.2015
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)
Sample Mark	Near Security South Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQS (Industrial/Residential)
1.	Ammonia (as NH <sub>3</sub> )	µg/m <sup>3</sup>	3.1	IS 11255:P06:1999(Rf:2003)	400
2.	Arsenic (as As)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS-VGA Flame Method	6.0
3.	Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	< 1.0	IS 5182:P11:2006	5.0
4.	Benzo(a)Pyrene (BaP)	ng/m <sup>3</sup>	< 1.0	IS 5182:P12:2004	1.0
5.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
6.	Lead (as Pb)	µg/m <sup>3</sup>	< 0.1	IS 5182:P22: 2004	1.0
7.	Nickel (as Ni)	ng/m <sup>3</sup>	< 0.1	IS 5182:Part 22: 2004 & AAS Method	20
8.	Nitrogen Dioxide (as NO <sub>2</sub> )	µg/m <sup>3</sup>	22.4	IS 5182:P06:2006	80
9.	Ozone (as O <sub>3</sub> )	µg/m <sup>3</sup>	< 9.8	IS 5182:P09:1974	100
10.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	89.4	IS 5182:P23:2006	100
11.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	45.1	Lab SOP No: ECI-SOP-A-21 Based on EPA 40 CFR Part 50 & CPCB Guide Line 2011	60
12.	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	10.2	IS 5182:P02:2001	80

<--- End of Report --->

Verified By *S. K. Rao*

Remarks : ---

**For ENVIRO CARE INDIA PRIVATE LIMITED**  
(Laboratory Division)

*A. Sheik Muzibur Rahuman*  
**Authorized Signatory**



**A. Sheik Muzibur Rahuman**  
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**NOTE:** The results relate only to the samples tested.  
The client shall be responsible for the validity of the results.  
The client shall not be held responsible for any error or omission in the same form without the permission of the Lab.  
The Lab is not responsible for any error or omission in the same form without the permission of the Lab.  
The Lab is not responsible for any error or omission in the same form without the permission of the Lab.  
The Lab is not responsible for any error or omission in the same form without the permission of the Lab.





**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS as per IS : 10543 : 2002

**AMBIENT AIR QUALITY SURVEY**

Report No	ECI-NN-AAQ-61/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No	ECI-NN-AAQ-61/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	31.08.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	05.09.2015
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)
Sample Mark	CHP-1(South Side)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQS (Industrial/Residential)
1.	Carbon Di-Oxide (CO <sub>2</sub> )	ppm	472.0	ECI-SOP-SAM-28	NA
2.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
3.	Suspended Particulate Matter (SPM)	ug/m <sup>3</sup>	151.8	IS 5182:P04:1999(Rf.2005)	—

<--- End of Report --->

Verified By : <i>C. V. M.</i>	<b>For ENVIRO CARE INDIA PRIVATE LIMITED</b> (Laboratory Division)  <i>A. Sheik Muzibur Rahuman</i> <b>Authorized Signatory</b>
Remarks : NA - Not Applicable	

**A. Sheik Muzibur Rahuman**  
Senior Chemist



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Note: The results relate only to the sample tested.  
Any tampering or manipulation shall invalidate this report.  
Private shall not be reproduced or where it is present in full and in the same form without the permission of the Enviro Care India Private Limited. Any other use of the results will not be accepted for more than 10 days from the date of issue of this report.  
All disputes arising out of this report shall be referred to Madurai for final decision.



*B. M. M.*

**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS as per IS : 14643 : 2004

**AMBIENT AIR QUALITY SURVEY**


Report No.	ECI-NN-AAQ-62/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-AAQ-62/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	31.08.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	05.09.2015
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)
Sample Mark	CHP-1(Middle Side)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max Permissible Limits of NAAQs (Industrial/Residential)
1.	Carbon Di-Oxide (CO <sub>2</sub> )	ppm	416.0	ECI-SOP-SAM-28	NA
2.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
3.	Suspended Particulate Matter (SPM)	µg/m <sup>3</sup>	214.8	IS 5182:P04:1999(Rf.2005)	--

<--- End of Report --->

Verified By : *Silva*

Remarks : NA - Not Applicable	<b>For ENVIRO CARE INDIA PRIVATE LIMITED</b> (Laboratory Division)   <b>Authorized Signatory</b>
-------------------------------	---



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e-mail : ecctbe@envirocareindia.com

**Note:** The report is valid only for the purpose mentioned. Any other use of the report is at the user's risk. The report shall not be used for any other purpose without the prior written permission of the laboratory. The user shall be responsible for any other use of the report. The report shall be valid only for the purpose mentioned. Any other use of the report is at the user's risk. The report shall not be used for any other purpose without the prior written permission of the laboratory. The user shall be responsible for any other use of the report.



**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by DIS as per IS 15024:2004

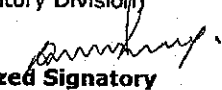
**AMBIENT AIR QUALITY SURVEY**

Report No.	ECI-NN-AAQ-63/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-AAQ-63/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	31.08.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	05.09.2015
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)
Sample Mark	CHP-1(North Side)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQs (Industrial Residential)
1.	Carbon Di-Oxide (CO <sub>2</sub> )	ppm	630.0	ECI-SOP-SAM-28	NA
2.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
3.	Suspended Particulate Matter (SPM)	µg/m <sup>3</sup>	196.1	IS 5182:P04:1999(Rf.2005)	---

<--- End of Report --->

Verified By: *S. K. Rao*

Remarks : NA - Not Applicable	<b>For ENVIRO CARE INDIA PRIVATE LIMITED</b> (Laboratory Division)   <b>Authorized Signatory</b>
-------------------------------	---



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**Note**

- The results relate only to the samples tested.
- Any complaint or objection shall be made within 15 days.
- Report shall not be given or reproduced without the permission of the Laboratory unless informed by customer. The test items will not be returned unless the report is ready to issue and is approved.
- Liability of equipment is limited to the invoice amount.
- Any dispute arising out of this report shall be referred to the jurisdiction of the court.



*(Handwritten signature)*

**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS as per IS : 14545 : 2010


**AMBIENT AIR QUALITY SURVEY**

Report No.	ECI-NN-AAQ-64/09/2015	Report Date	08.09.2015		
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District				
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-AAQ-64/09/2015		
Sample Drawn By	ECI	Sample Received On	03.09.2015		
Sample Collected Date	31.08.2015	Test Commenced On	03.09.2015		
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On	05.09.2015		
Sample Description	Ambient Air	Sampling Method	IS 5182:P14:2000(R:2005)		
Sample Mark	CHP-2 4A Conveyor Side(Middle)				

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQs (Industrial/Residential)
1.	Carbon Di-Oxide (CO <sub>2</sub> )	ppm	375.0	ECI-SOP-SAM-28	NA
2.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
3.	Suspended Particulate Matter (SPM)	µg/m <sup>3</sup>	167.9	IS 5182:P04:1999(Rf.2005)	—

<--- End of Report --->

Verified By: *S. Gnan*

Remarks : NA - Not Applicable	<b>For ENVIRO CARE INDIA PRIVATE LIMITED</b> (Laboratory Division)   <b>Authorized Signatory</b>
-------------------------------	---



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**Note:** 1. The results shall only be valid for the test.  
 2. Any correction in the test shall be available only upon the receipt of the original test report and the test shall be done within the period of 15 days from the date of the test.  
 3. The test report shall be valid for 15 days from the date of the test. After 15 days, the test report shall be invalid.  
 4. The test report shall be valid for 15 days from the date of the test. After 15 days, the test report shall be invalid.  
 5. The test report shall be valid for 15 days from the date of the test. After 15 days, the test report shall be invalid.





**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
 Recognized by BIS (IS: 14543: 2004)

**AMBIENT AIR QUALITY SURVEY**

Report No:	ECI-NN-AAQ-65/09/2015	Report Date:	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No:	ECI-NN-AAQ-65/09/2015
Sample Drawn By	ECI	Sample Received On:	03.09.2015
Sample Collected Date	31.08.2015	Test Commenced On:	03.09.2015
Qty of Sample Received	Filter Papers & 25 ml Soln	Test Completed On:	05.09.2015
Sample Description	Ambient Air	Sampling Method:	IS 5182:P14:2000(R:2005)
Sample Mark	CHP-2 4A Conveyor Side(South)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQS (Industrial Residential)
1.	Carbon Di-Oxide (CO <sub>2</sub> )	ppm	562.0	ECI-SOP-SAM-28	NA
2.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
3.	Suspended Particulate Matter (SPM)	µg/m <sup>3</sup>	175.1	IS 5182:P04:1999(Rf.2005)	—

<--- End of Report --->

Verified By : *C. V. M. A.*

Remarks : NA - Not Applicable

**For ENVIRO CARE INDIA PRIVATE LIMITED**  
(Laboratory Division)  
*[Signature]*  
Authorized Signatory



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**Note:** The results relate only to the sample submitted. Any correction/alteration should be made in the report. Report shall be valid only when the sample is received in the laboratory within the stipulated time. The results are valid only for the period of 15 days from the date of issue of the report. If the sample is not received within the stipulated time, the results may be affected. The results are not valid for the period of 15 days from the date of issue of the report. Any dispute arising out of the results should be raised immediately.



*[Handwritten signature]*

**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS (ISIRI) 1552 : 2004

**AMBIENT AIR QUALITY SURVEY**

Report No:	ECI-NN-AAQ-66/09/2015	Report Date:	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoodi Taluk Thiruvallur District		
Customer Reference:	4540001274 Dt: 27/07/2015	Sample Reference No:	ECI-NN-AAQ-66/09/2015
Sample Drawn By:	ECI	Sample Received On:	03.09.2015
Sample Collected Date:	31.08.2015	Test Commenced On:	03.09.2015
Qty of Sample Received:	Filter Papers & 25 ml Soln	Test Completed On:	05.09.2015
Sample Description:	Ambient Air	Sampling Method:	IS 5182:P14:2000(R:2005)
Sample Mark:	CHP-2 4B Conveyor Side(North)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible Limits of NAAQs (Industrial/Residential)
1.	Carbon Di-Oxide (CO <sub>2</sub> )	ppm	430.0	ECI-SOP-SAM-28	NA
2.	Carbon Monoxide (as CO)	mg/m <sup>3</sup>	< 1.2	ECI-SOP-SAM-08/CO Gas Detector (Instrument manual)	2.0
3.	Suspended Particulate Matter (SPM)	µg/m <sup>3</sup>	194.6	IS 5182:P04:1999(Rf.2005)	—

<--- End of Report --->

Verified By: *S. Ilangovan*

Remarks : NA - Not Applicable	<p style="text-align: center;"><b>For ENVIRO CARE INDIA PRIVATE LIMITED</b> (Laboratory Division)</p> <p style="text-align: center;"><i>A. Sheik Muzibur Rahuman</i> <b>Authorized Signatory</b></p>
-------------------------------	--



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e-mail : ecicbe@envirocareindia.com

Note: The results are only for the samples tested. Any repetition of tests shall be at the client's expense. All test results are valid only for the period mentioned in the report. The results are valid only for the period mentioned in the report. The results are valid only for the period mentioned in the report. The results are valid only for the period mentioned in the report.



**TEST REPORT**

**STACK MONITORING**

Report No.	ECI-NN-SM-79/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoondi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-SM-79/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	02.09.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Thimble & 50 ml Soln	Test Completed On	07.09.2015
Sample Description	Stack	Sampling Method	IS:11255:P1:1985(R:2003)
Sample Mark	DG 500 KVA Unit-II-Silencer		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible (N/PCB Norms for General Emission)
1.	Stack Height from 'G' Level	m	4.0	---	NA
2.	Port hole Height from 'G' Level	m	4.0	---	NA
3.	Stack Diameter at Port hole	m	0.25	---	NA
4.	Ambient Temperature	°C	35	IS 11255:P03:2008	NA
5.	Stack Temperature	°C	177	IS 11255:P03:2008	NA
6.	Flue Gas Velocity	m/sec	11.3	IS 11255:P03:2008	NA
7.	Flow Rate	Nm <sup>3</sup> /hr	1321	IS 11255:P03:2008	NA
8.	Carbon Monoxide (as CO)	% (v/v)	0.4	IS 13270:1992(Rf.2003)	1.0
9.	Hydrocarbon (HC)	% (v/v)	< 0.2	IS 13270:1992 (Rf.2003)	NA
10.	Oxides of Nitrogen(as NO <sub>x</sub> )	mg/Nm <sup>3</sup>	25.1	IS:11255:P07:2005 & IS 5182:P06:2006	NA
11.	Particulate Matter (PM)	mg/Nm <sup>3</sup>	94.6	IS 11255:P01:2003	150
12.	Sulphur Dioxide (as SO <sub>2</sub> )	mg/Nm <sup>3</sup>	18.6	IS 11255:P02:2003	NA

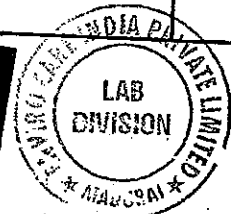
<--- End of Report --->

Verified By : *[Signature]*

Remarks : NA - Not Applicable

**For ENVIRO CARE INDIA PRIVATE LIMITED**  
(Laboratory Division)

*[Signature]*  
**Authorized Signatory**



**A. Sheik Muzibur Rahuman**  
Senior Chemist

CHENNAI Tel : +91 (44) 42867084  
Mobile : 9944938637  
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103  
Mobile : 8220015870  
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686  
Mobile : 8056766966  
e-mail : eckcbe@envirocareindia.com

Note: The results are valid only for the test as per the conditions specified in the report. The results are not to be used for any other purpose. The results are valid for a period of 15 days from the date of issue of the report. The results are not to be used for any other purpose. The results are not to be used for any other purpose. The results are not to be used for any other purpose.



*[Handwritten Signature]*

**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS as per IS 14543:2004

**STACK MONITORING**

Report No.	ECI-NN-SM-80/09/2015	Report Date	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoondi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No.	ECI-NN-SM-80/09/2015
Sample Drawn By	ECI	Sample Received On	03.09.2015
Sample Collected Date	02.09.2015	Test Commenced On	03.09.2015
Qty of Sample Received	Thimble & 50 ml Soln	Test Completed On	07.09.2015
Sample Description	Stack	Sampling Method	IS:11255:P1:1985(R:2003)
Sample Mark	DG 500 KVA Unit-III-Silencer		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible INPCB Norms for General Emission
1.	Stack Height from 'G' Level	m	4.0	---	NA
2.	Port hole Height from 'G' Level	m	4.0	---	NA
3.	Stack Diameter at Port hole	m	0.25	---	NA
4.	Ambient Temperature	°C	35	IS 11255:P03:2008	NA
5.	Stack Temperature	°C	175	IS 11255:P03:2008	NA
6.	Flue Gas Velocity	m/sec	11.0	IS 11255:P03:2008	NA
7.	Flow Rate	Nm <sup>3</sup> /hr	1297	IS 11255:P03:2008	NA
8.	Carbon Monoxide (as CO)	% (v/v)	0.4	IS 13270:1992(Rf.2003)	1.0
9.	Hydrocarbon (HC)	% (v/v)	< 0.2	IS 13270:1992 (Rf.2003)	NA
10.	Oxides of Nitrogen(as NO <sub>x</sub> )	mg/Nm <sup>3</sup>	27.2	IS:11255:P07:2005 & IS 5182:P06:2006	NA
11.	Particulate Matter (PM)	mg/Nm <sup>3</sup>	96.3	IS 11255:P01:2003	150
12.	Sulphur Dioxide (as SO <sub>2</sub> )	mg/Nm <sup>3</sup>	20.2	IS 11255:P02:2003	NA

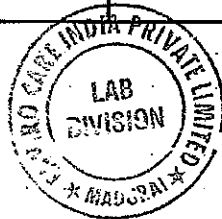
<--- End of Report --->

Verified By: *C. Pillay*

Remarks : NA - Not Applicable

For ENVIRO CARE INDIA PRIVATE LIMITED  
(Laboratory Division)

*A. Sheik Muzibur Rahuman*  
Authorized Signatory



**A. Sheik Muzibur Rahuman**  
Senior Chemist

CHENNAI Tel : +91 (44) 42867084  
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e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103  
Mobile : 8220015870  
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686  
Mobile : 8056766966  
e-mail : ecicbe@envirocareindia.com

**NOTE:**  
1. The results are valid only for the test as stated.  
2. Any alteration to the test method should be made in the report.  
3. Reproduction of the report without the permission of the laboratory is prohibited.  
4. Unless informed to the contrary, the results are given on the basis of the test as stated.  
5. The responsibility of the laboratory is limited to the test as stated.  
6. Any dispute arising out of the test results should be referred to the laboratory.



**TEST REPORT**

Accredited by NABL (Chemical & Biological)  
Recognized by BIS as per IS 14543 : 2004

**STACK MONITORING**

Report No:	ECI-NN-SM-81/09/2015	Report Date:	08.09.2015
Customer Name & Address	M/s. OPG Power Generation (P) Ltd, Peria Obulapuram Village Gummidipoondi Taluk Thiruvallur District		
Customer Reference	4540001274 Dt: 27/07/2015	Sample Reference No:	ECI-NN-SM-81/09/2015
Sample Drawn By:	ECI	Sample Received On:	03.09.2015
Sample Collected Day:	02.09.2015	Test Commenced On:	03.09.2015
Qty of Sample Received:	Thimble & 50 ml Soln	Test Completed On:	07.09.2015
Sample Description:	Stack	Sampling Method:	IS:11255:P1:1985(R:2003)
Sample Mark:	DG 500 KVA Unit-I-Silencer		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max. Permissible TNPCB Norms for General Emission
1.	Stack Height from 'G' Level	m	4.0	---	NA
2.	Port hole Height from 'G' Level	m	4.0	---	NA
3.	Stack Diameter at Port hole	m	0.25	---	NA
4.	Ambient Temperature	°C	35	IS 11255:P03:2008	NA
5.	Stack Temperature	°C	211	IS 11255:P03:2008	NA
6.	Flue Gas Velocity	m/sec	11.8	IS 11255:P03:2008	NA
7.	Flow Rate	Nm <sup>3</sup> /hr	1283	IS 11255:P03:2008	NA
8.	Carbon Monoxide (as CO)	% (v/v)	0.4	IS 13270:1992(Rf.2003)	1.0
9.	Hydrocarbon (HC)	% (v/v)	< 0.2	IS 13270:1992 (Rf.2003)	NA
10.	Oxides of Nitrogen(as NO <sub>x</sub> )	mg/Nm <sup>3</sup>	31.2	IS:11255:P07:2005 & IS 5182:P06:2006	NA
11.	Particulate Matter (PM)	mg/Nm <sup>3</sup>	100.4	IS 11255:P01:2003	150
12.	Sulphur Dioxide (as SO <sub>2</sub> )	mg/Nm <sup>3</sup>	23.5	IS 11255:P02:2003	NA

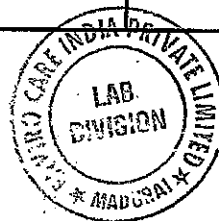
<--- End of Report --->

Verified By : *C.V.*

Remarks : NA - Not Applicable

For ENVIRO CARE INDIA PRIVATE LIMITED  
(Laboratory Division)

*A. Sheik Muzihur Rahuman*  
Authorized Signatory



**A. Sheik Muzihur Rahuman**  
Senior Chemist

CHENNAI Tel : +91 (44) 42867084  
Mobile : 9944938637  
e-mail : ecicheennai@envirocareindia.com

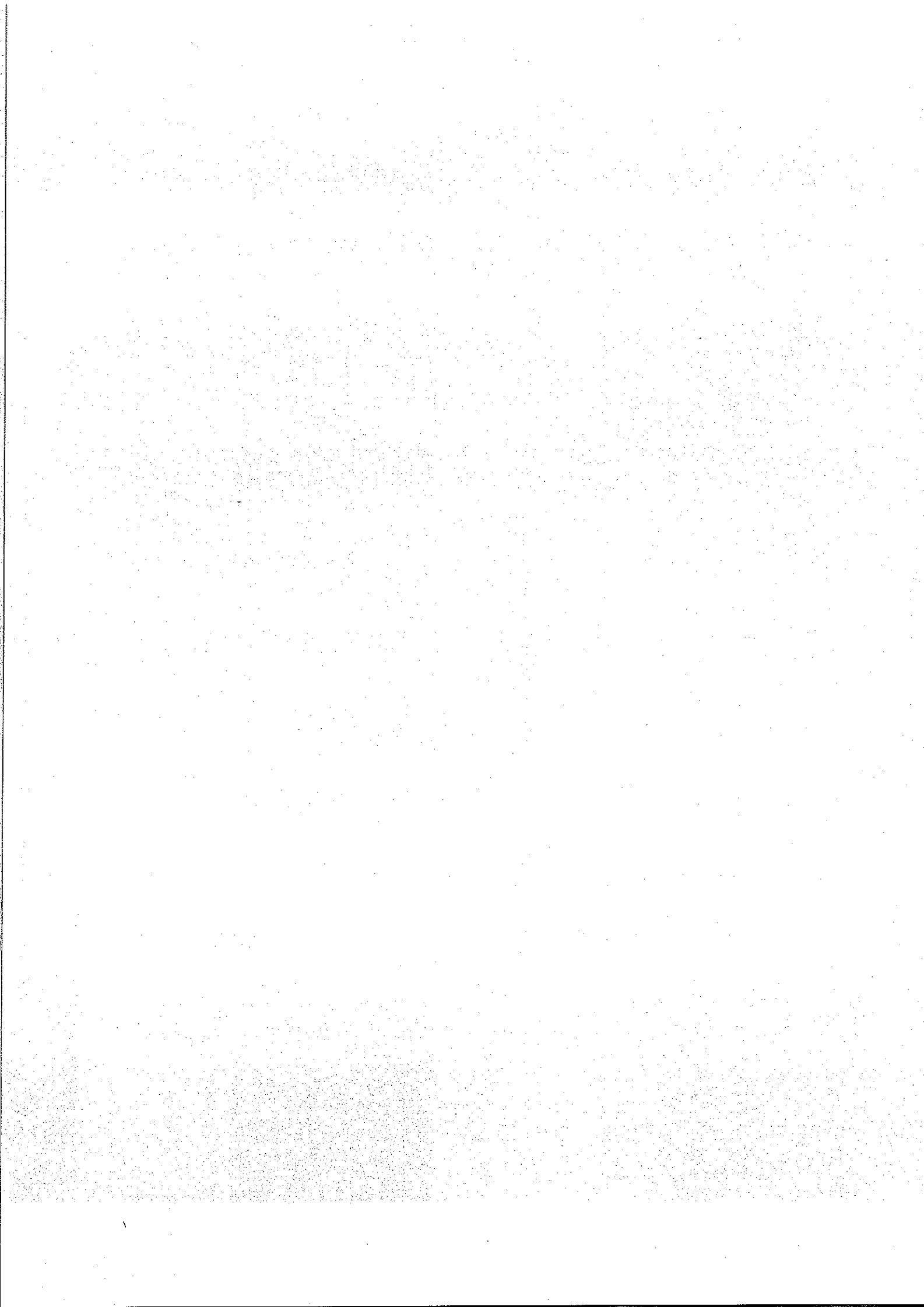
MADURAI Tel : +91 (452) 4355103  
Mobile : 8220015870  
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686  
Mobile : 8056766966  
e-mail : eciche@envirocareindia.com

**Note:**  
1. The results are valid only for the stated test conditions.  
2. Any correction or alteration shall be made only for the original report.  
3. The report shall not be used for any other purpose without the permission of the laboratory.  
4. The samples analyzed by this laboratory shall not be retained for more than 30 days from the date of analysis.  
5. The laboratory is not responsible for any damage to the samples or any loss of samples.  
6. Any dispute arising out of the report shall be referred to the management of the client.



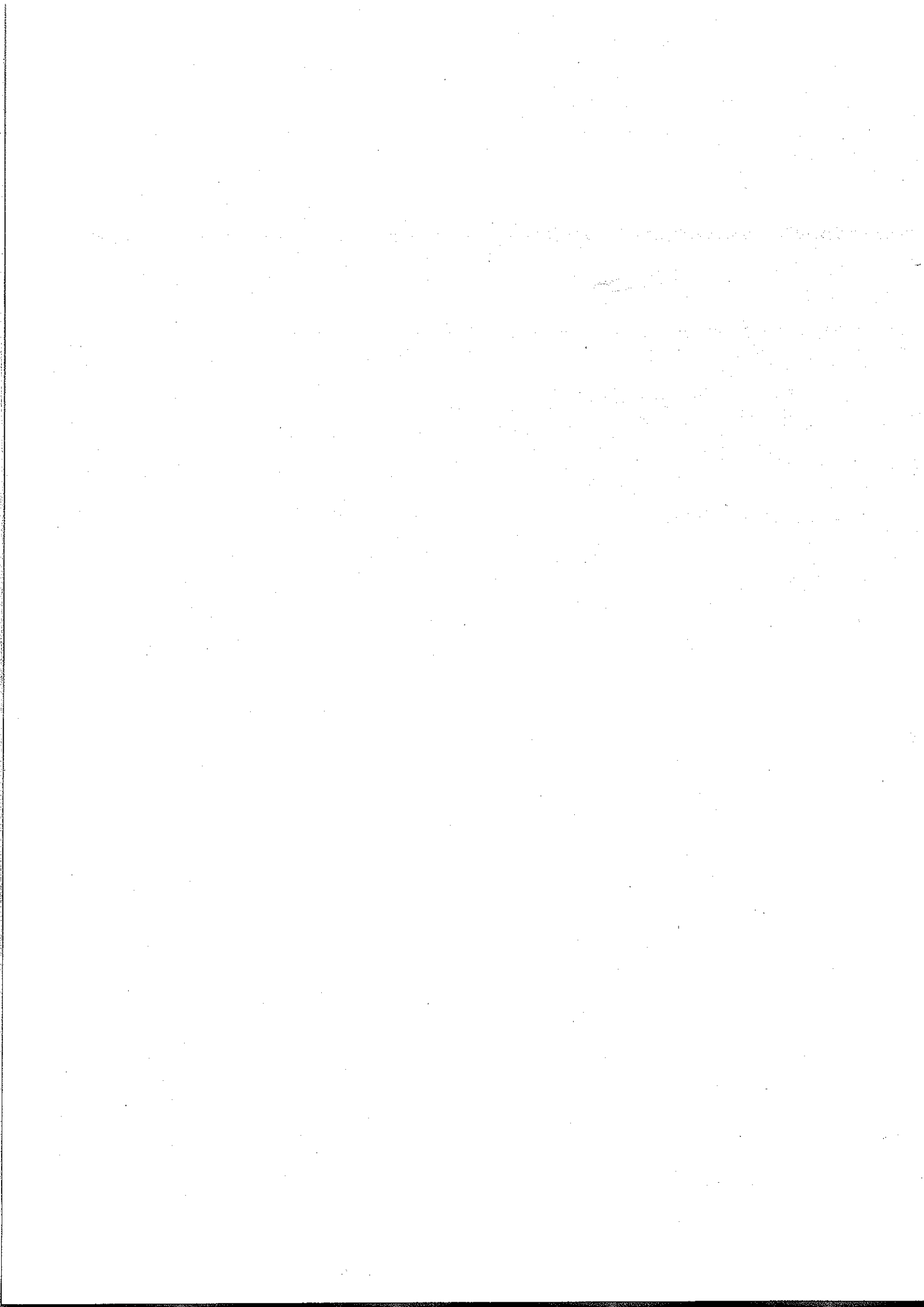
*A. Sheik Muzihur Rahuman*





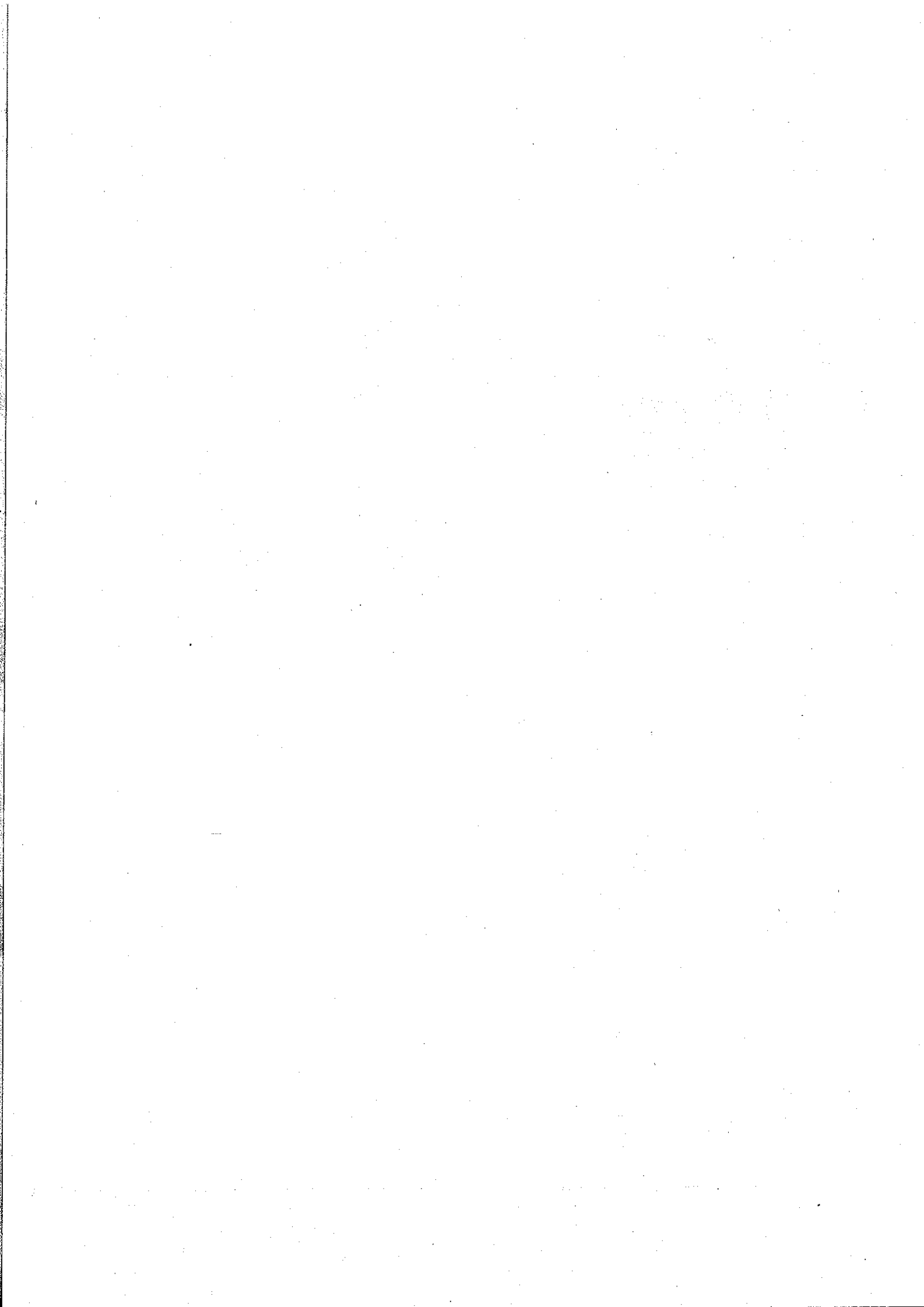
**TNOCB Monthly Sample Analysis Report**

Date of Sample Collection	29-Oct-15	29-Oct-15	27-Nov-15	27-Nov-15	27-Nov-15	27-Nov-15	27-Nov-15	27-Nov-15	27-Nov-15	29-Dec-15	29-Dec-15	2-Feb-16	2-Feb-16	23-Feb-16	23-Feb-16	15-Mar-16	15-Mar-16						
Sample Description	Outlet of STP	RO Permeate	Outlet of STP	Outlet of ETP	Bore well	Bore well	Bore well	Bore well	Bore well	Outlet of STP	Outlet of ETP	Outlet of STP	Outlet of ETP	Outlet of STP	Outlet of ETP	Outlet of STP	Outlet of ETP						
D/E Code No.	620OctG/15	630OctG/15	32NovG/15	33NovG/15	34NovG/15	35NovG/15	36NovG/15	37NovG/15	61DecG/15	62DecG/15	1FebG/16	2FebG/16	51FebG/16	52FebG/16	VP 801	VP 802							
Lab Code	1655	1656	1836	1837	1838	1839	1840	1841	2067	2088	2285	2286	2431	2432	2613	2614							
S.No.	1	2	1	2	3	4	5	6	1	2	1	2	1	2	1	2							
Parameter	pH	Conductivity	Total Suspended Solids	Total Dissolved Solids	Chlorides	Sulphates	Oil and Grease	BOD at 27°C for 3 days	COD	Potassium	Sulphides	Copper	Zinc	Cadmium	Lead	Nickel	Total Phosphate	Total Chromium	Total Alkalinity	Total Kjeldahl Nitrogen	Fluoride	Mercury	
Unit		µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	8.98	8.13	8.43	8.46	7.09	7.89	7.3	8.45	8.00	7.89	7.60	7.13	7.41	7.76	7.15	6.9							
	22	10	12	10	28	8	38	12	28	12	22	10	12	10	22	8							
		350		298	932	428	314	368	428			350	622	110		288							
	145	10		109	240	80	127	32	110			175	205	50		115							
		<1		<1	<1	7	5	4	46			27	54	6		19							
	5	3	3	4	3	3	4	3	6	3	<1	<1	<1	<1	<1	<1							
		24		32	40	24	32	24	40			24	40	24		2							
					<0.0015	<0.0015	<0.0015	<0.0015								0.004							
																<0.0008							
																<0.015							
					0.017	<0.15	<0.15	<0.15								<0.006							





# **NOISE LEVEL MONITORING**





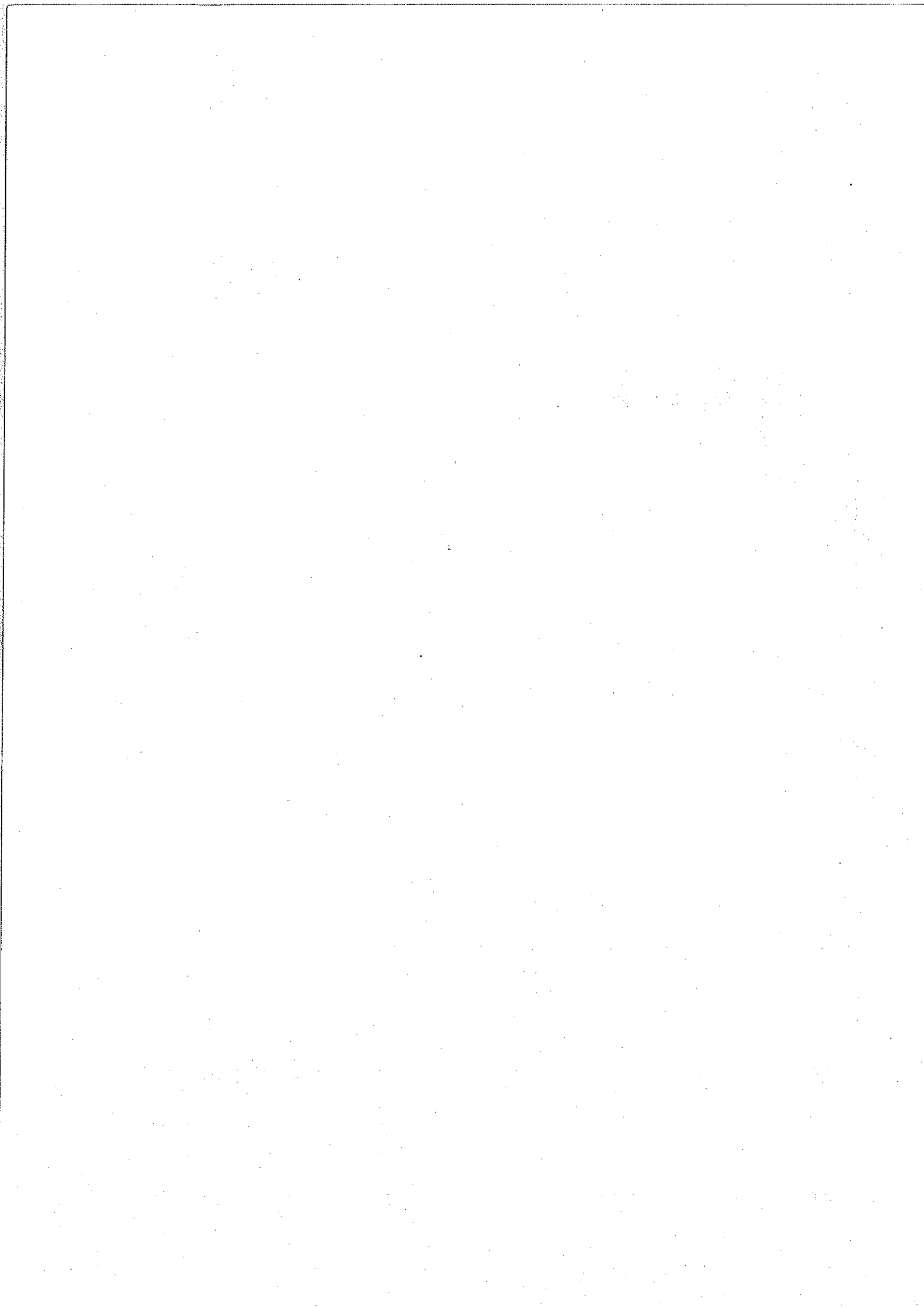
**OPG Power Generation Pvt Ltd.,**  
2 x 77, 1 x 80, 1 x 180 MW TPP

Doc title

**Ambient Noise level monitoring ( October 2015 - March 2016 )**

Oct-15	DAY TIME				DAY TIME			
	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )
02.10.2015	52	51.4	51.8	52.2	42.4	41.2	41.4	42.8
09.10.2015	51.8	53.2	52.2	51.8	42.6	42.4	42.3	44.2
23.10.2015	53.1	52.8	53.8	51.4	41.8	42.8	43.6	44.2
30.10.2015	52.2	51.4	52.4	52.2	42.1	45.8	43.8	42.4

Nov-15	DAY TIME				DAY TIME			
	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )
04.11.2015	51.8	51.4	52.2	51.1	42.8	42.4	41.8	42.4
12.11.2015	53.4	52.2	52.8	54.1	42.8	42.8	42.4	43.8
18.11.2015	52.8	51.8	53.2	54.2	43.1	42.2	42.8	44.1
26.11.2015	53.2	53.2	53.6	53.8	43.2	43.8	43.8	42.4





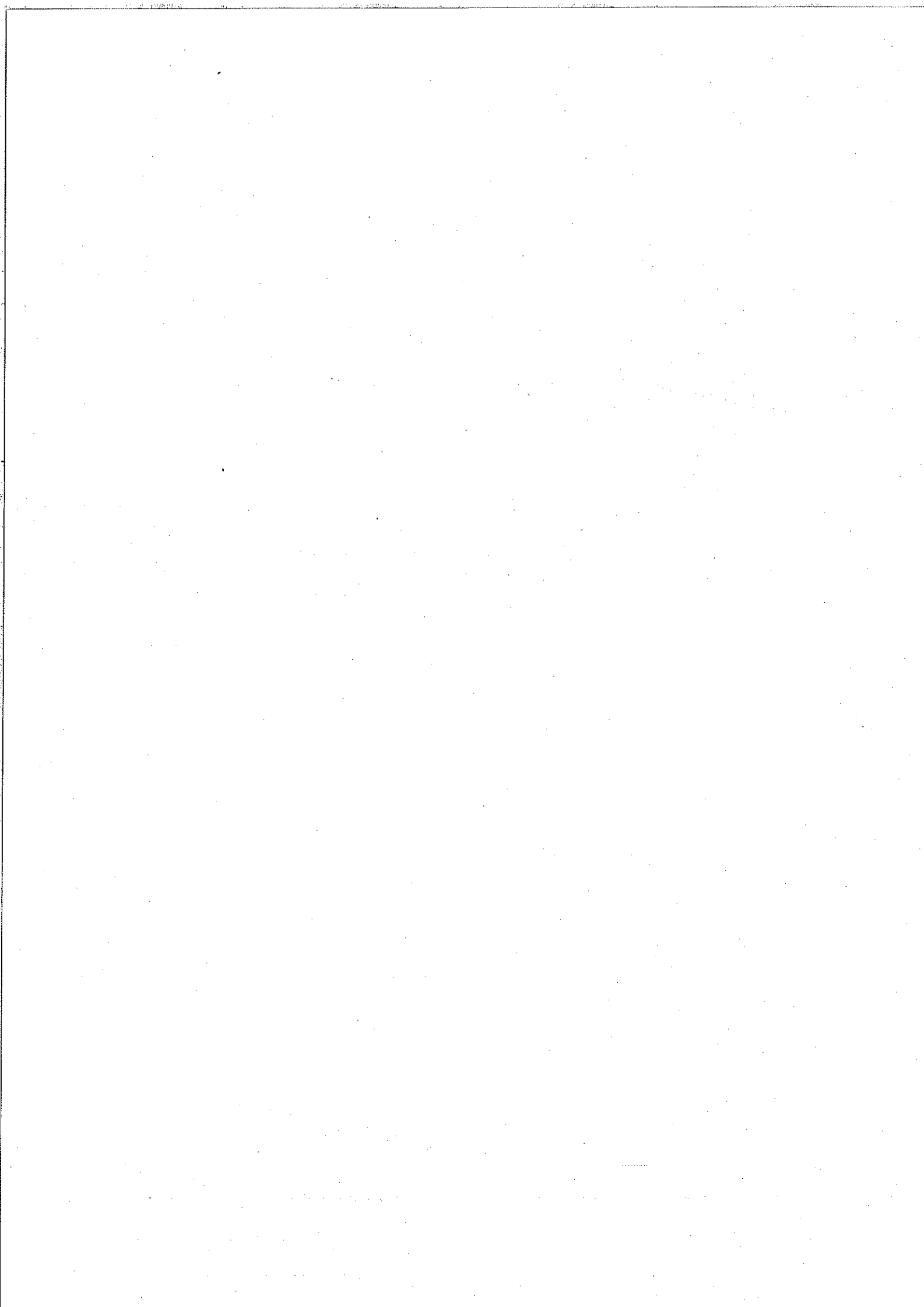
**OPG Power Generation Pvt Ltd.,**  
2 x 77, 1 x 80, 1 x 180 MW TPP

Doc title

**Ambient Noise level monitoring ( October 2015 - March 2016 )**

Dec-15	DAY TIME				NIGHT TIME			
	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )
3.12.2015	53.6	53.2	53.1	54.2	43.1	44.8	41.9	43.5
12.12.2015	51.8	51.5	51.1	51.2	41.9	41.6	41.7	41.8
20.12.2015	52.2	51.8	52.2	53.2	42.6	42.4	41.8	42.2
29.12.2015	53.1	52.9	54.1	53.6	42.9	41.8	43.2	42.1

Jan-16	DAY TIME				NIGHT TIME			
	North Gate	South Gate	Kanisk Gate ( East )	RR Tulasi (West )	North Gate	South Gate	Kanisk Gate ( East )	RR Tulasi (West )
06.01.2016	52.1	51.4	52.3	51.8	41.9	42.3	42.5	43
14.01.2016	53.6	52.5	52.9	52.4	42.3	42.5	41.9	43.2
21.01.2016	51.1	51.8	52	51.8	42.1	44.1	42.1	43.2
28.01.2016	50.6	51.2	52.1	52.1	42.6	42.1	43.1	40.8





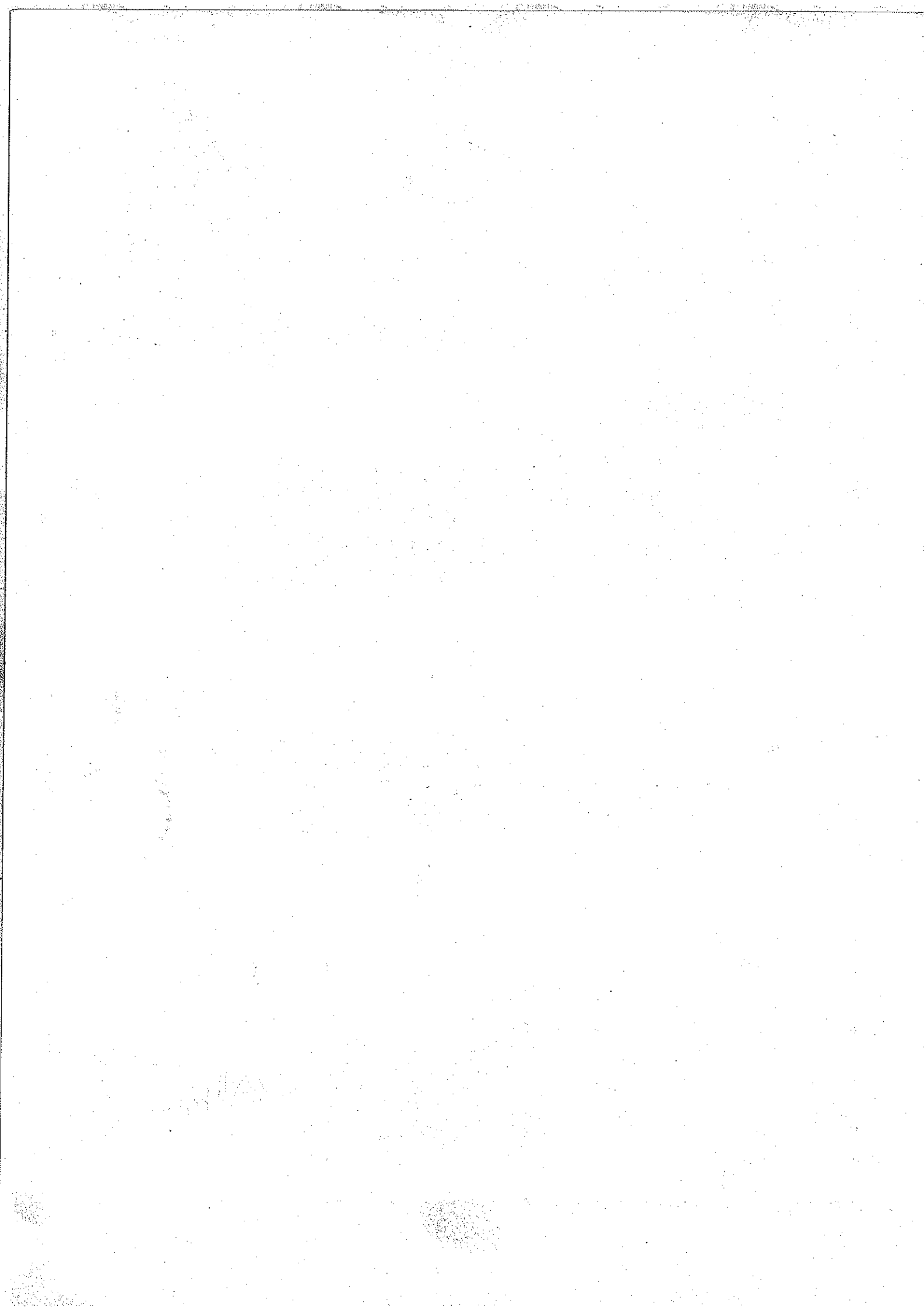
OPG Power Generation Pvt Ltd.,  
2 x 77, 1 x 80, 1 x 180 MW TPP

Doc title

Ambient Noise level monitoring ( October 2015 - March 2016 )

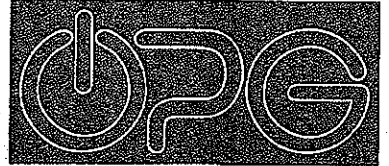
Feb-16	DAY TIME				NIGHT TIME			
	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )	North Gate	South Gate	Kanisk Gate ( West )	RR Tulasi (East )
05.02.2016	51.9	52.1	52.2	53.2	44.2	43.2	42.4	43.4
13.02.2016	52.4	52.8	53.6	52.1	42.8	42.4	42.4	42.2
20.02.2016	52.6	51.2	53.2	52.8	41.8	41.8	41.6	41.8
29.02.2016	51.8	52.9	53.4	53.1	42.4	43.6	42.2	42.6

Mar-16	DAY TIME				NIGHT TIME			
	North Gate	South Gate	Kanisk Gate ( East )	RR Tulasi (West )	North Gate	South Gate	Kanisk Gate ( East )	RR Tulasi (West )
05.03.2016	52	51.4	52.1	53.2	41.4	41.8	42.2	41.2
14.03.2016	51.8	51.8	52.4	52.8	42.1	41.4	41.8	42.1
20.03.2016	51.2	52.1	50.1	52.1	42.1	42.1	42.8	40.8
24.03.2016	51.4	51.8	51.2	50.8	40.4	41.6	41.9	41.2





**FORM V ( 2015-2016)**



OPG POWER GENERATION PVT. LTD.  
CIN : U40109TN2005PTC055442

OPGPG: EHS/TNPCB/CTO/2016-17/

27 - 04 - 2016

**Joint Chief Environmental Engineer (M),**

Tamil Nadu Pollution Control Board, Chennai Region,

77A, South Avenue Road,

Ambattur Industrial Estate,

Chennai – 600 056

Sir,

**Sub: TNPCB Industries – M/s OPG Power Generation Private Limited – Submission of Environmental Statement - Reg.**

We herewith submit the annual environmental statement in Form 5 for the financial year 2015-16, ending March 2016.

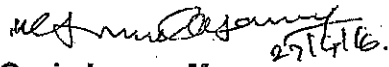
This is for your kind information and records please.

For any further clarification or data if required, we are at your disposal.

Thanking You.

Yours Sincerely,

**For OPG Power Generation Private Limited**

  
Govindasamy M

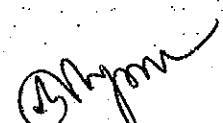
**Head-EHS**

- Cc: 1. The Member Secretary, TNPC Board, Chennai-32 with Encl. for kind information  
2. The District Environmental Engineer, Thiruvallore District – only copy of letter

New No. 6, Sardar Patel Road, Guindy, Chennai - 600 032.  
Phone : +91 44 4291 1222, Fax : +91 44 4291 1209

E-mail : [admin@opgpower.com](mailto:admin@opgpower.com)

Website : [www.opgpower.com](http://www.opgpower.com)



# FORM 5

## ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31<sup>ST</sup> MARCH 2016

### PART A

(i)	Name and address of the owner/ occupier of the industry, operation or process.	T.CHANDRAMOULEE JOINT MANAGING DIRECTOR OPG POWER GENERATION PVT. LTD 167, ST. MARRYS ROAD ALWARPET CHENNAI
(ii)	Industry category Primary –(STC Code) Secondary– (STC Code)	13. Thermal Power Plant Red Large
(iii)	Production capacity-Units-	2x77+1x80+1x180 MW
(iv)	Year of Establishment	Apr 2010/Sep 2012/May 2013/ Jul 2015
(v)	Date of last environmental statement submitted	29 <sup>th</sup> September 2015

### PART B

#### Water and Raw Material Consumption

##### (1) Water consumption m<sup>3</sup>/d

Process	359 KLD
Cooling	41 KLD (Air Cooled Condenser)
Domestic	31 KLD

*[Handwritten signature]*  
29/6

Sl. No.	Name of the Products	Process water consumption per unit of product output l/kwh	
		During the previous financial year	During the current financial year
		(1)	(2)
1.	Electricity	0.045 liter/kwh – Unit 1 0.051 liter/kwh – Unit 2 0.065 liter/kwh – Unit 3 Under Commission – Unit 4	0.073 liter/kwh – Unit 1 0.054 liter/kwh – Unit 2 0.072 liter/kwh – Unit 3 0.048 liter/kwh – Unit 4

**(2) Raw Material Consumption**

Sl. No.	Name of the Raw materials	Consumption of raw material per unit	
		During the previous financial year	During the current financial year
		(1)	(2)
1.	Blended Coal	0.80 kg/kwh –Unit 1 0.74 kg/kwh –Unit 2 0.75 kg/kwh –Unit 3 Under Commission – Unit 4	0.777 kg/kwh –Unit 1 0.740 kg/kwh –Unit 2 0.748 kg/kwh –Unit 3 0.641 kg/kwh –Unit 4

\*Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

*Handwritten signature and date 27/5*

**PART C**

**POLLUTION DISCHARGED TO ENVIRONMENT/UNIT OF OUTPUT**

(Parameters as specified in the consent issued)

Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
(a) Water	0.32 kg/day	pH 7.6 TSS 21 mg/l BOD 11 mg/l	No Variation
(b) Air	SPM 0.7 MT/day SO <sub>2</sub> 2.3 MT/day NO <sub>x</sub> 2.7 MT/day	SPM 35 mg/Nm <sup>3</sup> SO <sub>2</sub> 120 mg/Nm <sup>3</sup> NO <sub>x</sub> 140 mg/Nm <sup>3</sup>	No Variation

**PART D**

**HAZARDOUS WASTES**

(As specified under Hazardous Wastes Management and Handling Rules, 1989)

Hazardous Waste	Total quantity	
	During the previous financial year	During the current financial year
(a) From process	1000 kg	1000 kg
(b) From pollution control facilities	Nil	Nil

*Handwritten signature and date 25/14*

## PART E

### SOLID WASTES

	Total quantity	
	During the previous financial year	During the current financial year
(a) From process	Fly Ash 141578 MT Bottom Ash 31624 MT	Fly Ash 174316 MT Bottom Ash 40644 MT
(b) From pollution control facilities	Nil	Nil
(c) (1) Quantity recycled or re-utilised with in the unit	Nil	Nil
(2) Sold	Fly Ash 141578 MT Bottom Ash 31624 MT	Fly Ash 174316 MT Bottom Ash 40644 MT
(3) Disposed	Nil	Nil

## PART F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adapted for both these categories of wastes.

- Hazardous waste production: Approximately 1000 kg of used/spent oil of all 4 units disposed to authorized recycler.
- Dry Fly ash and Bottom ash Disposal Practice:
  - Dry Fly ash : 100% disposal to end-user – Cement industries & brick making
  - Dry Bottom ash : 100% disposal to end-user – Filling for Road laying & Brick making
- Typical Fly ash analysis:

Unburnt carbon: <1%	SiO <sub>2</sub> : 58 %	Al <sub>2</sub> O <sub>3</sub> : 24 %
Fe <sub>2</sub> O <sub>3</sub> : 6 %	CaO: 2 %	MgO: 1 %
TiO <sub>2</sub> : 1.1 %	Na <sub>2</sub> O: 0.5 %	K <sub>2</sub> O: 1 %
P <sub>2</sub> O <sub>5</sub> : 0.1 %	SO <sub>3</sub> : 5 %	

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25/4

## PART G

**Impact on pollution abatement measures taken on conservation of natural resources and on the cost of production.**

- a) Green belt developed in more than 33% of the total area and additional 2000 to 3000 plantations every year
- b) RO based Effluent treatment plant is functioning and 90% of the effluent is recycled in the process.
- c) Sewage treatment plants is working satisfactorily and the treated water is totally used in our green belt
- d) Bag filters, ESP are working satisfactorily
- e) Continuous stack monitoring equipment's for all the stacks and 2 Ambient Air quality monitoring stations are commissioned and the results are uploaded to Care Air Centre
- f) Continuous effluent monitoring station for the recommended effluent parameters (Flow Totalizer and Web Camera for the Solar Pond) are procured and connected to Water Quality monitoring center.
- g) Additional RO based effluent treatment plant for unit 4 and expansion project was constructed for a cost of 5 Cr and commissioned under Zero discharge scheme.
- h) Rainwater harvesting by infiltration-recharge pits and open ponds were established based on independent hydrological study

Hence there is no adverse impact on Environment and loss of generation

## PART H

**Additional measures / investment proposal for environmental protection, abatement of pollution, prevention of population.**

- a) Additional Sewage treatment plant for unit 4 and expansion project is under construction for a cost of 2 Cr to meet the future construction requirement.

## PART I

### Any other particulars for improving the quality of environment

- a) Green belt is developed in more than 33% of the total area and this task is kept in continual improvement
- b) ISO 14001: 2004 Environment Management System and OHSAS 18001:2007 Occupational Health & Safety Accreditation System certificates were obtained and the systems are maintained well.
- i) Rainwater harvesting by infiltration-recharge pits and open ponds were established based on independent hydrological study
- c) 100% disposal of fly ash and bottom ash are being ensured.
- d) All the noise generating equipment were covered with acoustics to avoid the noise pollution
- e) Wind shield around the Coal Stock yard was replaced, since it got damaged in the heavy rain.
- f) RO based effluent treatment plant is commissioned and the treated effluent water is recycled in the process, which reduced the raw water consumption to 50%.

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27/9



# **RAIN WATER HARVESTING REPORT**

Date: 04.04.2016

## RAIN WATER HARVESTING PROGRESS IN OPG THERMAL POWERPLANT

- **PURPOSE:**

The purpose of this report is to monitor and follow up action on the work progress on Rain water harvesting recommendations given by Mr. Chandra Reddys & Mr. Jayakumar (Ground Water).

- **PROCESS:**

Find below the MAJOR Recommendations.

- Modification on existing Tube wells.
- Recharge Pits along with De- Silting Chamber – 9 Locations.
- Infiltration Pit at regular Interval in storm water drain line.
- Existing Rain water Gutter pipes to be connected with raw water storage tank.
- Piezometer Nests to be provided – 3 Locations – To monitor ground water level.

- **MODIFICATION ON EXISTING TUBE WELLS:**

S.No	Recommended	Action taken	Reason
1	Pump capacity replacement with 5 HP	Out of 17, 15 Tube wells were replaced with 5 HP pumps	1. 1 No of pump (Not able to replace with 5 H.P due to chock with soil) crusher house 2. 1 No is for monitoring tube well.
2	Controlled-pumping	No Bore wells are running continuously more than 6 hrs. Running Hrs. schedule were prepared and logged	-
3	Existing Tube wells protection from entry of rain water to avoid disturbs gravel packaging, destabilize casing pipes.	It has been completed.	-



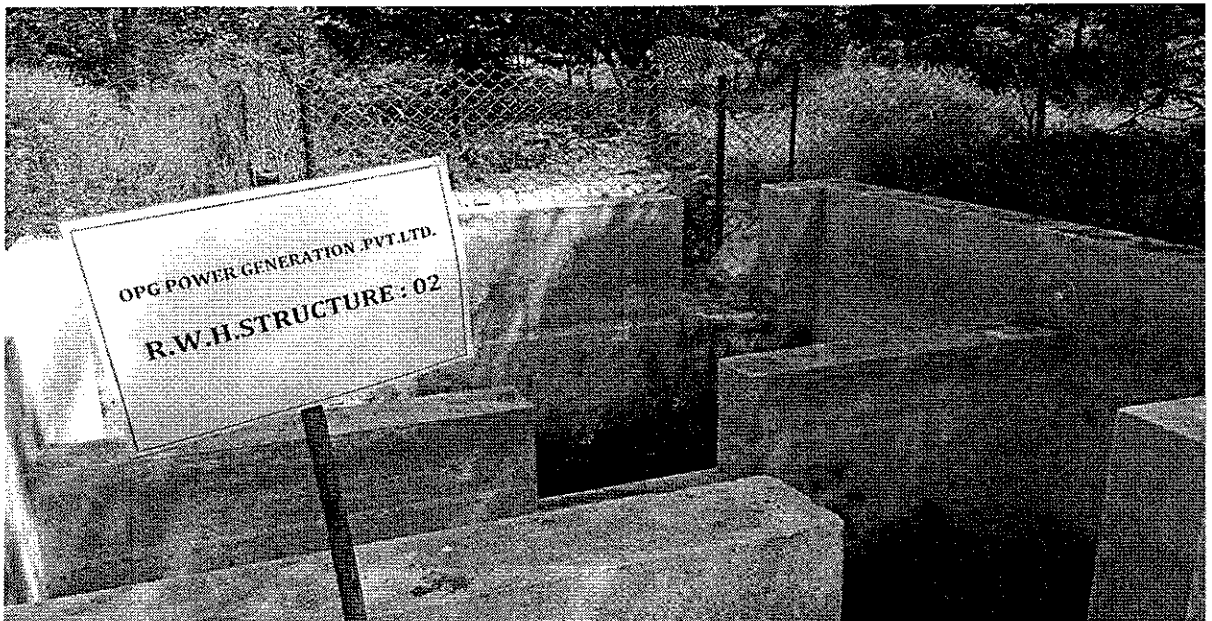
- RECHARGE PITS ALONG WITH De-SILTING CHAMBER

As per their recommendations, 9 recharge pits and 7 De-Silting chamber have to be constructed in our premises. Among these 4 No's of De-Silting chambers and 2 No's of Recharging Pits were completed.

- NEAR BY ADMIN

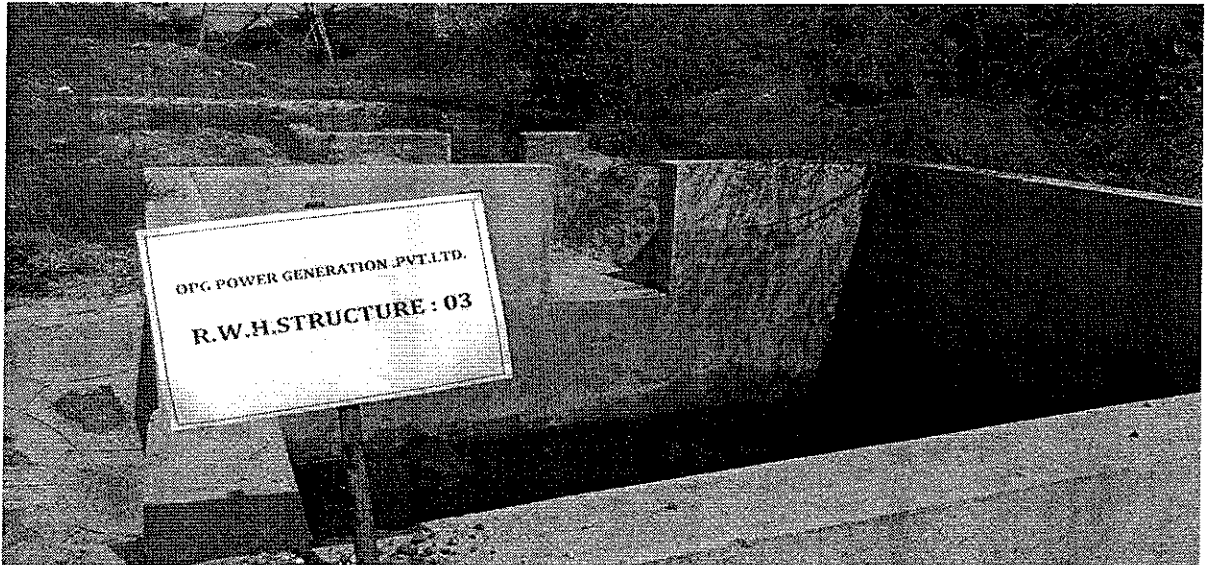


- NEAR BY TIME OFFICE

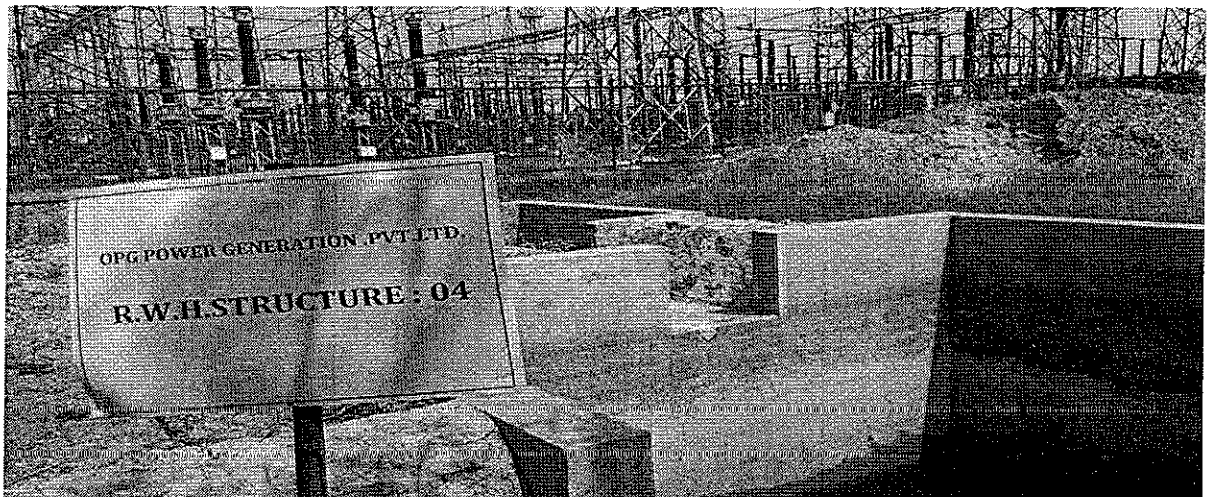


*Allyson*

• EAST SIDE OF UNIT-1 SWITCH YARD



• UNIT IV SWITCH YARD



- In the entire Pits Storm water Drains to De Silting Chamber and Input to recharging Pit to be cleared. - Completed
- Both the existing Recharging Pits found full of grass, to be cleared – **It was cleared.**
- Top surface of the Existing pits has to be raised 10 – 15 cm to avoid silting on the pit.
- Gravels which is inside the existing Pits to be cleared off silt.
- A protective fencing has to be provided around new constructed pits.

*(Signature)*

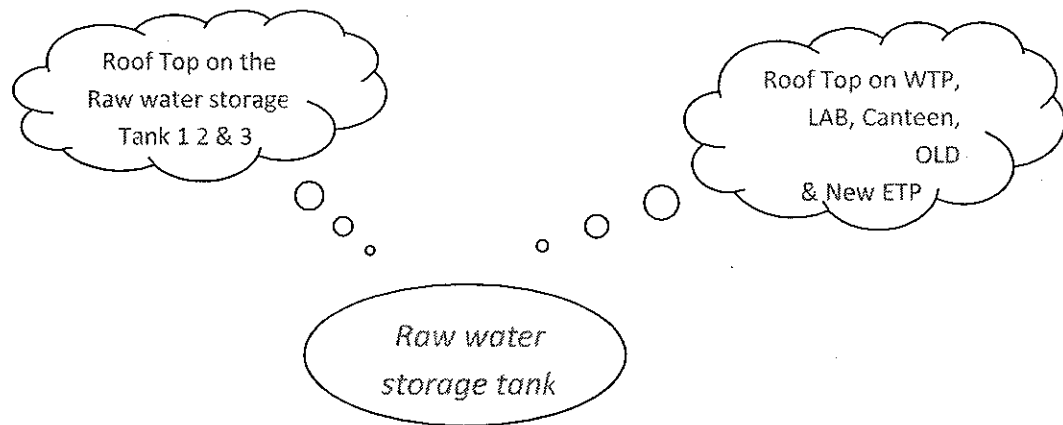
- ROOF TOP RAIN WATER HARVESTING

1. Admin Office:

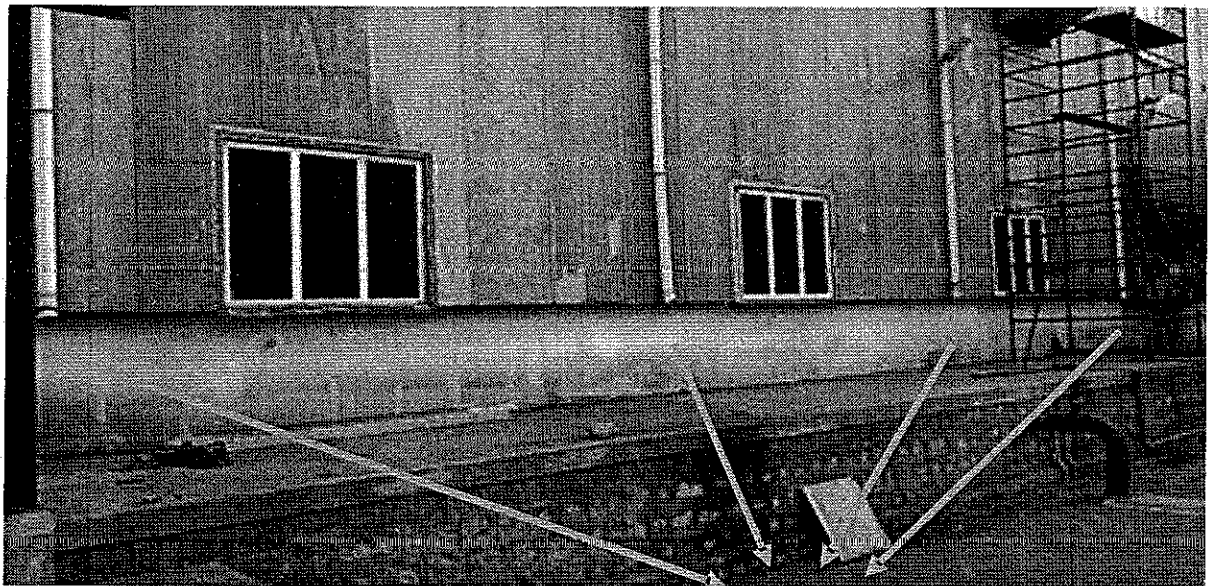
In filtration Pit may be constructed near by the Existing tube wells. Roof Top rain water can be routed to this pit.

2. WTP & LAB :

Roof Top rain water on the WTP and Lab and ETP may be routed directly to RAW water storage tank. Right now it has been diverted to ETP Storage tank.



3. UNIT # 1, 2 & 3 ACC fans & POWER House:



As mentioned in the picture, Recharge pit may be constructed to conserve the rain water.

Existing Gutter pipes may be connected to recharge pit.

*Signature*

#### 4. On the Store:

In the northern side of the storm water drain line, 2 or 3 infiltration pit to be constructed.

Existing gutter pipes to be routed to that infiltration pit.

- INFILTRATION PITS

- RECOMMENDATIONS:

- ✓ There are 22 no's of infiltration pits are located in our premises in storm water drain line.
- ✓ Most of the pits are found full of grass, to be cleaned. – **It was cleaned.**
- ✓ Gravels in the pit to be cleaned or replaced. – **Replaced with new gravels.**
- ✓ Perimeter of the pits to be slightly increased to avoid silt deposit.

- ACTION TAKEN:

- ✓ Already 10 no's of the pits were cleaned.



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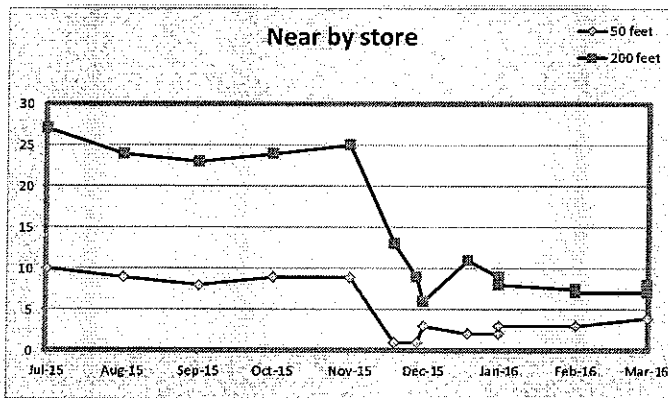


➤ PIEZOMETER NESTS:

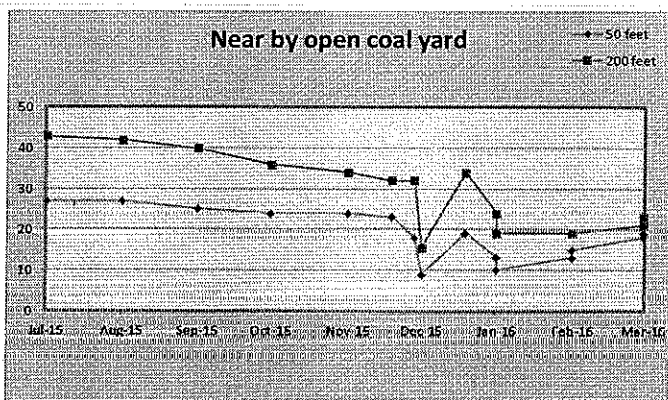
S.No	Recommendations	Action taken
1	Piezometer Nests - 3 No's	Completed in 3 locations 1) Near Storage pond 2) Near Labour shed, 3) Near open coal yard
2	Every Fortnight Water level and analysis to be done	Every fortnight, water levels are being monitored and logged. Details are given below.

➤ FIND BELOW THE WATER LEVEL DATA AT DIFFERENT DEPTH (50 & 200 FEETS)

DATE	Near by store	Bore level from earth water level	
	Month	50 feet	200 feet
09-07-2015	Jul-15	10	27
06-08-2015	Aug-15	9	24
05-09-2015	Sep-15	8	23
04-10-2015	Oct-15	9	24
04-11-2015	Nov-15	9	25
19-11-2015	Nov-15	1	13
28-11-2015	Nov-15	1	9
15-12-2015	Dec-15	2	11
30-12-2015	Dec-15	3	6
12.01.2016	Jan-16	2	9
25.01.2016	Jan-16	3	8
10.02.2016	Feb-16	3	7.5
25.02.2016	Feb-16	3	7
12.03.2016	Mar-16	4	7
31.03.2016	Mar-16	4	8

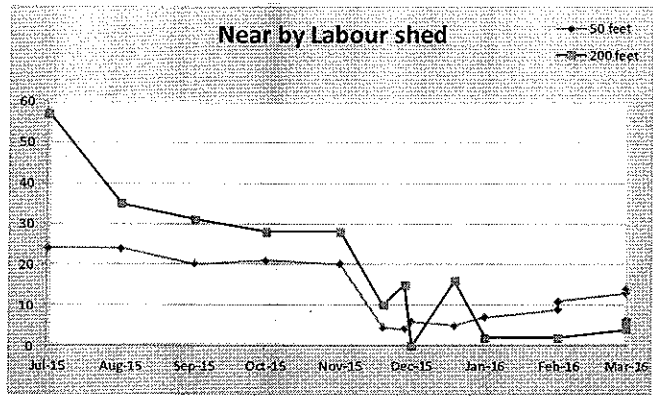


DATE	Near by Open coal Yard	Bore level from earth water level	
	Month	50 feet	200 feet
09-07-2015	Jul-15	27	43
06-08-2015	Aug-15	27	42
05-09-2015	Sep-15	25	40
04-10-2015	Oct-15	24	36
04-11-2015	Nov-15	24	34
19-11-2015	Nov-15	23	32
28-11-2015	Nov-15	18	32
15-12-2015	Dec-15	19	34
30-12-2015	Dec-15	9	15.5
12.01.2016	Jan-16	13	24
25.01.2016	Jan-16	10	19
10.02.2016	Feb-16	13	19
25.02.2016	Feb-16	15	19
12.03.2016	Mar-16	18	21
31.03.2016	Mar-16	19	23



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DATE	Near by labour shed	Bore level from earth water level	
	Month	50 feet	200 feet
09-07-2015	Jul-15	24	57
06-08-2015	Aug-15	24	35
05-09-2015	Sep-15	20	31
04-10-2015	Oct-15	21	28
04-11-2015	Nov-15	20	28
19-11-2015	Nov-15	4.5	10
28-11-2015	Nov-15	4	15
15-12-2015	Dec-15	5	16
30-12-2015	Dec-15	6	0
12.01.2016	Jan-16	7	2
25.01.2016	Jan-16	7	2
10.02.2016	Feb-16	9	2
25.02.2016	Feb-16	11	2
12.03.2016	Mar-16	13	4
31.03.2016	Mar-16	14	6



*Allyson*





भारत सरकार  
 Government of India  
 वाणिज्य और उद्योग विभाग  
 Ministry of Commerce & Industry  
 पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पीएसओ)  
 Petroleum & Explosives Safety Organisation (PESO)  
 पता: तंत्र, एडब्ल्यू. सी.ओ.ओ. कॉम्प्लेक्स, सेमिनरी हिल्स  
 नागपुर - 440006  
 5th Floor, A-Block, CGO Complex, Seminary Hills,  
 Nagpur - 440006

E-mail: explosives@explosives.gov.in  
 Phone/Fax No. 0712-2510240, Fax 2510977

दिनांक (Dated) 08/01/2015

संख्या (No): P/HQ/TN/15/4786 (P226617)

लगाए गए (To)

Mr. M/s OPG Power Generation Pvt. Ltd.,  
 167 St. Marys Road Alwarpet,  
 NA,  
 Chennai,  
 District: CHENNAI,  
 State: Tamil Nadu  
 PIN: 600018

उपरोक्त (Subject): Plot No. S. No. 195/2A, NA, Pappankuppam, Taluka: Thiruvallur, District: THIRUVALLUR, State: Tamil Nadu, PIN: 999999 में स्थित पेट्रोलियम वर्ग B स्तंभोपकरण - पेट्रोलियम नियम 2002 के अंतर्गत प्रथम XV में जारी अनुमति सं P/HQ/TN/15/4786 (P226617) - संशोधन के संबंध में।  
 Existing Petroleum Class B Installation at Plot No. S. No. 195/2A, NA, Pappankuppam, Taluka: Thiruvallur, District: THIRUVALLUR, State: Tamil Nadu, PIN: 999999. Licence No: P/HQ/TN/15/4786 (P226617) - granted in form XV under Petroleum Rules 2002 - Amendment regarding

सहायक (By)

कृपया आपके उपरोक्त विषय से संबंधित पर संख्या OPGPG/JMD/CCOe/1443/14-15 दिनांक 05/01/2015 का संदर्भ ग्रहण करें।  
 Reference to your letter No OPGPG/JMD/CCOe/1443/14-15 dated 05/01/2014 on the above subject

दिनांक 31/12/2013 तक वैध अनुमति संख्या P/HQ/TN/15/4786 (P226617) दिनांक 08/01/2015 निम्नलिखित वर्ग एड मामलों में पेट्रोलियम भंडारण के लिए यथा संशोधित कर इस पर के साथ वापस जा रही है।  
 Licence No: P/HQ/TN/15/4786 (P226617) dated 08/01/2015 valid upto 31/12/2013 is returned herewith duly amended with respect to Capacity Amendment

पेट्रोलियम का विवरण /Description of Petroleum	किलोलीटरों में अनुमति क्षमता /Quantity licensed in KL
वर्ग A प्रपुंज पेट्रोलियम /Petroleum Class A in bulk	NIL
वर्ग A प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class A otherwise than in bulk	NIL
वर्ग B प्रपुंज पेट्रोलियम /Petroleum Class B in bulk	271.00 KL
वर्ग B प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class B otherwise than in bulk	NIL
वर्ग C प्रपुंज पेट्रोलियम /Petroleum Class C in bulk	NIL
वर्ग C प्रपुंज पेट्रोलियम से भिन्न /Petroleum Class C otherwise than in bulk	NIL
कुल क्षमता /Total	271.00 KL

कृपया पावती दें।

Please acknowledge the receipt.

Note: Your Balance Amount with the Organisation is Rs. ~~XXXXXX~~ which will be used for processing of the same Licence in future

अवधीय (Yours faithfully)

(अर. पी. सिंह)  
 (R.P. Singh)  
 उप मुख्य विस्फोटक नियंत्रक  
 Dy. Chief Controller of Explosives  
 कर्ते मुख्य विस्फोटक नियंत्रक  
 For Chief Controller of Explosives  
 नागपुर  
 Nagpur

Copy forwarded to :-

1. The District Revenue Officer, Tiruvallur (T.N.), THIRUVALLUR (Tamil Nadu) with reference to his NDC No R/ 37212/08 M3 Dated 17/03/2009
2. Jt. Chief Controller of Explosives, South Circle Office, CHENNAI. A Copy of the licence along with approved plan is enclosed.
3. Dy. Chief Controller of Explosives, Sivakasi, VIRUDHUNAGAR. A Copy of the licence along with approved plan is enclosed.

For Chief Controller of Explosives...  
 Nagpur

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट <http://peso.gov.in> देखें)  
 (For more information regarding status fees and other details please visit our website, <http://peso.gov.in>)

**High Speed Diesel / Gas Oil**  
**Indian Oil Diesel meets the requirements of**  
**IS 1460: 2005 (5<sup>th</sup> Revision)**

Sl. No.	Characteristics	Requirements		Method of Test
		BS II	BS III	
(i)	Acidity, inorganic	Nil	Nil	P:2
(ii)	Acidity, total mg of KOH/g, Max	To Report	To Report	P:2
(iii)	Ash, percent by mass, Max	0.01	0.01	P:4 / ISO 6245
(iv)	Carbon residue (Ramsbottom) on 10 percent residue <sup>(1)</sup> percent by mass, Max	0.30	0.30	P:8 / ISO 10370
(v)	Cetane number <sup>(2)</sup> , Min	48 <sup>3)</sup>	51 <sup>3)</sup>	P:9 / ISO 5165
(vi)	Cetane index <sup>(2)</sup> , Min	46 <sup>3)</sup>	46 <sup>3)</sup>	D 4737 / ISO 4264
(vii)	Pour points <sup>(4)</sup> Max a) Winter b) Summer	3°C 15°C	3°C 15°C	P:10 / D 5949 or D 5950 or D 5985
(viii)	Copper strip corrosion for 3hr at 100°C	Not worse than No. 1	Not worse than No. 1	P:15 / ISO 2160
(ix)	Distillation, percent (v/v) recovered			P:18 / ISO 3405
	a) at 350°C	85	-	
	b) at 360°C	-	95	
	c) at 370°C	95	-	
(x)	Flash point			
	a) Abel °C, Min	35	35	P:20
	b) Pensky Martens closed cup <sup>(5)</sup> °C, Min	66	66	P:21
(xi)	Kinematic viscosity, cSt, at 40°C	2.0 to 5.0	2.0 to 5.0	P:25 / ISO 3104
(xii)	Sediments, percent by mass, Max	0.05	-	P:30
(xiii)	Total Contamination, mg/kg	24	24	EN 12662
(xiv)	Density at 15°C <sup>(6)</sup> , kg/ m <sup>3</sup>	820-860	820-845	P:16 or P:32 <sup>(7)</sup> / D 4052 / ISO 3675 or ISO 12185
(xv)	Total sulphur <sup>(8)</sup> , mg/kg, Max	500	350	IP 336 or 4294. <sup>(9)</sup> ISO 14596 or ISO 8754/ P:83 / D 2785 / D 5433 / D 2622 / D 3120
(xvi)	Water content, percent(v/v) Water content, mg/kg, Max	0.05 -	- 200	P:40 / ISO 3733 / ISO 6296 / ISO 12937
(xvii)	Cold Filter Plugging point (CFPP) <sup>(4)</sup> Max a) Winter b) Summer	6°C 18°C	6°C 18°C	P:110 / D 6371
(xviii)	Total sediments <sup>(10)</sup> mg per 100 ml, Max	1.5	-	Annex A / ISO 11205 / D 2274 <sup>(10)</sup>
(xix)	Oxidation Stability, g/m <sup>3</sup> , Max	-	25	ISO 12205 or D 2274
(xx)	Polycyclic Aromatic Hydrocarbon (PAH) percent by mass, Max	-	11	IP 391 or EN 1296
(xxi)	Lubricity corrected wear scar diameter (WSD 1.4) at 60°C, microns, Max	460	460	ISO 12156-1
(xxii)	Oxygen content <sup>(11)</sup> percent by mass, Max	0.6	0.6	Annex B

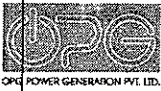
*Allyam*

## NOTES

- 1 This limit is applicable prior to addition of ignition improvers, if used. In case a value exceeding the limit is obtained on finished fuels in the market, ASTM D 4046 / ISO 13759 shall be used to establish the presence of nitrate containing compound. In such case the present limit for carbon residue cannot be applied. However, the use of ignition improver does not exempt the manufacturer from meeting this requirement prior to the addition of additives.
- 2 Fuel meant for vehicles meeting Bharat Stage II emission norms is required to meet either of these two parameters.
- 3 For fuel processed from Assam crude, cetane number and cetane index is relaxed by 3 units.
- 4 Winter shall be the period from November to February in central and northern plains of India (both months inclusive) and rest of the months of the year shall be called as summer.
- 5 Applicable for Naval applications and fishing vessels requiring high flash HSD.
- 6 For fuel processed from Assam crude, the density range is relaxed to 820-870 and 820-850 for Bharat Stage II and Bharat Stage III grades respectively.
- 7 In case of dispute P:32 shall be the referee test method.
- 8 For HSD supplied to Indian Navy, the limit of sulphur shall be in agreement between the buyer and the supplier.
- 9 In case of dispute, ASTM D 4294 shall be the referee test method.
- 10 This test shall be carried out only at the refinery or manufacturer's end. As an alternative, the test method given in Annex A can also be used with a limit of 1.6 mg/100 ml. In case of dispute, ASTM D 2274 shall be referee method.
- 11 Shall be applicable only for HSD blended with 5 percent (v/v) Bio-diesel and the limit shall proportionately vary as and when the different blending percent of bio-diesel is permitted.

Last Updated on September 26, 2007





### **Safety Monitoring in Coal handling area**

Monitoring involves scheduled (8 hr.) visual inspections and recordings of coal stockpiles with specific attention to the presence of haze, smoke emissions or spontaneous combustion odour. A thermocouple is inserted into the stockpile at specific positions to measure temperature in every 24 hours

Normally, wet coal will show signs of water sweating and slow rise in temperature in that area. Those areas to be watched regularly for any increase in steam

The following details to be recorded to monitor the stockpile:

- 1) Date of stacking
- 2) Type of coal
- 3) Stockpile temperature readings
- 4) Date of reclaiming

The record assist in the management of residency time and subsequent control measures for spontaneous combustion of stockpiled coal

A major preventive measure is regular scheduled stockpile observations. These observations assist in early identification of hot spots of spontaneous combustion.

### **Mitigation Measures:**

- 1) The Bottom portion of the pile to be manually compacted with the help of shovels to prevent air from flowing into or out of the bottom of the pile when the coal pile is warmer than ambient conditions
- 2) In case of the coal being unable to reclaim due to some reasons and if smoke comes out, the smoldering portion to be taken out of the pile and water to be sprayed on the smoldering coal and allow it to cool and the area to be compacted to prevent further air contact
- 3) Fly ash slurry can be applied at the toe portion of the Pile to completely blanket the portion from Air contact
- 4) Pile should be stacked such that there is sufficient gap between each piles

Fly Ash Customer Details			
S no	Name	Contact Person	Address
1	Amba Recycler	Ashok	Chennai
2	Amma Fly ash Bricks	Murali	21B, By pass road, Gummidipoondi-601201
3	Amman Roadways Agency Pvt Ltd		200A, Padmavathy complex, Salem Road, Namakkal-637001
4	B.Sekar	Sekar	Chennai
5	Hyderabad Industrial Ltd (HIL)	Sasthri	Kanigapuram, Periyapalayam, Thiruvallur
6	Kavery Industries	R.V Reddy	Nemalore, Matharapakkam
7	Lakshmi Agencies	Parasuraman	59/29, Arunachalam 2nd St, (Opp Sivan Kovil), Arakkonam-631001
8	Methra Industries India Pvt Ltd	Manokaran	New No: 62, Panjelijamman kovil st, Arumbakkam, Chennai-106
9	Munusamy & Co		Chennai
10	Om Muruga	Prakash	No 27, Madhalaiyar st, Mannelore, Gummidipoondi Taluk, Thiruvallur-601201
11	Sastha Enterprises		Ambattur, Chennai
12	Sri Balaji Agencies	Srinivasan	Chennai
13	Sri Kameshwaran Fly Ash Bricks		Ponneri - 601204
14	Sri Preeven Enterprises	Mony	25, Indranagar, Nanganallur, Mathavaram, Chennai-600061
15	The India Cements Ltd	Mohammad	PSN Nagar, Dalavoi, Ariyalur-621704
16	Thirumalai Agencies	Gopal	Mathavaram
17	Ultra Tech Cements Ltd	Arulprakash	Reddypalayam Post, Reddypalayam, Ariyalur-621704
18	Vasantham Enterprises	Selvaraj	No 19, By-pass road, Gummidipoondi
19	Boomi Brick Industries		Boomi Brick Industries, Veeraraghavapuram village, Thiruvallur-602001
20	Vijay Agency		11E,21A Michael Thottam, Housing Unit, Metturdam-636401
21	Saravana Supply		GNT Road, Kavaraipettai-601206
22	Raydium Flyash Bricks		126/2A,28 Vannipakkam Village 601203 Ponneri Taluk,
23	Sri Nithya Supplier		3/33, Nagaraja kandigai village, Gummidipoondi - 601201
24	Sree Kandan Traders		Sree Kandan Traders, Veeraraghavapuram Village, Thiruvallur District -602021
25	Thirumurugan Concrete Blocks		12/3 Big street,Dhimmavaram, Chengalpattu - 603101

*B. J. J.*