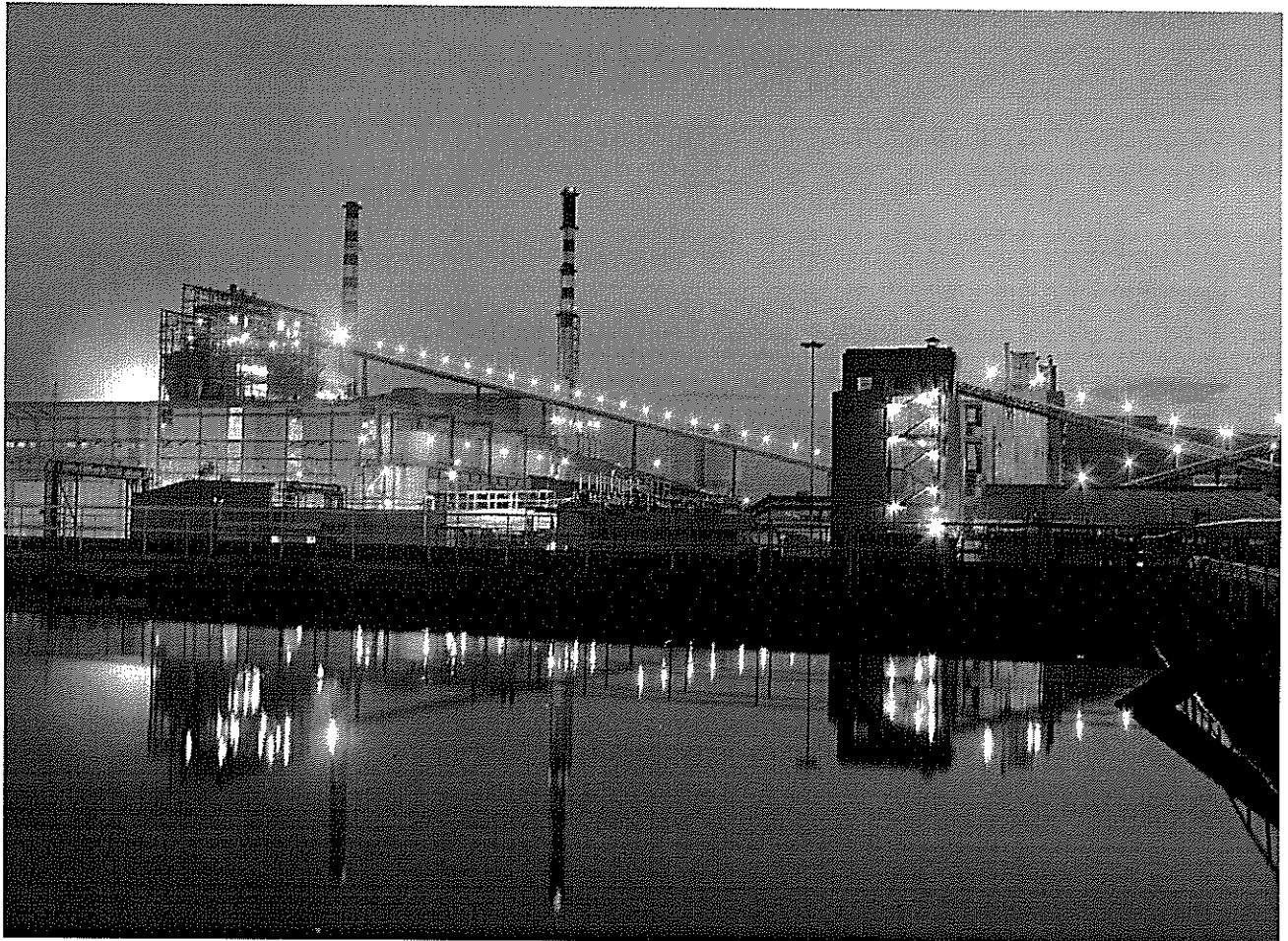


ENVIRONMENTAL COMPLIANCE STATUS REPORT

**APRIL – SEPTEMBER
2015**



**SAI LILAGAR POWER COMPANY LIMITED
P.O.: GOPAL NAGAR
Dist.: JANJGIR - CHAMPA (C. G.) Pin: 495663
2 x 43 MW Phase I & II
Coal Based Captive Power Plant**



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ACPCPL Phase I - 1 X 43 MW

ENVIRONMENTAL COMPLIANCE STATUS REPORT- Coal Based AFBC Boiler (2 x 90 TPH)

October 14 to March 2015

Letter no.: 1806/ F4- 46/ 32/ 05 Dated: 23.06.2005

S.N.	Conditions	Present Status
3. i)	All the conditions stipulated by Chhattisgarh Environmental Conservation Board Letter No.: 1284/ TS/ CECB/ 2005 Dated: 17.03.2005 should be strictly implemented.	Noted and Complied.
ii)	Coal requirement is estimated at 9024 TPD having 46% ash content and 0.5% Sulphur content.	Noted and being complied.
iii)	A detailed note on Zero effluents discharge including water utilization for greenbelt development should be submitted to the department of Housing and Environment within a period of one month from the date of clearance letter to Chhattisgarh Environment Conservation Board.	Complied.
iv)	Rainwater harvesting system should be installed in consultation with appropriate authority within a period of six months from the date of clearance.	Complied.
v)	A detailed note on watershed development within 10 km radius may be submitted within 6 months.	Complied.
vi)	Gas velocity rate may be confirmed within one month.	Complied.
vii)	Space provision made for De-Sulphurisation (FGD) unit.	Complied.
viii)	Authenticated list of flora & fauna from PCCF/ CWLW/ Academic institution/ University may be submitted.	Complied. The list of Flora and Fauna was authenticated by the Divisional Forest Officer, Champa and the same was submitted to CECB.
ix)	As recommended by the State Environment Conservation Board, Green Belt of 40 – 50 m in the portion of where the State road runs, parallel to the site and 50m along the plant boundary should be developed.	A massive greenbelt is developed on 6.0 ha available land around the plant periphery which is 1/3 of total area (18.0 ha). Total 25500 saplings are planted till date with 75% surviving rate.



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S.N.	Conditions	Present Status
x)	Water authorization from the State Government given for 43 MW Coal Based Captive Power Plant in the area adjacent to the premises of M/s. Lafarge India Private Limited Cement Plant at village – Gopal Nagar, District: Janjgir – Champa (C. G.).	Noted.
xi)	A detailed note on reduction in water consumption by 25% or more than the present level as stated by the proponent may be submitted to the Chhattisgarh Environment Conservation Board within two months of the issue the clearance letter.	Noted and complied.
xii)	For Gaseous discharge, one stack of 85 meter height each shall be provided with continuous online monitoring system.	Complied.
xiii)	Electrostatic precipitator (ESP) should be installed having adequate efficiency to limit outlet SPM emission to 100 mg/Nm ³ .	Complied. ESP's with 99.9% efficiency has been installed to control Stack Emission and the same is observed to be well within prescribed limit of CECB norms revised in year 2008 in CFO i.e., less than 50 mg/Nm ³ .
xiv)	Ash generation will be utilized 100% beneficial uses such as cement manufacturing in the existing cement plant belonging to M/s. Lafarge India Private Limited. Ash generated should be used in a phased manner as per the provisions of the notification on Fly Ash utilization issued by MoEF in September 1999 and its subsequent amendments. By the end of 9 th year, full fly ash utilization should be insured. Borough earth should be taken from ash pond area for construction of ash dyke etc.	Being complied. Adopted dry ash extraction and disposal system. 100% generated fly ash is being given to M/s. Lafarge India Private Limited for cement manufacturing and to brick manufacturers for brick manufacturers. Generated bottom ash is used for filling of stone quarry.
x)	Water authorization from the State Government given for 43 MW Coal Based Captive Power Plant in the area adjacent to the premises of M/s. Lafarge India Private Limited Cement Plant at village – Gopal Nagar, District: Janjgir – Champa (C. G.).	Noted.
xv)	Necessary drainage network at the proposed CPP site should be developed.	Complied. A RCC drainage network is provided at the site.



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S.N.	Conditions	Present Status
xvi)	Water requirement should not exceed 10584 kilo liter/day. The waste water generated should be recycled and reused in the plant and no waste water should be discharged out side the plant boundary or in natural drain.	Complied. The wastewater treated in RO plant and the treated water is being recycled in plant process. The rejects from RO plant is reused for Ash Conditioning, IBD Quenching & for sprinkling on roads. Hence the plant is a zero discharge unit.
xvii)	Waste water of coal handling plant discharge should be treated before disposal.	Being complied. The generated waste water is treated at RO plant & reuse in the process.
xviii)	Regular monitoring of water quality including heavy metals should be undertaken around ash dyke and the project areas to ascertain the change in the water quality due to leaching of contaminants from ash disposal area (if any).	Adopted dry ash extraction and disposal system. Plant is not having ash dyke or any ash storage facility in the plant. Plant is complying 100% ash utilization as per fly ash notification.
xix)	Noise level should be limited to 75 Leq, and regular maintenance of equipment is undertaken. For people working in the area of generator and other high noise area, earplug should be provided.	Noted and being complied. Acoustic enclosures are provided to High noise generating sources. Adequate measures for the control of noise have been taken and ear plugs/ ear muffs are provided to personnel working in high noise generating sources.
xx)	Regular monitoring of the air quality should be carried out in and around the power plant and records should be maintained and submitted to Chhattisgarh Environment Conservation Board on six monthly bases.	Being complied. Adequate ambient air quality monitoring stations are set and monthly monitoring of ambient air quality is carried out and the reports are regularly submitting to CECB every month.
xxi)	For controlling fugitive dust, regular sprinkling of water in vulnerable areas of the plant should be ensured.	Coal dust extraction and suppression system for the control of fugitive dust emission have been provided in the coal handling area.
xxii)	All other mitigative measures shall be taken as enumerated in Chapter 5 of the REIA report.	Noted and being complied.
xxiii)	The project proponent should advertise at least in two local newspapers widely circulated in the region of the project, one of which should be in vernacular language of the locality concerned, informing that the project has been accorded environmental clearance and copies of clearance letters are available with the Chhattisgarh Environment Conservation Board.	Complied.



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S.N.	Conditions	Present Status
xxiv)	A separate environment monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.	A separate environmental management cell comprising the following is already in place who will be reporting to Project Head/ In-charge at site. 1. Deputy Manager – Env. 2. Chief Chemist 3. Chemists and Technicians
xxv)	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards should be submitted to Chhattisgarh Environment Conservation Board.	Being complied.
xxvi)	Chhattisgarh Environment Conservation Board will monitor the implementation of the stipulated conditions. Complete set of Environment impact assessment report and management plan should be forwarded to the regional office for their use during monitoring.	Complied
xxvii)	Separate funds should be allocated for implementation of Environmental Protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purpose and year-wise expenditure should be reported to the ministry.	Noted and complied.
xxviii)	Full co-operation should be extended to the officers from the state government, Chhattisgarh Environment Conservation Board, Central Pollution Control Board etc. Office of the who would be monitoring the compliance of environmental status.	Noted.



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ACPCPL Phase II Expansion - 1 X 43 MW

ENVIRONMENTAL COMPLIANCE STATUS REPORT- Coal Based CFBC Boiler (1 x 190 TPH)

Letter No.: J – 13011/ 31/ 08-IA.II (T) Dated: 18.02.2009

**Point wise compliance for the conditions specified in Environmental
Clearance accorded to ACPCPL Phase - II by MoEF**

S. N.	Condition	Compliance
3.	The conditions stipulated by Ministry of Environment & Forests accords Environmental Clearance to the said project under the provisions of Environment Impact Assessment Notification, 2006 subject to implementation of the following terms and conditions:-	Point wise compliance for MoEF conditions is as below:
(i)	No additional land in excess of 3.5 Ha shall be used for any activity/facility of this project.	Complied. No additional land was acquired for the expansion unit in excess of 3.5 Ha. The total plant area is only 18.06 ha.
(ii)	Sulphur and ash contents in the coal to be used in the project shall not exceed 0.4% and 45% respectively at any given time.	Noted and is being complied.
(iii)	The height of the stack shall be as per the standards prescribed in this regard or 85 m whichever is more and shall be fitted with continuous online monitoring equipments for Sox, NOx, Hg and Particulate. Exit velocity of flue gases shall not be less than 20 m/sec.	Complied. The stack height has been designed based on sulphur content for the worst coal scenario i.e., 0.5% as per the CPCB emission regulations. The details of calculation has been given below: The total coal requirement is 382T/ hr (912 TPD). Minimum stack height as per CPCB emission regulations, $H = 14 (Q)^{0.3}$ Where "Q" – SO ₂ load in Kg/hr $Q = (0.5/100) * 38000 * (64/32) = 380 \text{ Kg/hr}$ Therefore, minimum stack height, $H = 14 (380)^{0.3} = 83.2 \text{ m}$. Hence a stack height of 86 m was proposed and constructed accordingly.
(iv)	High efficiency Electrostatic Precipitators (ESP's) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm ³ .	Complied. ESP's with an efficiency of 99.9% for the boiler emissions so as to achieve Particulate emission level of $\leq 50 \text{ mg/Nm}^3$.



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S. N.	Condition	Compliance
(v)	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.	Complied. Dry fog dust suppression system is provided to dusty areas, handling points, transfer areas and other vulnerable dusty areas in coal handling plant.
(vi)	Fly ash shall be collected in dry form and storage facility (Silos) shall be provided. 100% ash utilization (Fly ash and bottom ash) shall be ensured from day one. There shall be no ash pond for this expansion project.	Being complied. Fly ash & bottom ash silos constructed for collection and storage in dry form. Being complied. Adopted dry ash extraction and disposal system. 100% generated fly ash is being given to M/s. Lafarge India Private Limited for cement manufacturing and to brick manufacturers for brick manufacturers. Generated bottom ash is used for filling of stone quarry.
(vii)	Air cooled condensers shall be provided.	Complied. Air cooled condensers were provided.
(viii)	The treated effluents confirming to the prescribed standards shall be re-circulated and reused within the plant. There shall be no discharge outside the plant boundary. Arrangements shall be made that effluents and storm water do not get mixed.	Complied. The wastewater from different sections shall be treated in RO plant and the treated water shall be recycled in plant process. The rejects from RO plant is reused for Ash Conditioning, IBD Quenching & for sprinkling on roads to minimize the fugitive emission. Hence there shall be no discharge of effluent outside of the plant boundary & the plant is zero discharge unit.
(ix)	A sewage treatment plant shall be provided and the treated sewage shall be used for raising greenbelt/ plantation.	Soak pits are provided for the treatment of generated sewage in the plant.
(x)	Rainwater harvesting should be adopted. Central Groundwater Authority/ Board shall be consulted for finalization of appropriate rainwater harvesting technology within a period of three months from the date of clearance and details shall be furnished.	RWH system is provided in the plant.
(xi)	Adequate safety measures shall be provided in the plant area to check/ minimize spontaneous fires in coal yard, especially during summer season. Details of these measures along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry at Bhopal.	Complied. A fire detection and protection system is provided to check/ minimize spontaneous fires in coal yard and all along the plant premises. On-site Emergency Plan is prepared and under implementation at Project. On site emergency plan is already in implementation at site.



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S. N.	Condition	Compliance
(xii)	Storage facility for auxiliary liquid fuels such as LDO and HFO/ LSHS shall be made in the plant area where risk is minimum to the storage facilities. Disaster management plan shall be prepared to meet any eventually in case of an accident taking place. Mock drills shall be conducted regularly and based on the same, modifications required, if any shall be incorporated in the DMP. Sulphur content in the liquid fuel will not exceed 0.5%.	Complied. A tank of 25 m ³ storage capacity is provided to store LDO and it is taken care that risk should be minimum. A disaster management plan is prepared at site to meet any eventually in case of an accident taking place. Noted and being complied. Personnel are trained suitably and prepared mentally and physically in emergency response through carefully planned procedures. The key personnel and essential are trained in the operations. Noted and being complied.
(xiii)	Regular monitoring of ground water in and around the existing ash pond, if any, including heavy metals (Arsenic, Mercury, Cr, Lead etc.) shall be carried out, records maintained and six monthly reports shall be furnished to the Regional Office of this Ministry.	Noted and being complied. There is no ash pond in the plant as the dry ash disposal system is provided.
(xiv)	A green belt of adequate width and density shall be developed around the plant periphery covering 1/3 of total area preferably with local species.	A massive greenbelt is developed on 6.0 ha available land around the plant periphery which is 1/3 of total area (18.0 ha). Total 25,500 saplings are planted till date with 70% surviving rate.
(xv)	First Aid and sanitation arrangements shall be made available for the drivers and other contract workers during construction phase.	Complied.
(xvi)	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/ earmuffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc. shall be periodically examined to maintain automatic record and for treatment for any hearing loss including shifting to non noisy/ less noisy areas.	Noted and being complied. Acoustic enclosures are provided to High noise generating sources. Adequate measures for the control of noise have been taken and ear plugs/ ear muffs are taken into use at noisy work spots.

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S. N.	Condition	Compliance
(xvii)	Regular monitoring of ground level concentration of SO ₂ , NO _x , SPM and RSPM 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. The data so monitored shall also be put on the website of the company.	Complied. Regular monitoring is carried out on monthly basis to check the values of ground level concentrations of all parameters mentioned in the notification of MoEF issued as a G. S. R. 826 (E) on dated: 16 th November 2009. The results of parameters are well within prescribed limit mentioned in notification issued by MoEF.
(xviii)	Provision shall be made for the housing of construction labor 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.	Noted and complied.
(xix)	The project proponent shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned, informing that the project has been accorded environmental clearance and copies of the clearance letter are available with the state pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forest at http://envfor.nic.in .	Complied. Published advertise of Environmental Clearance in two (One in Hindi & One in English) local newspapers widely circulated in the region.
(xx)	A separate environment management cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.	A separate environmental management cell comprising the following is already in place who will be reporting to Project Head/ In-charge at site. 1. Deputy Manager – Env. 2. Chief Chemist 3. Chemists and Technicians
(xxi)	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards shall be submitted to this Ministry/ Regional Office/ CPCB/ SPCB.	Noted and being complied.



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S. N.	Condition	Compliance
(xxii)	Regional Office of the Ministry of Environment & Forests located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Environment 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 updates the same from time to time at least six monthly basis. Criteria pollutants levels (stack and ambient levels) will be displayed at the main gate of the power plant.	Noted and being complied.
(xxiii)	Separate funds should be allocated for implementation of environmental protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Noted and being complied.
(xxiv)	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.	Noted and complied.
(xxv)	Full cooperation shall be extended to the Scientists/ Officers from the Ministry/Regional Office of the Ministry at Bhopal/ the CPCB/ the SPCB who would be monitoring the compliance of Environmental status.	Noted and is being complied.



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S. N.	Condition	Compliance
4.	The Ministry of Environment and Forests reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of the Ministry. MoEF may impose additional environmental conditions or modify the existing ones, if necessary.	Noted.
5.	The environmental clearance accorded shall be valid for a period of 5 years to start operations by the power plant.	Noted.
6.	In case of any deviation or alteration in the project proposed including coal transportation system from these submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the conditions imposed and to add additional environmental protection measures required, if any.	Noted.
7.	The above stipulations would be enforced among others under the water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management and Handling) Rule, 1989 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.	Noted.
8.	Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred, within 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.	Noted.



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1.0 INTRODUCTION:

Sai Lilagar Power Company Limited has been promoted by the **KSK Energy Ventures Limited KSKEVL**, a company engaged in development of power generation projects. KSKEVL has successfully implemented and operating power generation plants in the country. SLPL is currently implementing many projects, with an installed capacity of over 2062 MW in various states of AP, Tamil Nadu, Chhattisgarh, Rajasthan and Maharashtra. Some of the projects are listed below:

- Sai Lilagar Power Company Limited – 2 X 43 MW Coal Based Power Plant at Gopal Nagar, Tah.: Akaltara, Dist.: Janjgir – Champa, Chhattisgarh
- Sitapuram Power Limited – 1 x 43 MW Coal based Power Plant at Dondapadu, Mellacheruvu Mandal, Dist.: Nalgonda, Telangana;
- Sai Regency Power Company Private Limited – 1 x 58 MW Gas based Power Plant at Ramanathapuram, Tamil Nadu.
- VS Lignite Power Private Limited (VSLP) - 1 X 135 MW Lignite based Power Plant, at Gurha, Dist.: Bikaner, Rajasthan;
- Sai Wardha Power Limited (WPCL) – 4 x 135 MW Coal Based Power Plant at MIDC , Warora, Dist.: Chandrapur, Maharashtra;
- KSK Mahanadi Power Company Limited (KMPCL) – 6 x 600 MW Coal Based Power Plant at Nariyara, Tah.: Akaltara, Dist.: Janjgir – Champa, Chhattisgarh.

1.1 Environmental Monitoring & Reporting:

SLPL was awarded clearance from Chhattisgarh Government vide the letter no.:1806/F4 – 46/ 32/ 05 Dated: 23/06/2005 and consent from CECB to operate the plant vide the letter no.: 1133/ TS/ CECB/ 2006 Raipur Dated: 02/03/2006 is required to meet the following conditions with respect to the above letters:

- To submit the Monthly Environmental (Source Emissions, Ambient Air Quality, Noise, Water & Waste Water Quality) Monitoring report to CECB;
- To submit a six monthly (biannual) Compliance report to MoEF, Bhopal office & CECB; and
- To submit an Environmental Statement report to CECB at the end of the every financial year.

The environmental monitoring includes the data generation for various environmental components viz Air, Noise, Water and Waste water so as to meet the above reporting requirements.

1.2 Description of Environment:

The coal based power plant is located at Gopal Nagar, Janjgir - Champa District, Chhattisgarh. The index map of the power plant and 10-km radius study area map are shown in **Figure - 1** and **Figure - 2** respectively.

85.0 m high stack of SLPL Phase I & 86.0 high stack of SLPL Phase II are the main source of air pollution from the power plant. Fugitive emissions are accepted from coal handling area, coal storage area and ash handling area.

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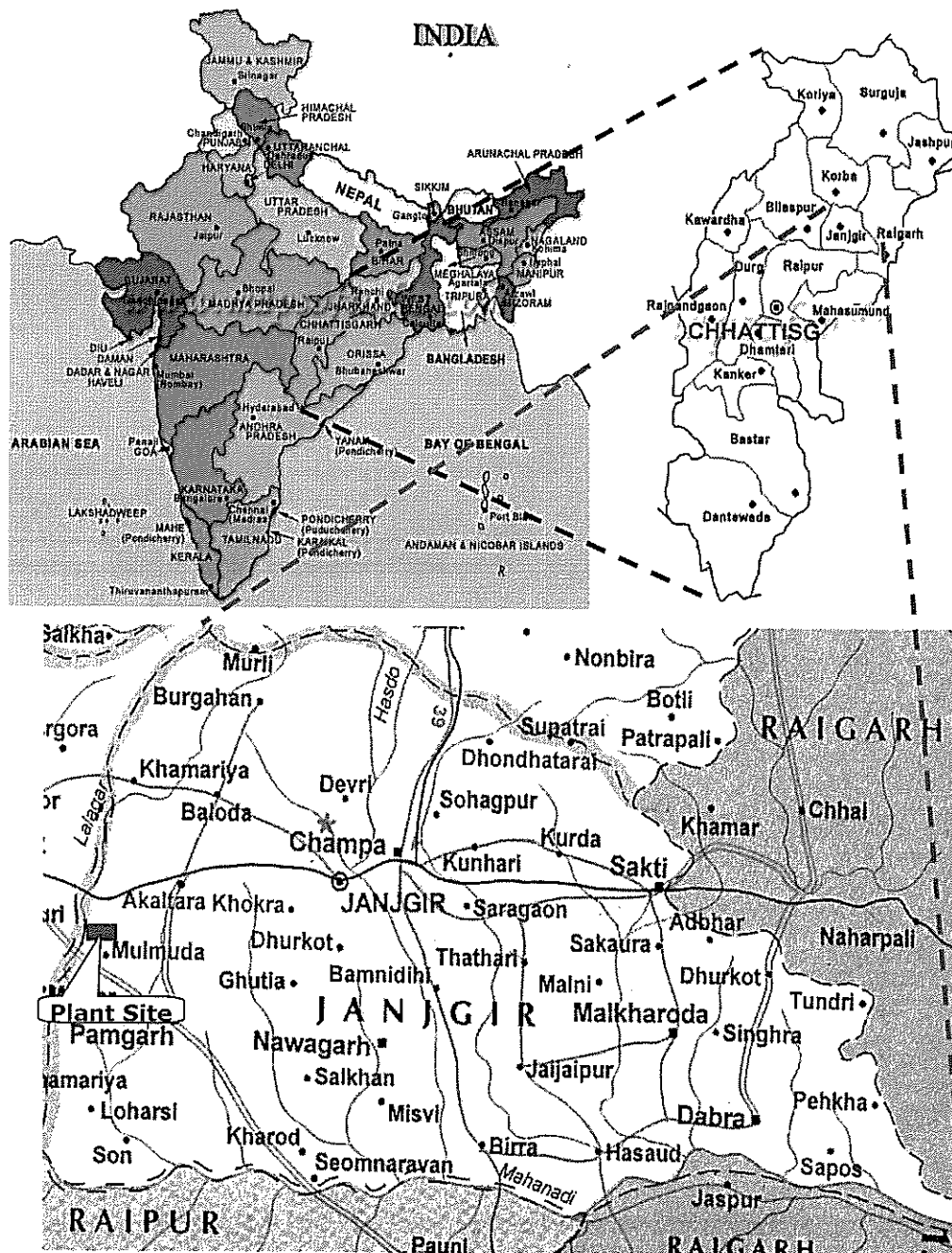
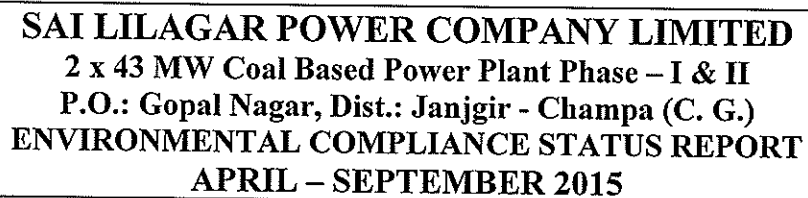


FIGURE-1
INDEX MAP



1.3 Brief Description of Power Plant SLPL Phase I & II – 2 x 43 MW Coal Based Phase I - AFBC Boiler (2 x 90 TPH) & Phase II - CFBC Boiler (1 x 190 TPH)

The process uses coal as the main fuel for power generation. The process of power generation from coal is very conventional method and is relatively simple. Coal is first crushed to the required size and then fed into a combustor. The heat liberated in combustion is used to generate high pressure steam which is then expanded in a condensing type of steam turbine generator from which mechanical energy is converted into electrical energy.

The various equipments are as follows:

1.3.1 Coal Handling System

Coal is being received by railway wagons at Jai ram Nagar railway siding & from there to plant in trucks covered by tarpaulin. The storage area has a capacity to store around fifteen day's plant requirement including covered storage. Thereafter, coal is being reclaimed and conveyed to the crusher house where coal size reduced to – 6 mm. The crushed coal is being conveyed and stored in the coal bunkers in the power plant. Suitable ventilation facilities and dust extraction, dust suppression and tunnel ventilation facilities are installed in various areas of coal handling plant, as necessary. The conveying system from transfer point to coal storage yard is provided 1 x 750 TPH capacities. Coal handling plant capacity from reclaim hopper to boiler bunker is 90 TPH each. The coal from the stockyard is fed to Primary and Secondary crusher where the size is reduced to - 6 mm. A belt weigher has been provided before the coal is being fed to the coal bunker to weigh the quantity of coal fed to bunker.

1.3.2 Steam Generating System

For steam generation, a boiler of 2 x 90 TPH capacity based on Atmospheric Fluidized Bed Combustion (AFBC) technology has been provided. AFBC technology is best suited for burning low grade coal and enables to keep the stack emission such as SO₂ and NO_x to acceptable limits by burning the fuel in an efficient and environmentally acceptable manner.

Steam generator is semi outdoor, top-supported, natural circulation, balanced draft, single/bi-drum, and water tube type designed to burn low grade coal. It also includes non-steaming type economizer, conventional type super heater and desuperheating station to control the final steam temp and tubular type air-heater.

1.3.3 Main Steam, Gland Steam Condensate and feed water system

The non-reheat steam cycle without regenerative feed heating system. Main steam from the boiler after expansion through turbine is exhausted to condenser. Low pressure heating steam to deaerator is supplied during start up by pressure reduction of main steam to the feed system consists of gland steam condenser, condenser of main air ejectors and deaerator.

Cycle make-up water from DM plant is pumped to the deaerator from the DM plant storage tank. The feed water after deaeration will be drawn by feed pump and will be pumped to the boiler at economizer inlet.

1.3.4 Steam Turbine Generator

The Steam Turbine Generator (STG) is of 1 x 43 MW and is condensing type. The inlet steam parameter for the turbine will be 89.0 kg/cm² and 515°C.

1.3.5 Electrical System

The turbo-generator will be generating power at 11 KV and will be connected to 6.6 KV switch gear through an Auxiliary transformer. Electrical system will be designed for generator operation in isolation mode as well as parallel operation with each other.



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1.3.6 Instrumentation and Control System

Microprocessor based electronic control and instrument system for the various units of the plant has been set up. This system will ensure reliable centralized monitoring and control of main equipment and their auxiliaries.

1.3.7 Closed Cycle Cooling Water System

Circulating water system for cooling the condenser, Turbine oil cooler, generator air cooler and other auxiliaries will consists of induced draft cooling towers, circulating water pumps, the cooling water supply and return piping.

1.3.8 Ash Handling System

Dry ash disposal through pneumatic conveying system to bottom/ fly ash Silos located within plant from where fly ash shall be transported to Cement Plant bulk ash silos through closed tankers. The ash collected at the Boiler bank hoppers, economizer hopper, air preheater hoppers and ESP hoppers shall be pneumatically conveyed to ash silos.

1.3.9 Electrostatic Precipitator (ESP):

For removal of dust from the flue gases, a high efficiency ESP has been provided for control of particulate emissions.

The various auxiliary systems include:

- | | |
|------------------------------|----------------------------------|
| 1. Air conditioning system | 2. Ventilation system |
| 3. Compressed air system | 4. Fire detection & alarm system |
| 5. Demineralised water plant | |

Brief Description of Power Plant SLPL Phase II Expansion – 1 x 43 MW Coal Based CFBC Boiler (1 x 190 TPH)

1.4 Brief Description of Power Plant: SLPL Phase II – 1 x 43 MW Coal Based CFBC Boiler (1 x 190 TPH)

The process uses coal as the main fuel for power generation. The process of power generation from coal is very conventional method and is relatively simple. Coal is first crushed to the required size and then fed into a combustor. The heat liberated in combustion is used to generate high pressure steam which is then expanded in a condensing type of steam turbine generator from which mechanical energy is converted into electrical energy.

The various equipments are as follows:

1.4.1 Coal Handling System

Coal is being received by railway wagons at Jairam Nagar railway siding & from there to plant in trucks covered by tarpaulin. The storage area has a capacity to store around ten day's plant requirement including covered storage. Thereafter, coal is being reclaimed and conveyed to the crusher house where coal size reduced to – 6 mm. The crushed coal is being conveyed and stored in the coal bunkers in the power plant. Suitable ventilation facilities and dust suppression and tunnel ventilation facilities installed in various areas of coal handling plant, as necessary. The conveying system from transfer point to coal storage yard is provided 1 x 750 TPH capacity. Coal handling plant capacity from reclaim hopper to boiler bunker is 190 TPH. The coal from the stockyard is fed to Primary and Secondary crusher where the size is reduced to - 6 mm. A belt weigher has been provided before the coal is being fed to the coal bunker to weigh the quantity of coal fed to bunker.



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1.4.2 Steam Generating System

For steam generation, a boiler of 1 x 190 TPH capacity based on Circulating Fluidized Bed Combustion (CFBC) technology has been provided. CFBC technology is best suited for burning of low grade coal and enables to keep the stack emission such as SO₂ and NO_x to acceptable limits by burning the fuel in an efficient and environmentally acceptable manner.

Steam generator is semi outdoor, top-supported, natural circulation, balanced draft, single/bi-drum, and water tube type designed to burn low grade coal. It also includes non-steaming type economizer, conventional type super heater and desuperheating station to control the final steam temp and tubular type air-heater.

1.4.3 Main Steam, Gland Steam Condensate and feed water system

The non-reheat steam cycle without regenerative feed heating system. Main steam from the boiler after expansion through turbine is exhausted to condenser. Low pressure heating steam to deaerator is supplied during start up by pressure reduction of main steam to the feed system consists of gland steam condenser, condenser of main air ejectors and deaerator.

Cycle make-up water from DM plant is pumped to the deaerator from the DM plant storage tank. The feed water after deaeration will be drawn by feed pump and will be pumped to the boiler at economizer inlet.

1.4.4 Steam Turbine Generator

The Steam Turbine Generator (STG) is of 1 x 43 MW and is condensing type. The inlet steam parameter for the turbine is 89.0 kg/cm² and 515°C.

1.4.5 Electrical System

The turbo-generator is generating power at 11 KV and connected to 6.6 KV switchgear through an Auxiliary transformer. Electrical systems are designed for generator operation in isolation mode as well as parallel operation with each other.

1.4.6 Instrumentation and Control System

Microprocessor based electronic control and instrument system for the various units of the plant has been set up. This system will ensure reliable centralized monitoring and control of main equipment and their auxiliaries.

1.4.7 Closed Cycle Cooling Water System

Circulating water system for cooling the condenser, Turbine oil cooler, generator air cooler and other auxiliaries consists of induced draft cooling towers, circulating water pumps, the cooling water supply and return piping.

1.4.8 Ash Handling System

Dry ash disposal through pneumatic conveying system to bottom/ fly ash Silos located within plant from where fly ash is being transported to Cement Plant through closed bulkers. The ash collected at the Boiler bank hoppers, economizer hopper, air preheater hoppers and ESP hoppers is being pneumatically conveyed to ash silos.

1.4.9 Electrostatic Precipitator (ESP):

For removal of dust from the flue gases, a high efficiency ESP has been provided for control of particulate emissions.

The various auxiliary systems include:

- | | |
|------------------------------|----------------------------------|
| 1. Air conditioning system | 2. Ventilation system |
| 3. Compressed air system | 4. Fire detection & alarm system |
| 5. Demineralised water plant | |



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1.5 Pollution Control Measures

SLPL officials are well versed with their social responsibilities and are very keen in undertaking various steps to reduce the pollution from different environment attributes viz. air, noise, water etc.

1.5.1 Air Pollution Control

For removal of dust from the flue gas, high efficiency Electrostatic Precipitator is provided for control of particulate emissions.

There is a like hood of dust generation in coal handling system. The coal crushers are enclosed with built-in dust suppression system like water sprinklers. Manual water sprinklers were provided at coal yards to suppress any dust formation during unloading.

1.6 Green Belt Development

A comprehensive plan is envisaged for development of Green Belt around the perimeter of the plant. An experienced horticulturist has been engaged for carrying out the plantation programme.

- The Green belt development will help in controlling the dust emissions as well as acts as barriers for reducing the noise levels;
- Dense tree belt development would be planted around the dust generation points, around the coal handling area and in the plant premises.
- Trees would be planted on the either side of the roads used for transportation to arrest the air born dust.

1.7 Noise Pollution Control

Other than the regular maintenance of the various equipments, the ear plugs & ear muffs are provided to all employees working close to the noise generating units. Apart from this, the following steps have been undertaken for reduction of noise level:

- Frequent lubrication of pumps would be undertaken;
- Encasement of noise generating equipment otherwise noise cannot be controlled;
- Providing noise proof cabins to operators where remote control for operating noise generating equipment is feasible; and
- Workers exposure times to the higher noise levels for lesser time have been planned in accordance to the OSHA standards.

2.0 ENVIRONMENTAL DATA ANALYSIS

2.0.1 Meteorology

Meteorological data was collected at one station concurrently with the ambient air quality monitoring. The weather station was placed on rooftop of DM Plant at a height of 4.0 m at SLPL. Wind speed, wind direction, relative humidity and temperatures were recorded at hourly intervals continuously.

2.0.2 Methodology of Sampling

Micro-meteorological data was observed for wind direction and speed using wind vane and anemometer. The data was recorded at monthly hours. The online wind monitor station is installed & set up in the plant for recording of Micro-meteorological data.

2.0.3 Observations On Primary Data

The site specific data is presented in **Table-1** and discussed below:

TABLE-1
SUMMARY OF THE METEROLOGICAL DATA GENERATED AT SITE.
(APRIL – SEPTEMBER 2015)

Month	Temperature (°C)		Relative Humidity (%)		Total Rainfall (mm)
	Max.	Min.	Max.	Min.	
April 2015	43.5	18.2	51.9	21.0	290.0
May 2015	46.6	23.0	97.0	17.0	
June 2015	43.4	22.0	97.0	29.0	
July 2015	37.1	22.0	97.0	44.9	
August 2015	36.4	21.5	97.0	48.9	
September 2015	39.7	22.0	97.0	44.0	

2.1.1 Temperature

It was observed that the temperature ranged from 18.2°C to 46.6°C. The maximum temperature was recorded in the month of May and January as 46.6°C and minimum temperature was recorded in the month of April as 18.2°C. The monthly variations in the temperature are presented in **Table -1**.

2.1.2 Relative Humidity

During the period of observation the relative humidity recorded was moderately high and ranged from 59.9 % to 97.0 %. The maximum humidity 97.0% was observed in the months of April, May, June, July, August and September 2015 the minimum occurred at 97.0% in the month of May, June, July, August and September. The monthly variation in the relative humidity is presented in **Table -1**.

2.1.3 Rainfall

A total of **290.0** mm rainfall was recorded during the study period. The six monthly Total Rain Fall is given in **Table-1**.

2.2 Ambient Air Quality

The ambient air quality with respect to the study zone of 10 km radius around the existing Power plant forms the baseline information. All the sampling locations fall within 10 km radial distance from the existing power plant. The assess the effect of power plant activities on the air, environmental parameters like Particulate Matter (PM₁₀), (PM_{2.5}), Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x) were monitored. The results of monitoring carried out for study period (**April – September 2015**) are presented. The details of the sampling locations with respect to the Power Plant are given below in Table – 2.0 and depicted in **Figure-2.1**.

TABLE- 2
AMBIENT AIR QUALITY SAMPLING LOCATIONS

Sampling Code	Locations	Sampling Height (m)	Location Details
AAQ1	Near Main Gate (SLPL)	5.0	Represents Core zone air quality
AAQ2	Top of DM Plant SLPL)	4.0	Represents Core zone air quality
AAQ3	Near Raw water Reservoir (SLPL)	4.0	Represents Core zone air quality
AAQ4	Amora village	4.0	Represents Down - wind air quality
AAQ5	Sonsari village	3.5	Represents Down – Wind air quality
AAQ6	Nariyara village	4.0	Represents Cross – Wind air quality

2.2.1 Methodology of Sampling

Sampling was carried out continuously for forty-eight hours per week at each station during the four week of the study period using pre-calibrated High volume Samplers. In each of the stations earmarked, samples were collected for SO₂ and NO_x, Respirable Particulate Matter (PM₁₀) and Fine Dust (PM_{2.5}). Samples were collected at twenty four hourly intervals and same were sent to field Laboratory for analysis.

2.2.2 Analytical Procedure

Whatman GF/A filter paper was used in High-volume sampler for TSPM & RSPM and weighed in Mettler electronic balance and computed as per standard methods. Ambient Air samples were analyzed for SO₂ concentration levels using Improved West – Gaeke method using preprogrammed SYSTRONICS spectrophotometer at a wavelength of 560nm. NO_x concentration levels were estimated using **Jacob and Hocheiser modified (Na-As) method** using preprogrammed SYSTRONICS spectrophotometer at a wavelength of 540 nm.

2.2.3 Presentation of Primary Data

The survey results of all the sampling locations are presented in **Table - 3(A) to 3(F)**. Various statistical parameters like maximum and minimum values have been computed from the observed raw data for all the AAQ monitoring stations. The summary of these results for all the locations is presented in **Table - 3**. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for rural and residential zone and industrial zone.

2.2.4 Observation based on Primary Data

AAQ1: Near Main Gate (ACPCL)

The values for PM₁₀ and PM_{2.5} ranged from 52.1 to 67.2 µg/m³ & 26.4 to 39.0 µg/m³ during the study period. Similarly SO₂ and NO_x levels were recorded in the range of 12.8 to 18.3 µg/m³ and 14.5 to 21.8 µg/m³ respectively.

AAQ2: Amora Village

The values for PM₁₀ and PM_{2.5} ranged from 42.1 to 55.6 µg/m³ and 19.0 to 27.5 µg/m³ during the study period. Similarly SO₂ and NO_x levels were recorded in the range of 9.6 to 14.1 µg/m³ and 12.0 to 16.1 µg/m³ respectively.

AAQ3: Sonsari Village

The values for PM₁₀ and PM_{2.5} ranged from 46.7 to 54.1 µg/m³ and 20.3 to 25.8 µg/m³ during the study period. Similarly SO₂ and NO_x levels were recorded in the range of 9.9 to 12.9 µg/m³ and 11.9 to 15.0 µg/m³ respectively.

AAQ4: Nariyara Village

The values for PM₁₀ and PM_{2.5} ranged from 44.7 to 55.7 µg/m³ and 19.1 to 25.8 µg/m³ during the study period. Similarly SO₂ and NO_x levels were recorded in the range of 10.7 to 13.3 µg/m³ and 12.2 to 15.9 µg/m³ respectively.

AAQ5: Tarod Village

The values for PM₁₀ and PM_{2.5} ranged from 46.3 to 57.1 µg/m³ and 21.7 to 27.6 µg/m³ during the study period. Similarly SO₂ and NO_x levels were recorded in the range of 10.8 to 14.0 µg/m³ and 12.9 to 17.1 µg/m³ respectively.

AAQ6: Jhalmala Village

The values for PM₁₀ and PM_{2.5} ranged from 43.2 to 53.1 µg/m³ and 17.5 to 23.2 µg/m³ during the study period. Similarly SO₂ and NO_x levels were recorded in the range of 10.0 to 13.1 µg/m³ and 12.2 to 15.8 µg/m³ respectively.

TABLE-3
SUMMARY OF AMBIENT AIR QUALITY RESULT
(April – September 2015)

Location	PM ₁₀		PM _{2.5}		SO ₂		NO _x	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Near Main Gate (SLPL)	67.2	52.1	39.0	26.4	18.3	12.8	21.8	14.5
Amora Village	55.6	42.1	27.5	19.0	14.1	9.6	16.1	12.0
Sonsari Village	54.0	46.7	25.8	20.3	12.9	9.9	15.0	11.9
Nariyara Village	55.7	44.7	25.8	19.1	13.3	10.7	15.9	12.2
Tarod Village	57.1	46.3	27.6	21.7	14.0	10.8	17.1	12.9
Jhalmala Village	53.1	43.2	23.2	17.5	13.1	10.0	15.8	12.2

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TABLE – 4 (A)
Ambient Air Quality Data Analysis

Inside Ambient Air Quality Monitoring

Location: Plant site

Location: Plant site																	
Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³	
										I		II		I	II	III	
APRIL 2015																	
SHUT DOWN																	
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100	2000	400					
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP			UV Photometric method			NDIR Spectroscopy Method		Indophenols Blue Method		

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NO _x µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
MAY 2015																
04.05.2015	26.4	53.6	13.6	15.2	<0.001	<1.0	<0.001	2.1	0.017	9.2	11.1	7.1	232	262	205	<20
05.05.2015	29.1	56.4	12.8	14.7	<0.001	<1.0	<0.001	1.8	0.020	10.1	12.3	8.2	210	249	184	<20
11.05.2015	30.5	54.1	15.1	17.3	<0.001	<1.0	<0.001	1.6	0.016	9.5	11.1	7.3	220	259	193	<20
12.05.2015	28.1	52.1	13.2	16.2	<0.001	<1.0	<0.001	1.9	0.019	10.6	13.1	8.6	231	263	201	<20
18.05.2015	32.1	55.1	14.8	18.1	<0.001	<1.0	<0.001	2.0	0.017	8.6	11.5	6.2	212	246	180	<20
19.05.2015	29.1	53.1	13.5	15.7	<0.001	<1.0	<0.001	1.7	0.019	10.1	12.4	7.6	235	269	203	<20
25.05.2015	31.2	58.4	12.8	14.5	<0.001	<1.0	<0.001	2.1	0.020	8.1	10.8	6.6	224	259	196	<20
26.05.2015	28.7	56.1	14.2	17.1	<0.001	<1.0	<0.001	1.8	0.015	9.3	11.6	7.8	230	261	200	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis			AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenols Blue Method			

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										I	II	III	I	II	III	
JUNE 2015																
01.06.2015	28.6	56.9	14.9	16.4	<0.001	<1.0	<0.001	1.0	0.013	10.2	12.1	8.1	224	253	196	<20
02.06.2015	31.3	59.7	14.1	15.9	<0.001	<1.0	<0.001	1.5	0.015	9.6	11.3	7.2	202	240	175	<20
08.06.2015	32.7	57.4	16.4	18.5	<0.001	<1.0	<0.001	0.9	0.018	8.4	10.5	6.3	212	246	184	<20
09.06.2015	30.3	55.4	14.5	17.4	<0.001	<1.0	<0.001	1.3	0.014	9.9	11.6	7.5	223	254	192	<20
15.06.2015	34.3	58.4	16.1	19.3	<0.001	<1.0	<0.001	1.5	0.016	10.5	12.5	8.6	204	237	171	<20
16.06.2015	31.3	56.4	14.8	16.9	<0.001	<1.0	<0.001	1.7	0.012	11.1	13.6	9.3	227	258	194	<20
22.06.2015	33.4	61.7	14.1	15.7	<0.001	<1.0	<0.001	1.9	0.015	11.8	14.0	8.4	216	250	187	<20
23.06.2015	30.9	59.4	15.5	18.3	<0.001	<1.0	<0.001	1.4	0.013	10.3	12.6	7.2	222	252	191	<20
29.06.2015	32.4	57.4	14.4	17.4	<0.001	<1.0	<0.001	1.0	0.017	11	13.3	8.1	208	239	178	<20
30.06.2015	29.8	60.6	14.0	16.1	<0.001	<1.0	<0.001	1.3	0.014	8.6	10.8	6.0	213	243	184	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenols Blue Method			

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										I	II	III	I	II	III	
JULY 2015																
06.07.2015	32.2	63.1	16.3	18.0	<0.001	<1.0	<0.001	0.8	0.010	9.2	11.6	7.8	230	261	203	<20
07.07.2015	34.9	62.8	15.5	17.5	<0.001	<1.0	<0.001	1.2	0.013	11.3	13.1	9.6	208	245	193	<20
13.07.2015	36.0	61.3	17.8	19.6	<0.001	<1.0	<0.001	1.5	0.016	10.4	12.4	8.2	220	251	191	<20
14.07.2015	33.9	58.5	15.9	18.2	<0.001	<1.0	<0.001	1.1	0.014	9.3	11.0	7.3	231	260	201	<20
20.07.2015	36.1	61.5	17.5	20.9	<0.001	<1.0	<0.001	0.9	0.012	9.8	10.9	6.3	210	242	183	<20
21.07.2015	34.9	59.5	16.2	18.5	<0.001	<1.0	<0.001	1.3	0.015	10.1	12.3	8.5	232	263	201	<20
27.07.2015	36.1	60.9	15.5	17.3	<0.001	<1.0	<0.001	1.1	0.011	9.6	11.7	7.4	222	255	194	<20
28.07.2015	34.5	62.5	16.9	19.9	<0.001	<1.0	<0.001	1.4	0.012	10.0	11.5	8.3	219	262	184	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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										I	II	III	I	II	III	
AUGUST 2015																
07.08.2015	34.6	59.7	15.3	17.2	<0.001	<1.0	<0.001	0.6	0.008	8.4	10.6	6.6	221	255	196	<20
08.08.2015	36.1	63.5	17.6	20.6	<0.001	<1.0	<0.001	0.7	0.010	10.6	12.8	8.1	199	238	174	<20
14.08.2015	33.1	65.1	16.2	18.4	<0.001	<1.0	<0.001	1.0	0.007	9.6	11.7	7.4	214	246	184	<20
15.08.2015	35.1	62.4	15.2	17.9	<0.001	<1.0	<0.001	0.9	0.009	8.2	10.9	6.4	225	251	194	<20
21.08.2015	37.6	63.2	17.2	21.4	<0.001	<1.0	<0.001	0.8	0.012	9.2	11.4	7.8	204	238	176	<20
22.08.2015	35.4	65.4	15.7	18.5	<0.001	<1.0	<0.001	1.1	0.007	8.7	10.2	6.7	226	256	194	<20
28.08.2015	33.6	62.3	18.3	21.8	<0.001	<1.0	<0.001	1.2	0.009	10.4	12.8	8.5	216	248	187	<20
29.08.2015	36.7	64.8	17.0	20.6	<0.001	<1.0	<0.001	0.9	0.013	9.7	12.1	7.1	223	254	193	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis			AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenols Blue Method			

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
SEPTEMBER 2015																
04.09.2015	36.0	62.1	14.2	16.3	<0.001	<1.0	<0.001	0.8	0.006	9.3	11.3	7.4	230	262	203	<20
05.09.2015	37.4	65.3	16.5	19.7	<0.001	<1.0	<0.001	1.1	0.011	8.1	10.9	6.6	213	245	182	<20
11.09.2015	34.3	67.1	15.1	17.5	<0.001	<1.0	<0.001	0.6	0.010	10.2	12.6	8.2	220	253	190	<20
12.09.2015	36.4	64.2	14.4	17.0	<0.001	<1.0	<0.001	0.8	0.008	11.1	13.1	9.0	231	260	201	<20
18.09.2015	39.0	65.0	16.3	19.3	<0.001	<1.0	<0.001	1.1	0.009	10.5	12.8	8.1	210	245	183	<20
19.09.2015	36.8	67.2	14.6	17.6	<0.001	<1.0	<0.001	0.9	0.011	9.3	11.4	7.4	232	263	201	<20
25.09.2015	35.0	64.3	17.2	20.9	<0.001	<1.0	<0.001	0.7	0.007	11.3	13.0	9.2	222	255	194	<20
26.09.2015	38.2	66.7	16.2	19.7	<0.001	<1.0	<0.001	0.5	0.010	9.8	11.5	7.7	231	261	202	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenols Blue Method			

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

Outside Ambient Air Quality Monitoring
Location: Amora

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
APRIL 2015																
01.04.2015	23.9	46.4	11.9	13.5	<0.001	<1.0	<0.001	1.3	0.014	7.4	9.6	5.8	172	208	145	<20
02.04.2015	20.2	47.9	11.2	12.6	<0.001	<1.0	<0.001	1.5	0.015	8.2	10.4	6.6	178	203	157	<20
08.04.2015	23.2	43.9	11.5	14.2	<0.001	<1.0	<0.001	1.1	0.012	9.2	11.2	7.2	163	196	133	<20
09.04.2015	25.1	45.4	9.9	12.0	<0.001	<1.0	<0.001	1.3	0.014	9	11.6	7.4	176	212	149	<20
15.04.2015	22.2	46.9	11.1	13.3	<0.001	<1.0	<0.001	1.0	0.016	7.6	9.4	5.3	170	201	140	<20
16.04.2015	21.0	48.5	11.9	14.0	<0.001	<1.0	<0.001	1.2	0.012	9.3	11.1	7.1	181	207	152	<20
22.04.2015	23.7	49.9	11.3	13.4	<0.001	<1.0	<0.001	1.4	0.013	8.4	10.4	6.4	168	201	143	<20
23.04.2015	25.9	45.5	9.8	12.6	<0.001	<1.0	<0.001	1.3	0.015	7.5	9.3	5.8	180	214	154	<20
29.04.2015	24.2	47.0	11.6	13.6	<0.001	<1.0	<0.001	1.5	0.011	8.6	10.4	6.2	169	206	145	<20
30.04.2015	23.4	49.4	10.2	12.1	<0.001	<1.0	<0.001	1.1	0.013	8.1	10.1	6.0	177	207	154	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis			AAS/ICP		UV Photometric method		NDIR Spectroscopy Method			Indophenols Blue Method		

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
MAY 2015																
04.05.2015	22.7	44.6	11.2	12.9	<0.001	<1.0	<0.001	1.0	0.012	8.1	10.1	6.6	163	197	138	<20
05.05.2015	19.0	46.1	10.5	12.4	<0.001	<1.0	<0.001	1.2	0.014	9.3	11.2	7.2	169	192	141	<20
11.05.2015	22.0	42.1	10.8	13.2	<0.001	<1.0	<0.001	1.3	0.010	10.1	12.3	8.3	154	185	126	<20
12.05.2015	23.9	43.6	11.2	13.0	<0.001	<1.0	<0.001	0.9	0.013	8.2	10.8	6.9	171	201	142	<20
18.05.2015	21.0	45.1	9.6	12.0	<0.001	<1.0	<0.001	1.1	0.011	8.6	10.1	7.1	161	190	133	<20
19.05.2015	19.8	46.7	11.2	13.4	<0.001	<1.0	<0.001	1.3	0.014	7.4	9.6	6.2	172	196	145	<20
25.05.2015	22.5	48.1	10.6	12.8	<0.001	<1.0	<0.001	1.0	0.010	9.1	11.2	7.3	159	190	125	<20
26.05.2015	24.7	43.7	11.3	13.1	<0.001	<1.0	<0.001	0.8	0.012	8.4	10.4	6.3	171	203	147	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP		UV Photometric method	NDIR Spectroscopy Method			Indophenols Blue Method			

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
JUNE 2015																
01.06.2015	24.0	48.1	12.1	14.1	<0.001	<1.0	<0.001	0.8	0.010	9.3	11.2	7.1	181	205	152	<20
02.06.2015	20.3	47.3	11.3	13.0	<0.001	<1.0	<0.001	1.0	0.012	10.1	11.9	8.2	177	200	147	<20
08.06.2015	23.3	44.4	10.2	12.7	<0.001	<1.0	<0.001	0.7	0.009	8.4	10.8	6.5	162	193	132	<20
09.06.2015	25.2	46.3	12.0	14.3	<0.001	<1.0	<0.001	1.1	0.010	9.3	11.1	7.3	179	209	148	<20
15.06.2015	22.3	50.1	10.4	12.6	<0.001	<1.0	<0.001	0.9	0.008	7.8	9.6	5.8	169	198	139	<20
16.06.2015	21.1	47.9	12.0	14.2	<0.001	<1.0	<0.001	0.7	0.012	8.3	10.3	6.2	178	204	140	<20
22.06.2015	23.8	49.3	11.4	13.7	<0.001	<1.0	<0.001	1.1	0.008	8.0	10.7	7.8	167	198	130	<20
23.06.2015	21.9	44.9	9.9	11.9	<0.001	<1.0	<0.001	0.9	0.012	9.7	11.2	7.1	182	211	153	<20
29.06.2015	24.4	46.4	10.6	12.3	<0.001	<1.0	<0.001	0.6	0.009	7.8	10.3	6.3	162	194	134	<20
30.06.2015	21.9	48.3	11.2	13.5	<0.001	<1.0	<0.001	1.1	0.01	10.3	12	7.9	174	205	142	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
JULY 2015																
06.07.2015	23.1	50.2	11.9	13.6	<0.001	<1.0	<0.001	0.5	0.008	8.1	10.6	6.8	188	213	163	<20
07.07.2015	19.4	49.6	12.0	14.2	<0.001	<1.0	<0.001	0.8	0.010	7.8	10.9	5.7	180	208	153	<20
13.07.2015	22.4	46.3	10.9	13.1	<0.001	<1.0	<0.001	0.6	0.006	9.3	11.5	7.6	173	201	142	<20
14.07.2015	24.3	48.3	11.7	13.8	<0.001	<1.0	<0.001	0.9	0.005	8.8	11.8	6.4	193	217	160	<20
20.07.2015	21.4	52.2	12.5	14.1	<0.001	<1.0	<0.001	0.4	0.007	8.3	10.5	6.1	176	206	145	<20
21.07.2015	20.2	50.2	13.2	15.0	<0.001	<1.0	<0.001	0.8	0.010	7.4	9.8	5.4	185	212	154	<20
27.07.2015	22.9	51.4	12.1	14.5	<0.001	<1.0	<0.001	0.6	0.006	9.6	11.6	7.2	174	206	143	<20
28.07.2015	20.8	47.1	10.6	12.7	<0.001	<1.0	<0.001	0.4	0.007	8.4	10.4	6.3	191	219	165	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
AUGUST 2015																
03.08.2015	22.6	51.9	12.8	14.7	<0.001	<1.0	<0.001	0.3	0.006	7.4	9.5	5.7	168	196	142	<20
04.08.2015	20.8	52.3	13.6	15.3	<0.001	<1.0	<0.001	0.4	0.008	8.2	10.2	6.1	174	205	147	<20
12.08.2015	23.8	48.2	11.8	14.2	<0.001	<1.0	<0.001	0.5	0.004	7.6	9.6	5.8	164	189	134	<20
13.08.2015	25.7	50.3	12.6	14.9	<0.001	<1.0	<0.001	0.7	0.006	8.1	10.7	6.0	189	205	152	<20
19.08.2015	23.1	54.2	13.4	15.2	<0.001	<1.0	<0.001	0.3	0.008	6.9	9.6	5.2	167	194	137	<20
20.08.2015	21.6	51.9	14.1	16.1	<0.001	<1.0	<0.001	0.2	0.005	8.4	10.4	6.3	176	202	146	<20
24.08.2015	24.3	53.1	13.0	15.6	<0.001	<1.0	<0.001	0.6	0.003	7.6	10.1	6.0	165	194	135	<20
25.08.2015	22.2	48.8	11.5	13.8	<0.001	<1.0	<0.001	0.3	0.006	7.2	9.9	5.9	176	207	144	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
SEPTEMBER 2015																
01.09.2015	24.4	53.1	11.7	13.8	<0.001	<1.0	<0.001	0.5	0.003	8.4	10.6	6.8	173	202	146	<20
07.09.2015	22.5	53.5	12.5	14.4	<0.001	<1.0	<0.001	0.2	0.005	9.0	11.4	7.7	181	211	151	<20
08.09.2015	25.4	49.2	12.1	14.1	<0.001	<1.0	<0.001	0.1	0.002	8.2	10.5	6.2	169	195	138	<20
14.09.2015	27.5	51.4	11.5	13.6	<0.001	<1.0	<0.001	0.3	0.004	7.5	9.8	5.8	184	211	156	<20
15.09.2015	24.7	52.1	12.3	14.3	<0.001	<1.0	<0.001	0.5	0.005	9.3	11.6	7.3	172	200	141	<20
21.09.2015	23.4	55.6	13.2	15.3	<0.001	<1.0	<0.001	0.4	0.003	8.9	11.1	7.0	169	208	135	<20
22.09.2015	26.0	54.3	11.9	13.9	<0.001	<1.0	<0.001	0.3	0.006	7.5	9.5	5.5	170	202	142	<20
28.09.2015	24.1	50.0	12.2	14.8	<0.001	<1.0	<0.001	0.1	0.003	8.1	10.4	6.9	181	211	150	<20
29.09.2015	23.4	53.6	11.3	13.7	<0.001	<1.0	<0.001	0.3	0.004	8.8			11.3			7.1
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenols Blue Method				

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**



SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
ENVIRONMENTAL COMPLIANCE STATUS REPORT
APRIL TO SEPTEMBER 2015

TABLE – 4 (E)

Outside Ambient Air Quality Monitoring
Location: Sonsari

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
APRIL 2015																
01.04.2015	21.2	47.2	10.8	12.9	<0.001	<1.0	<0.001	1.2	0.015	8.3	10.2	6.8	168	205	140	<20
02.04.2015	22.2	49.2	11.5	13.5	<0.001	<1.0	<0.001	1.4	0.013	7.1	9.6	5.8	180	210	152	<20
08.04.2015	24.0	47.7	10.2	11.8	<0.001	<1.0	<0.001	1.1	0.015	9.6	11.1	7.1	159	197	126	<20
09.04.2015	21.3	45.8	10.6	12.4	<0.001	<1.0	<0.001	1.3	0.012	8.1	10.5	6.3	170	203	139	<20
15.04.2015	23.2	48.4	9.7	12.1	<0.001	<1.0	<0.001	1.4	0.014	7.8	9.4	5.7	183	220	156	<20
16.04.2015	23.7	50.7	11.6	13.6	<0.001	<1.0	<0.001	1.1	0.015	8.3	10.2	6.0	161	198	132	<20
22.04.2015	22.4	49.1	11.3	14.5	<0.001	<1.0	<0.001	1.2	0.012	9.6	11.4	7.8	182	214	150	<20
23.04.2015	23.5	49.7	11.0	12.8	<0.001	<1.0	<0.001	1.0	0.015	8.7	11.1	6.2	170	206	141	<20
29.04.2015	21.2	46.8	9.9	12.0	<0.001	<1.0	<0.001	1.3	0.013	8.1	10.7	5.9	165	191	133	<20
30.04.2015	23.7	49.5	10.8	12.6	<0.001	<1.0	<0.001	1.4	0.012	7.6	9.8	5.2	173	212	139	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophe nols Blue Method								

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
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APRIL TO SEPTEMBER 2015

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ /m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
MAY 2015																
04.05.2015	20.3	48.1	11.1	13.1	<0.001	<1.0	<0.001	1.0	0.012	9.1	11.3	7.9	159	192	129	<20
05.05.2015	21.3	50.1	10.9	12.8	<0.001	<1.0	<0.001	0.8	0.010	8.2	10.2	6.5	172	201	141	<20
11.05.2015	23.1	48.6	11.3	13.1	<0.001	<1.0	<0.001	1.2	0.013	10.0	12	8.1	151	188	115	<20
12.05.2015	20.4	46.7	12.1	14.0	<0.001	<1.0	<0.001	0.9	0.011	9.3	11.4	7.2	162	194	128	<20
18.05.2015	23.6	49.3	10.1	12.8	<0.001	<1.0	<0.001	1.1	0.012	8.1	10.3	6.3	175	202	145	<20
19.05.2015	22.8	51.6	11.1	13.3	<0.001	<1.0	<0.001	1.0	0.010	9.2	11.2	7.7	155	189	121	<20
25.05.2015	21.5	50.0	10.7	12.4	<0.001	<1.0	<0.001	0.7	0.013	7.8	9.9	5.9	174	205	139	<20
26.05.2015	22.6	50.6	11.3	13.1	<0.001	<1.0	<0.001	0.9	0.011	8.9	10.7	6.7	163	197	125	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP		UV Photometric method	NDIR Spectroscopy Method		Indophenols Blue Method						

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P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
JUNE 2015																
01.06.2015	21.6	49.0	12.2	14.0	<0.001	<1.0	<0.001	0.9	0.010	8.4	10.3	6.8	166	203	137	<20
02.06.2015	22.6	51.0	11.3	13.7	<0.001	<1.0	<0.001	1.1	0.008	7.6	9.6	5.8	179	212	149	<20
08.06.2015	24.4	49.5	12.4	14.2	<0.001	<1.0	<0.001	1.0	0.010	8.1	10.2	6.9	158	199	123	<20
09.06.2015	21.7	47.6	10.9	12.8	<0.001	<1.0	<0.001	0.8	0.012	9	11.7	7.5	169	205	136	<20
15.06.2015	24.9	50.2	11.2	13.7	<0.001	<1.0	<0.001	1.1	0.010	7.6	11.2	5.6	182	213	153	<20
16.06.2015	24.1	52.5	12.2	14.0	<0.001	<1.0	<0.001	0.9	0.009	8.3	10.8	6.7	162	200	130	<20
22.06.2015	22.8	50.9	11.8	13.1	<0.001	<1.0	<0.001	0.6	0.010	9.1	11.7	7.1	180	216	147	<20
23.06.2015	23.9	51.5	10.8	12.7	<0.001	<1.0	<0.001	1.0	0.012	7.8	9.8	5.9	170	206	133	<20
29.06.2015	21.6	49.2	11.2	13.6	<0.001	<1.0	<0.001	0.8	0.010	8.5	10.5	6.1	165	196	138	<20
30.06.2015	24.4	52.0	12.9	14.8	<0.001	<1.0	<0.001	1.0	0.008	8.0	10.1	7.0	180	211	150	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

SAI LILAGAR POWER COMPANY LTD.
2 x 43 MW Coal Based Captive Power Plant Phase – I & II
P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.)
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**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
JULY 2015																
06.07.2015	20.5	47.2	11.3	13.2	<0.001	<1.0	<0.001	0.7	0.006	9.2	11.3	7.1	184	221	153	<20
07.07.2015	23.6	49.2	10.4	12.9	<0.001	<1.0	<0.001	0.5	0.009	8.1	10.4	6.3	176	206	141	<20
13.07.2015	22.3	48.5	11.5	13.4	<0.001	<1.0	<0.001	0.8	0.007	9.3	11.8	7.0	182	213	150	<20
14.07.2015	20.6	51.2	10.0	12.0	<0.001	<1.0	<0.001	0.4	0.004	7.5	9.6	5.8	178	209	144	<20
20.07.2015	22.5	48.4	10.3	13.0	<0.001	<1.0	<0.001	0.8	0.007	8.1	10.4	6.1	188	225	152	<20
21.07.2015	23.0	50.7	11.3	13.2	<0.001	<1.0	<0.001	0.3	0.009	9.0	11.1	7.3	167	198	131	<20
27.07.2015	21.7	49.1	10.9	12.7	<0.001	<1.0	<0.001	0.7	0.006	10.1	12.1	8.2	177	205	143	<20
28.07.2015	22.8	49.7	9.9	11.9	<0.001	<1.0	<0.001	0.5	0.008	7.4	10.2	5.3	182	212	141	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
AUGUST 2015																
03.08.2015	22.2	49.1	12.1	14.0	<0.001	<1.0	<0.001	0.3	0.005	8.1	10.8	6.8	175	214	144	<20
04.08.2015	21.6	51.1	11.2	13.7	<0.001	<1.0	<0.001	0.2	0.003	7.8	11.3	5.7	167	198	132	<20
12.08.2015	24.0	50.4	12.3	14.2	<0.001	<1.0	<0.001	0.5	0.005	8.3	10.7	6.3	173	205	143	<20
13.08.2015	22.3	53.1	10.8	12.8	<0.001	<1.0	<0.001	0.6	0.007	7.9	10.2	6.1	170	201	133	<20
19.08.2015	24.2	50.3	11.1	13.8	<0.001	<1.0	<0.001	0.4	0.004	9.2	11.5	7.4	181	217	142	<20
20.08.2015	22.8	52.6	12.1	15.0	<0.001	<1.0	<0.001	0.2	0.003	7.7	9.6	5.6	158	188	125	<20
24.08.2015	23.4	51.0	11.7	13.5	<0.001	<1.0	<0.001	0.5	0.005	8.0	10.4	6.2	169	197	130	<20
25.08.2015	24.5	52.4	10.7	12.7	<0.001	<1.0	<0.001	0.4	0.002	9.3	11.2	7.0	174	204	137	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
SEPTEMBER 2015																
01.09.2015	20.9	51.2	11.7	13.4	<0.001	<1.0	<0.001	0.1	0.002	9.3	11.1	7.4	169	207	138	<20
07.09.2015	23.1	52.2	10.8	12.7	<0.001	<1.0	<0.001	0.3	0.005	7.2	9.5	5.9	157	186	126	<20
08.09.2015	25.3	53.1	11.9	13.6	<0.001	<1.0	<0.001	0.4	0.003	6.6	8.4	5.1	167	198	137	<20
14.09.2015	21.8	51.8	10.4	12.2	<0.001	<1.0	<0.001	0.3	0.006	9.4	11.2	7.3	164	194	126	<20
15.09.2015	25.5	52.6	12.1	14.2	<0.001	<1.0	<0.001	0.2	0.003	8.1	10.5	6.4	175	209	136	<20
21.09.2015	23.1	50.7	11.7	13.7	<0.001	<1.0	<0.001	0.1	0.005	7.3	9.3	5.2	168	201	123	<20
22.09.2015	24.7	54.1	11.3	13.9	<0.001	<1.0	<0.001	0.4	0.004	9.0	11	7.8	171	190	145	<20
28.09.2015	25.8	50.6	10.3	12.1	<0.001	<1.0	<0.001	0.3	0.001	8.5	10.4	6.1	168	197	128	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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TABLE – 4 (F)

Outside Ambient Air Quality Monitoring
Location: Nariyara

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
APRIL 2015																
01.04.2015	21.4	47.0	11.4	13.1	<0.001	<1.0	<0.001	1.2	0.011	8.3	10.1	6.6	191	220	160	<20
02.04.2015	19.1	44.9	11.9	14.2	<0.001	<1.0	<0.001	1.1	0.013	9.1	11.3	7.1	175	208	142	<20
08.04.2015	22.2	49.0	12.6	14.8	<0.001	<1.0	<0.001	1.4	0.008	7.8	9.8	5.8	182	213	154	<20
09.04.2015	20.3	46.9	11.3	13.2	<0.001	<1.0	<0.001	1.0	0.011	8.5	10.4	6.8	194	225	161	<20
15.04.2015	24.1	46.0	11.9	14.3	<0.001	<1.0	<0.001	1.2	0.013	8.1	10.7	6.2	170	209	139	<20
16.04.2015	21.7	44.7	11.4	13.5	<0.001	<1.0	<0.001	1.0	0.010	9.3	11.0	7.0	184	217	153	<20
22.04.2015	21.3	48.2	11.7	14.2	<0.001	<1.0	<0.001	1.4	0.013	7.3	9.6	5.9	194	220	162	<20
23.04.2015	23.8	45.9	12.1	14.6	<0.001	<1.0	<0.001	1.1	0.011	9.4	11.2	7.1	173	206	143	<20
29.04.2015	23.0	48.9	10.7	13.3	<0.001	<1.0	<0.001	1.3	0.009	8.8	10.6	6.5	181	213	151	<20
30.04.2015	21.1	47.1	11.7	14.1	<0.001	<1.0	<0.001	1.2	0.012	7.0	9.5	5.2	173	205	140	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NO _x µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
MAY 2015																
04.05.2015	22.5	48.2	10.9	12.3	<0.001	<1.0	<0.001	1.0	0.010	7.7	9.6	6.2	175	204	148	<20
05.05.2015	20.2	46.1	11.4	13.4	<0.001	<1.0	<0.001	0.8	0.009	8.6	10.5	7.2	159	192	130	<20
11.05.2015	23.3	50.2	12.1	14.0	<0.001	<1.0	<0.001	1.1	0.011	9.1	11.1	7.9	166	197	142	<20
12.05.2015	21.4	48.1	10.8	12.4	<0.001	<1.0	<0.001	0.7	0.007	8.1	9.5	7.2	178	209	149	<20
18.05.2015	25.2	47.2	11.4	13.5	<0.001	<1.0	<0.001	1.1	0.011	8.6	11.0	6.8	154	193	127	<20
19.05.2015	22.8	45.9	10.9	12.7	<0.001	<1.0	<0.001	0.9	0.008	8.9	10.6	7.5	168	201	141	<20
25.05.2015	22.4	49.4	11.2	13.4	<0.001	<1.0	<0.001	1.1	0.012	7.6	9.8	6.1	178	204	150	<20
26.05.2015	24.9	47.1	11.6	13.8	<0.001	<1.0	<0.001	1.2	0.009	8.1	10.7	7.8	157	190	131	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
JUNE 2015																
01.06.2015	21.6	49.7	11.6	13.1	<0.001	<1.0	<0.001	0.6	0.007	8.1	10.2	6.6	181	211	155	<20
02.06.2015	19.3	50.1	10.9	12.6	<0.001	<1.0	<0.001	0.7	0.005	9.6	11.5	8.0	165	199	137	<20
08.06.2015	22.4	48.3	11.5	13.2	<0.001	<1.0	<0.001	0.9	0.010	8.4	10.8	6.7	172	204	149	<20
09.06.2015	20.5	49.6	11.5	13.1	<0.001	<1.0	<0.001	0.7	0.008	9	11.3	7.8	184	216	151	<20
15.06.2015	24.3	46.9	12.1	14.4	<0.001	<1.0	<0.001	1.0	0.006	8.1	10.8	5.9	175	200	134	<20
16.06.2015	21.9	47.4	11.6	13.0	<0.001	<1.0	<0.001	0.5	0.010	7.7	9.6	6.1	163	188	136	<20
22.06.2015	21.5	51.2	13.2	15.0	<0.001	<1.0	<0.001	0.6	0.007	8.6	11.2	6.8	184	211	157	<20
23.06.2015	24.0	48.6	12.3	14.2	<0.001	<1.0	<0.001	0.9	0.009	9.2	11.6	8.0	163	197	130	<20
29.06.2015	21.0	51.6	11.4	13.1	<0.001	<1.0	<0.001	1.1	0.010	8.5	10.7	6.4	168	203	139	<20
30.06.2015	22.8	48.2	12.5	14.0	<0.001	<1.0	<0.001	0.7	0.006	7.3	9.5	5.5	180	213	151	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenols Blue Method			



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**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
JULY 2015																
06.07.2015	20.7	52.1	10.9	12.3	<0.001	<1.0	<0.001	0.4	0.005	9.3	11.3	7.1	193	223	162	<20
07.07.2015	23.1	49.6	12.2	14.6	<0.001	<1.0	<0.001	0.3	0.008	8.2	10.5	6.6	172	204	144	<20
13.07.2015	21.6	51.2	10.8	12.4	<0.001	<1.0	<0.001	0.7	0.005	7.5	9.6	5.8	182	212	156	<20
14.07.2015	19.7	50.7	11.9	13.8	<0.001	<1.0	<0.001	0.5	0.004	8.2	10.4	6.1	191	221	162	<20
20.07.2015	23.5	53.2	11.4	14.1	<0.001	<1.0	<0.001	0.9	0.006	9.1	11.1	7.7	176	205	141	<20
21.07.2015	21.1	47.6	10.9	12.2	<0.001	<1.0	<0.001	0.8	0.008	7.7	9.5	5.2	170	193	147	<20
27.07.2015	20.7	52.3	12.5	14.8	<0.001	<1.0	<0.001	0.5	0.005	8.2	10.7	6.0	191	216	163	<20
28.07.2015	23.4	50.2	11.6	13.4	<0.001	<1.0	<0.001	0.9	0.007	8.5	10.1	5.9	170	202	142	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis			AAS/ICP		UV Photometric method		NDIR Spectroscopy Method			Indophenols Blue Method		

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	CaH ₂ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
AUGUST 2015																
03.08.2015	22.0	53.9	12.0	14.5	<0.001	<1.0	<0.001	0.2	0.002	8.2	10.2	6.6	187	217	157	<20
04.08.2015	24.4	51.4	13.3	15.9	<0.001	<1.0	<0.001	0.5	0.005	7.1	9.6	5.8	166	197	135	<20
12.08.2015	23.1	53.0	11.9	13.6	<0.001	<1.0	<0.001	0.4	0.003	8.0	10.4	6.1	176	206	148	<20
13.08.2015	21.0	52.5	13.0	15.0	<0.001	<1.0	<0.001	0.6	0.005	7.3	9.3	5.8	185	215	157	<20
19.08.2015	24.8	53.9	12.5	15.3	<0.001	<1.0	<0.001	0.5	0.004	8.5	10.8	6.9	170	199	136	<20
20.08.2015	22.4	49.4	12.0	13.4	<0.001	<1.0	<0.001	0.3	0.002	8.2	10.2	6.2	164	187	139	<20
24.08.2015	23.1	54.1	11.7	14.4	<0.001	<1.0	<0.001	0.4	0.006	7.0	9.5	5.7	185	210	158	<20
25.08.2015	24.7	52.0	12.7	14.6	<0.001	<1.0	<0.001	0.2	0.004	7.5	9.3	6.1	164	196	137	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP		UV Photometric method		NDIR Spectroscopy Method		Indophenol Blue Method			



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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ ³ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
SEPTEMBER 2015																
01.09.2015	23.4	55.7	11.3	13.4	<0.001	<1.0	<0.001	0.1	0.004	9.1	11.1	7.2	193	226	163	<20
07.09.2015	25.8	53.3	12.6	14.8	<0.001	<1.0	<0.001	0.3	0.001	8.3	10.6	6.8	172	202	140	<20
08.09.2015	24.5	54.9	11.2	12.9	<0.001	<1.0	<0.001	0.2	0.002	7.4	9.6	5.1	182	211	153	<20
14.09.2015	22.4	54.3	12.3	14.4	<0.001	<1.0	<0.001	0.4	0.003	8.0	10.4	6.1	191	221	163	<20
15.09.2015	21.8	55.7	11.8	13.6	<0.001	<1.0	<0.001	0.2	0.002	7.3	9.2	5.8	176	205	141	<20
21.09.2015	23.8	51.2	10.9	12.7	<0.001	<1.0	<0.001	0.1	0.004	9.1	11.6	7.1	167	193	137	<20
22.09.2015	25.4	53.2	11.0	13.3	<0.001	<1.0	<0.001	0.3	0.002	6.7	8.7	5.1	178	215	145	<20
28.09.2015	23.4	53.8	13.1	15.0	<0.001	<1.0	<0.001	0.4	0.001	8.5	10.3	6.6	170	201	143	<20
29.09.2015	24.3	50.7	12.2	14.3	<0.001	<1.0	<0.001	0.2	0.003	6.9	8.9	4.9	182	211	158	<20

Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**


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TABLE – 4 (F)

Outside Ambient Air Quality Monitoring
Location: Tarod

Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NO _x µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a)pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
APRIL 2015																
Monitoring was not conduct																
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100	2000	400	Indophenols Blue Method			
Test Methods	Gravimetric Method		Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis		AAS/ICP			UV Photometric method			NDIR Spectroscopy Method			

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Monitoring Date	PM _{2.5} µg/m ³	PM ₁₀ µg/m ³	SO ₂ µg/m ³	NOx µg/m ³	C ₆ H ₆ µg/m ³	Benzo(a) pyrene in Particulate Phase µg/m ³	Arsenic µg/m ³	Nickel µg/m ³	Lead µg/m ³	O ₃ µg/m ³			CO µg/m ³			NH ₃ µg/m ³
										I	II	III	I	II	III	
MAY 2015																
04.05.2015	23.3	50.5	12.7	14.9	<0.001	<1.0	<0.001	1.2	0.012	8.4	10.2	6.6	176	199	149	<20
05.05.2015	24.6	48.6	11.3	13.3	<0.001	<1.0	<0.001	1.0	0.006	6.9	8.5	5.2	182	210	152	<20
11.05.2015	24.0	51.2	12.5	14.8	<0.001	<1.0	<0.001	1.3	0.013	8.1	10.6	7.1	191	215	160	<20
12.05.2015	21.7	49.3	12.2	13.7	<0.001	<1.0	<0.001	1.1	0.008	9.6	11.6	7.6	186	205	157	<20
18.05.2015	24.1	50.1	13.1	15.8	<0.001	<1.0	<0.001	1.2	0.010	8.3	10.1	6.2	175	201	143	<20
19.05.2015	25.2	52.6	12.0	14.1	<0.001	<1.0	<0.001	1.4	0.007	7.7	9.6	5.9	164	192	134	<20
25.05.2015	26.6	46.3	12.6	14.6	<0.001	<1.0	<0.001	0.9	0.005	7.9	10.4	6.1	180	207	151	<20
26.05.2015	24.3	50.2	11.1	13.4	<0.001	<1.0	<0.001	1.2	0.011	9.1	11.2	7.3	176	197	142	<20
Limits as per NAAQS	60	100	80	80	5.0	1.0	6.0	20	1.0	100			2000			400
Test Methods	Gravimetric Method	Improved West & Geake	Modified Jacob & Hochheiser Method	Solvent Extraction followed by GC Analysis	AAS/ICP	UV Photometric method	NDIR Spectroscopy Method	Indophenols Blue Method								

**** As per National Ambient Air Quality Standards – G. S. R. 826(E) notification dated 16.11.2009.**

2.3 Source Emission Monitoring

One common chimney attached to Boiler No. I & II is monitored for estimating emission rates with respect to Particulate matter, Sulphur Dioxide and Oxides of nitrogen. Online meter is provided for central monitoring of SPM.

2.3.1 Methodology of Sampling

The stack sampling was carried out by **ISO-KINETIC METHOD** using pre-calibrated stack kit. Cellulose and Glass Fiber thimbles were used for collecting particulate matter. The Sulphur Dioxide is estimated as per Emission Regulations (December, 1985) Part-III, COINDS/20/1984-85 published by CPCB, New Delhi. NO_x is estimated as per IS: 11255 Part VI and ASTM D- 1607.

2.3.2 Result and Discussions

Stack emission monitoring was carried out for Boiler I & II respectively. The emission rates were meeting the limits prescribed by CECB and results were tabulated in **Table - 5(A) to 5(F)**. The summary of these results (**APRIL – SEPTEMBER 2015**) is given below in **Table - 5**.

TABLE- 5
SOURCE EMISSION MONITORING Phase – I : FOR BOILER I & II
(Common Stack Attached to Boiler I & II)

Month	Dust Concentration (mg/Nm ³)	Sulphur Dioxide (mg/Nm ³)	Oxides of Nitrogen (mg/Nm ³)
APRIL 2015	SHUT DOWN	SHUT DOWN	SHUT DOWN
MAY 2015	SHUT DOWN	SHUT DOWN	SHUT DOWN
JUNE 2015	SHUT DOWN	SHUT DOWN	SHUT DOWN
JULY 2015	33.2	283.0	219.0
AUGUST 2015	35.4	269.0	196.0
SEPTEMBER 2015	41.2	280.0	219.0

The maximum value of dust concentration is 41.2 mg/Nm³ observed in the month of September 2015. Similarly the maximum values of SO₂ and NO_x concentration are 283.0 and 219.0 mg/Nm³ observed in the month of July and September 2015.


	<p align="center">SAI LIAGAR POWER COMPANY LTD. 2 x 43 MW Coal Based Power Plant Phase – I & II P.O.: Gopal Nagar, Dist.: Janjgir - Champa (C. G.) ENVIRONMENTAL COMPLIANCE STATUS REPORT APRIL TO SEPTEMBER 2015</p>
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TABLE- 5(A)

SOURCE EMISSION MONITORING Phase –II : FOR BOILER I & II
(Common Stack Attached to Boiler I & II)

Month	Dust Concentration (mg/Nm ³)	Sulphur Dioxide (mg/Nm ³)	Oxides of Nitrogen (mg/Nm ³)
APRIL 2015	SHUT DOWN	SHUT DOWN	SHUT DOWN
MAY 2015	31.6	277.0	182.0
JUNE 2015	32.8	286.0	202.0
JULY 2015	31.7	312.0	242.0
AUGUST 2015	SHUT DOWN	SHUT DOWN	SHUT DOWN
SEPTEMBER 2015	SHUT DOWN	SHUT DOWN	SHUT DOWN

The maximum value of dust concentration is 32.8 mg/Nm³ observed in the month of June 2015. Similarly the maximum values of SO₂ and NO_x concentration are 312.0 and 242.0 mg/Nm³ observed in the month of September 2015.

TABLE- 5 (B)

SOURCE EMISSION MONITORING Phase – I : FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

APRIL 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	85	-
3	Duct Dia.	M	2.5	-
4	Duct Area	m ²	4.9	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s		USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	Shut down	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NO_x: As per ASTM D 1608 – 77 (1990)

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TABLE– 5 (C)
SOURCE EMISSION MONITORING Phase – I: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

MAY 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	Shut down	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³		USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)
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TABLE– 5 (D)
SOURCE EMISSION MONITORING Phase – I: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

JUNE 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	85	-
3	Duct Dia.	M	2.5	-
4	Duct Area	m ²	4.91	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	Shut down	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³		USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

TABLE– 5 (E)
SOURCE EMISSION MONITORING Phase – I: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

JULY 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C	106	USEPA 1,2,3&4
6	Velocity	m/s	10.8	USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	95.2	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	33.2	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³	283	USEPA 6
10	Oxides of Nitrogen	mg/Nm ³	219	Flue gas analyzer


- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

TABLE– 5 (F)
SOURCE EMISSION MONITORING Phase – I: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

AUGUST 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	85	-
3	Duct Dia.	M	2.5	-
4	Duct Area	m ²	4.9	-
Flue Gas Characteristics				
5	Temperature	°C	104	USEPA 1,2,3&4
6	Velocity	m/s	12.9	USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	63.2	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	35.4	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³	269	USEPA 6
10	Oxides of Nitrogen	mg/Nm ³	196	Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

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TABLE– 5 (G)
SOURCE EMISSION MONITORING Phase –I: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler

SEMPTEMBER 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	85	-
3	Duct Dia.	M	2.5	-
4	Duct Area	m ²	4.91	-
Flue Gas Characteristics				
5	Temperature	°C	109	USEPA 1,2,3&4
6	Velocity	m/s	14.1	USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	51.1	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	41.2	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³	280	USEPA 6
10	Oxides of Nitrogen	mg/Nm ³	219	Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

TABLE– 5 (H)
SOURCE EMISSION MONITORING Phase –II: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

APRIL 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s		USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	Shut down	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

TABLE– 5 (I)
SOURCE EMISSION MONITORING Phase –II: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

MAY 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C	80	USEPA 1,2,3&4
6	Velocity	m/s	10.5	USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	103.5	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	31.6	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³	277	USEPA 6
10	Oxides of Nitrogen	mg/Nm ³	182	Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.
- Method of estimation of NO_x: As per ASTM D 1608 – 77 (1990)

TABLE– 5 (J)
SOURCE EMISSION MONITORING Phase –II: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

JUNE 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	85	-
3	Duct Dia.	M	2.5	-
4	Duct Area	m ²	4.91	-
Flue Gas Characteristics				
5	Temperature	°C	95	USEPA 1,2,3&4
6	Velocity	m/s	9.8	USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s	90.9	USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	32.8	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³	286	USEPA 6
10	Oxides of Nitrogen	mg/Nm ³	202	Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.
- Method of estimation of NO_x: As per ASTM D 1608 – 77 (1990)

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TABLE– 5 (K)
SOURCE EMISSION MONITORING Phase –II: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

JULY 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s		USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	Shut Down	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.S
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

TABLE– 5 (L)
SOURCE EMISSION MONITORING Phase –II: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

AUGUST 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s		USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	Shut Down	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.
- Method of estimation of NOx: As per ASTM D 1608 – 77 (1990)

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TABLE– 5 (M)
SOURCE EMISSION MONITORING Phase –II: FOR BOILER – I & II
(Common Stack Attached to Boiler I & Boiler II)

SEPTEMBER 2015

Sr. No.	Parameters	UOM	Result	Methods
Details of the source				
1	Capacity	MW	43	-
2	Stack Height	M	86	-
3	Duct Dia.	M	3.9	-
4	Duct Area	m ²	11.9	-
Flue Gas Characteristics				
5	Temperature	°C		USEPA 1,2,3&4
6	Velocity	m/s		USEPA 1,2,3&4
7	Volumetric Flow Rate	Nm ³ /s		USEPA 1,2,3&4
8	Particulate Matter	mg/Nm ³	Shut Down	USEPA 1,2,3&4
9	Sulfur dioxide	mg/Nm ³		USEPA 6
10	Oxides of Nitrogen	mg/Nm ³		Flue gas analyzer

- Method of estimation of Dust particulates, SO₂:
- As per emission Regulation (Dec, 1985) Part – III, COINDS/20/1984-85, published by CPCB, New Delhi.
- Method of estimation of NO_x: As per ASTM D 1608 – 77 (1990)

2.4 Water Quality

Samples were collected as per the procedures stipulated in IS: 2488. Parameters like Temperature, Electrical Conductivity, pH and Dissolved Oxygen were analyzed in-site using portable water analysis kit. Samples were collected by taking suitable precautions, particularly using sterilized bottles for bacteriological analysis. The details of the sampling locations are given in **Table- 6** and depicted in **Figure- 2**.

TABLE- 6
WATER SAMPLING LOCATIONS

Sample Code	Locations	Source
Surface Water		
RW1	Raw Water	Surface Water, Reservoir
Waste Water (Effluents) UNIT – I		
WW1	CT blow down	Waste water
WW2	Boiler blow down	Waste water
WW3	DM plant blow down	Waste water
WW4	Guard pond	Waste water
Waste Water (Effluents) UNIT – II		
WW1	CT blow down	Waste water
WW2	Boiler blow down	Waste water
WW3	DM plant blow down	Waste water

2.4.1 Methodology of Sampling

Water samples were collected for physic-chemical and bacteriological parameters taking suitable precautions. Temperature, pH, Dissolve Oxygen and Electrical Conductivity were measured in the field while collecting the samples.

Sterilized bottles were used to collect samples for bacteriological analysis, stored in the ice and transported to the central laboratory.

2.4.2 Analytical Procedure

Dissolve Oxygen, pH, and Temperature and Electrical conductivity were measured in the field using portable analysis kit. Physic-chemical and bacteriological parameters were determined in the laboratory as per standard methods.

Ground and surface water samples were analyzed as per IS: 10500 (1991) and IS: 2296 Class C respectively where as wastewater samples were analyzed as per MPCB Standards. The analytical methods mentioned in IS:3025 and Standard Methods published by APHA were followed. MPN Index of Coli f1orms was found as per standard methods (IS:1622).

2.4.3 Results and Discussions

2.4.4 Raw Water Quality



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Ground water and Surface water samples outside the premises was collected and analyzed.

The summary of analyzed parameters is shown in **Table- 6 (A) to (B)**. It can be observed that the pH value of all the samples were in the range of 7.5 – 7.6 and well within the limits. Total dissolve solids are found to be in the range of 620 – 1280 mg/l. Sulphates is found to be in the range of 18.6 – 110 mg/l.

2.4.5 Waste Water Quality

Discharges of effluents were found to be confirmed to the limits prescribed by the CPCB. The metals concentrations were found to be well within the limits. Analysis results during the study period were shown in **Table – 6 (C) to (F)**.

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TABLE – 6 (A)

GROUND WATER QUALITY IN STUDY AREA – MAY - 2015

Sr. No	Parameter	Units	GW1	GW2	GW3	GW4	GW5	GW6	Limits as per IS:10500
				Pre monsoon season	Pre monsoon season	Pre monsoon season	Pre monsoon season	Pre monsoon season	Pre monsoon season
				16/05/2015	16/05/2015	16/05/2015	16/05/2015	16/05/2015	16/05/2015
				18/05/2015	18/05/2015	18/05/2015	18/05/2015	18/05/2015	18/05/2015
1	pH	--	--	7.5	7.6	7.4	7.3	7.4	7.3
2	Color	Hazen	Hazen	2	3	2	3	2	2
3	Taste	--	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	--	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Conductivity	µs/cm	µs/cm	423	502	611	728	1007	823
6	Turbidity	NTU	NTU	3	4	4	3	4	4
7	Total Dissolved Solids	mg/l	mg/l	298	329	413	490	660	585
8	Total Hardness as CaCO ₃	mg/l	mg/l	148	174	186	221	293	297
9	Total Alkalinity	mg/l	mg/l	161	180	223	232	333	299
10	Calcium as Ca ²⁺	mg/l	mg/l	27.1	33.3	37.1	49.6	68.3	68.1
11	Magnesium as Mg ²⁺	mg/l	mg/l	19.6	22.1	22.6	23.5	29.6	30.7
12	Residual Chlorine	mg/l	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
13	Boron	mg/l	mg/l	0.09	0.12	0.06	0.10	0.19	0.13
14	Chloride as Cl ⁻	mg/l	mg/l	28.1	26.3	36.2	65.2	74.2	70.1
15	Sulphate as SO ₄ ²⁺	mg/l	mg/l	15.4	23.6	36.2	65.2	36.1	26.6
16	Fluorides as F	mg/l	mg/l	0.3	0.5	0.4	0.4	0.5	0.4
17	Nitrate as NO ₃	mg/l	mg/l	5.3	3.2	11.4	16.8	17.7	16.2
18	Sodium as Na ⁺	mg/l	mg/l	24.5	25.2	43.2	51.1	81.2	58.1
19	Potassium as K ⁺	mg/l	mg/l	16.3	14.7	20.4	27.4	19.4	15.8
20	Phenolic Compounds	mg/l	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
21	Cyanides	mg/l	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
22	Anionic Detergents	mg/l	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
23	Mineral Oil	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Cadmium as Cd	mg/l	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
25	Total Arsenic as As	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Copper as Cu	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Lead as Pb	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Manganese as Mn	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
29	Iron as Fe	mg/l	mg/l	0.10	0.16	0.21	0.18	0.17	0.15
30	Total Chromium as Cr	mg/l	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
31	Selenium as Se	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Zinc as Zn	mg/l	mg/l	0.17	0.31	0.19	0.16	0.15	0.13
33	Aluminium as Al	mg/l	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
34	Mercury as Hg	mg/l	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
35	Pesticides	mg/l	mg/l	Absent	Absent	Absent	Absent	Absent	Absent
36	E. Coli	--	--	Absent	Absent	Absent	Absent	Absent	Absent
37	Total Coliforms (MPN / 100ml)	MPN/100	MPN/100	Absent	Absent	Absent	Absent	Absent	Absent

GW1.Arasmeta Village (Bore well) , GW2.Mulmula (Bore well), GW3. Parsada (Bore well) GW4. Sonsari Village (Bore well), GW5. Nariyara (Bore well) & GW6. Amora Village (Bore well)



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TABLE – 6(B)
WASTE WATER QUALITY – BOILER BLOW DOWN Phase – I & II

Parameters	APRIL 2015	MAY 2015	JUNE 2015	JULY 2015	AUGU ST 2015	SEPTE MBER 2015	Limits As per CECB
Total Suspended Solid (mg/l)	Shut Down	21	14	20	18	27	100 mg/l
Oil and Grease (mg/l)	Shut Down	<1.0	<1.0	<1.0	<1.0	<1.0	10 mg/l
Copper (total) (mg/l)	Shut Down	0.06	0.07	0.05	0.04	0.03	1 mg/l
Iron (total) (mg/l)	Shut Down	0.18	0.15	0.17	0.10	0.12	1 mg/l

TABLE – 6(C)
WASTE WATER QUALITY – COOLING TOWER BLOW DOWN Phase – I & II

Parameters	APRIL 2015	MAY 2015	JUNE 2015	JULY 2015	AUGU ST 2015	SEPTE MBER 2015	Limits As per CECB
pH	Shut Down	7.5	8.0	7.8	7.0	7.3	6.5-8.5
Free Available Chlorine (mg/l)	Shut Down	<0.2	<0.2	<0.2	<0.2	<0.2	0.5
Zinc (mg/l)	Shut Down	<0.01	<0.01	<0.01	<0.01	<0.01	1.0
Chromium (Total) (mg/l)	Shut Down	<0.01	<0.01	<0.01	<0.01	<0.01	0.2
Phosphate (mg/l)	Shut Down	1.0	0.5	0.4	0.6	0.5	5.0

TABLE – 6 (D)
WASTE WATER QUALITY – GUARD POND

Parameters	APRIL 2015	MAY 2015	JUNE 2015	JULY 2015	AUGU ST 2015	SEPTE MBER 2015	Limits As per CECB
pH	Shut Down	7.9	8.2	8.0	6.9	7.2	6.5-8.5
Total Suspended Solids (mg/l)	Shut Down	23	30	23	33	27	100
Oil & Grease	Shut Down	<1.0	<1.0	<1.0	<1.0	<1.0	10
Chemical Oxygen Demand (mg/l)	Shut Down	43	36	29	38	40	250
Biochemical Oxygen Demand (3 days at 27 °C) (mg/l)	Shut Down	14	11	10	12	15	30
Total Dissolve Solids (mg/l)	Shut Down	915	882	824	990	990	2100

2.5 Noise Levels

Noise levels vary depending on the various equipments in the power plant such as Turbine, Feed pump and other equipments. Accordingly, noise levels were recorded at four locations to assess the noise levels due to the plant equipment. The ambient noise levels were also measured at four locations during the study period (**April-September, 2015**). The details of the noise sampling locations are given in **Table - 7** and **8** and depicted in **Figure – 2**.

2.5.1 Methodology of Sampling

Noise levels measurements were recorded at 1.5 m away from the noise generating sources. The noise monitoring was carried around the power plant continuously on hourly basis over a period of one day at each location. The noise levels monitoring was carried out using an analog noise level meter manufactured by HI-tech instruments Ltd.

2.5.2 Analytical Procedure

A spot noise level was recorded in Decibels dB(A) for the power plant equipment at the distance of 1.5 mts using a precision noise level meter. Ambient Noise levels were measured at 4 locations.

TABLE- 7
NOISE LEVEL MONITORING LOCATIONS INSIDE THE POWER PLANT

Sample Code	Locations
N1	Main Gate
N2	Admin Building
N3	TG Floor
N4	Boiler Feed Pump

TABLE- 8
AMBIENT NOISE LEVEL MONITORING LOCATIONS AROUND THE POWER PLANT

Sample Code	Locations
N5	Amora Village
N6	Sonsari Village
N7	Nariyara Village
N8	Arasmata Village

2.5.3 Result and Discussions

The noise levels recorded at different locations outside the power plant during the study period (**April-September 2015**) are given in **Table – 8**.

a. Day time Noise Levels (L_{day}):

Residential Zone: The daytime noise levels in all the residential locations were observed to be in the range of 44.6 dB(A) to 47.4 dB(A). The highest 47.4 dB(A) was observed at Arasmeta village in the month of September. While the minimum of 44.6 dB(A) was recorded at Sonsari village in the month of May. The noise levels are within the permissible limits of 55 dB(A) during the study period.

b. Night Noise Levels (L_{night}):

Residential Zone: The nighttime noise levels in all the residential locations were observed to be in the range of 41.0dB(A) to 43.8 dB(A). The lowest 41.0dB(A) was observed at Sonsari village in the month of May.. While the maximum of 43.8 dB(A) was recorded at Amora village in the month of September. The noise levels are within the permissible limit of 45 dB(A) during the study period.

Work Zone Noise Levels:

The noise levels recorded at the different machineries inside the power plant are given in **Table - 8 (A)**. Noise levels near the work zone measured at 1.5 m distance from the machinery were found to be in the range of 62.4 - 74.0 dB(A), against the OSHA prescribed limits of 90 dB(A) for 8 Hrs. exposure. However, workers at the work zone near the machinery were found to be provided with earmuffs.

TABLE– 8 (A)
NOISE LEVELS OUTSIDE THE POWER PLANT

APRIL - 2015

Sr. No.	Locations	Noise Level dB(A)			
		L_{day}	Standards	L_{night}	Standards
N1	Amora Village	46.0	55	42.4	45
N2	Sonsari Village	45.6	55	42.0	45
N3	Nariyara Village	47.2	55	43.6	45
N4	Arasmeta Village	47.4	55	43.8	45

TABLE– 8 (B)

NOISE LEVELS OUTSIDE THE POWER PLANT

MAY - 2015

Sr. No.	Locations	Noise Level dB(A)			
		L_{day}	Standards	L_{night}	Standards
N1	Amora Village	47.0	55	43.4	45
N2	Sonsari Village	44.6	55	41.0	45
N3	Nariyara Village	46.4	55	42.8	45
N4	Arasmeta Village	46.2	55	42.6	45

TABLE– 8 (C)

NOISE LEVELS OUTSIDE THE POWER PLANT

JUNE - 2015

Sr. No.	Locations	Noise Level dB(A)			
		L _{day}	Standards	L _{night}	Standards
N1	Amora Village	46.4	55	42.5	45
N2	Sonsari Village	45.8	55	42.2	45
N3	Nariyara Village	47.0	55	43.4	45
N4	Arasmeta Village	45.3	55	41.7	45

TABLE– 8 (D)

NOISE LEVELS OUTSIDE THE POWER PLANT

JULY - 2015

Sr. No.	Locations	Noise Level dB(A)			
		L _{day}	Standards	L _{night}	Standards
N1	Amora Village	45.5	55	41.9	45
N2	Sonsari Village	46.7	55	43.1	45
N3	Nariyara Village	46.4	55	42.8	45
N4	Arasmeta Village	46.0	55	42.4	45

TABLE– 8 (E)

NOISE LEVELS OUTSIDE THE POWER PLANT

AUGUST - 2015

Sr. No.	Locations	Noise Level dB(A)			
		L _{day}	Standards	L _{night}	Standards
N1	Amora Village	45.9	55	42.3	45
N2	Sonsari Village	45.8	55	42.2	45
N3	Nariyara Village	45.5	55	41.9	45
N4	Arasmeta Village	47.0	55	43.4	45

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TABLE– 8 (F)

NOISE LEVELS OUTSIDE THE POWER PLANT

SEPTEMBER - 2015

Sr. No.	Locations	Noise Level dB (A)			
		L _{day}	Standards	L _{night}	Standards
N1	Amora Village	47.2	55	43.6	45
N2	Sonsari Village	45.0	55	41.4	45
N3	Nariyara Village	46.1	55	42.5	45
N4	Arasmeta Village	46.2	55	42.6	45

TABLE– 9

NOISE LEVELS INSIDE THE POWER PLANT dB (A)

Sr. No.	Location	APRIL 2015	MAY 2015	JUNE 2015	JULY 2015	AUGUST 2015	SEPTEMBER 2015
NL5	Main Gate	Shut down	70.8	72.2	73.6	72.0	73.4
NL6	Admin Building	Shut down	63.6	64.8	62.4	64.1	65.7
NL7	TG Floor	Shut down	71.3	70.9	69.7	72.8	70.9
NL8	Boiler Feed Pump	Shut down	67.6	73.1	71.9	73.3	74.0

TABLE – 10
GREEN BELT DEVELOPMENT
Year wise Tree Plantation Details for the period of 2007 to 2015.

S. N.	Year	No. of Plants	Type of Plants	Remark
1.	2007	7000	Arjun, Karanj, Arkesia, Shisham, Aanvala, Jamun & Jetropa	
2.	2008	7100	Arjun, Karanj, Arkesia, Shisham, Aanvala, Jamun & Jetropa	
3.	2009	10000	Eucalyptus & Casuarinas	
4.	2010	2000	Neem, Kadamb, Gulmohar & Ashok	
5.	2011	4400	Kadamb, Gulmohar & Ashok	
6.	2012	2000	Kadamb, Gulmohar & Ashok	
7.	2013	1000	Kadamb, Gulmohar & Ashok	
8.	2014	1000	Kadamb, Gulmohar & Ashok	
9.	2015	1000	Kadamb & Ashok	

The target for plantation in the year 2016 is 1000 no. of saplings.