

Date: 07/06/2019

To  
Government of India  
Ministry of Environment Forest & Climate Change  
Eastern Regional Office  
A/3, Chandrasekharpur,  
Bhubaneswar – 751 023

**Kind Attn.: Mr. P. Suresh Babu, Dy. Director (S)**

**Sub.: Submission of Six monthly Compliance Report on EC Ref. No.  
F. No. J-11011/201/2013-IA.II(I) dt.21.12.2016**

Sir,

As per requirement for submission of the six monthly EC compliance report, we are sending herewith the following for your kind consideration.

1. One six monthly compliance report for the period of **October'2018 to March' 2019** on the status of implementation of the stipulated conditions and environmental safe guard is submitted herewith.

We hope that you will do the needful in this regard.

Thanking you

Yours truly,  
**For Shakambhari Ispat & Power Ltd.**

  
**Authorized Signatory**

CC to:

- i. The Senior Environmental Engineer, EIM CELL, WBPCB, Paribesh Bhawan,  
Block –LA, 10A, Sec.-III, Salt Lake City, Kolkata -700098

**COMPLIANCE STATUS ON ENVIRONMENTAL  
CLEARANCE**

**For the Proposed Expansion Project of Integrated Steel**

**Plant with captive power plant**

**Vide letter No. : F. No. J-11011/201/2013-IA.II(I)**

**dt.21.12.2016**

**PROJECT LOCATION:**

Village-Madandih, P.O. – Bartoria, P.S-Neturia, Dist. –  
Purulia, Pin-723121, West Bengal

## Six Monthly Compliance Report | Oct 18 – March 19

As per requirement this unit is giving below the compliance report as per conditions of Environmental Clearance for the period of **October 2018 to March 2019**.

| Sl. No.                   | Condition   | Compliance   |
|---------------------------|---|--|
| <b>SPECIFIC CONDITION</b> |   |  |
| i.                        | The project proponent shall install 24x7 air monitoring devices to monitor air emissions, as provided by the CPCB and submit report to Ministry and its Regional Office   | The proponent has taken step to monitor air quality so proper monitoring is done and the reports are sent to the Ministry.   |
| ii.                       | No dumping is permitted in the abandoned coal 2B and 2C in nearby Parbelia Village. The iron ore trailing and excess ash should be stored within the plant premises for the period of 2 years for which land is available. The status of storage of above material shall be periodically reviewed by the regional office for land adequate and environmental management. For future storage of iron ore tailing and excess ash, beyond the period of 2 years, the proponent will submit the land acquisition details to the Ministry. | Any kind of dumping is restricted in the abandoned coal 2B and 2C nearby Parbelia village. The storage material status is checked within proper course of time.                                    |
| iii.                      | In-plant control measures like bag filters, de-dusting and dust suppression system shall be provided to control fugitive emissions from all the vulnerable sources. Dust extraction and suppression system shall be provided at all the transfer points, coal handling plant etc. Water sprinkling system shall be provided to control secondary fugitive dust emissions generated during screening, loading, unloading, handling and storage of raw  | Proper & efficient APC and dust suppression system is installed in the plant to optimize the pollution within the plant. Water sprinkler is provided in the plant to reduce dust within the plant. |

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|-------|---|--|
|       | materials etc.  |  |
| iv.   | The ETP for Mini Blast Furnace effluent should be designed to meet Cyanide standard as notified by the MoEFCC.  | This compliance condition is noted and implemented adequately.   |
| v.    | No effluent shall be discharged outside the plant premises and ‘zero’ discharge shall be adopted.   | The proponent has taken “Zero Effluent Discharge” policy and no effluent is discharged outside the plant.  |
| vi.   | Continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices viz. Electrostatic precipitator (ESP), bag house, bag filters etc. shall be provided to keep the emission levels below 50 mg/Nm <sup>3</sup> and installing energy efficient technology.   | The proponent has taken sufficient measures to control pollution generated from stack. Continuous monitoring is done and it has been found that all the emissions are within prescribed limit. |
| vii.  | Hot gases from DRI kiln shall be passed through Dust Settling Chamber (DSC) to remove coarse solids and After Burning Chamber (ABC) to burn CO completely. The gas then shall be cleaned in ESP before leaving out into the atmosphere through ID fan and stack.  | This condition has been maintained by the project proponent.   |
| viii. | Efforts shall further be made to use maximum water from the rain water harvesting sources. Use of air cooled condensers shall be explored and closed circuit cooling system shall be provided to reduce water consumption and water requirement shall be modified accordingly. All the effluent should be treated and used for ash handling, dust suppression and green belt development. ETP sludge should be disposed off scientifically. | Rain water harvesting plan is finalized and will be implemented to optimize use of water in the plant.   |
| ix.   | All the coal fines, char from DRI plant shall be utilized   | All the waste fine particles are   |

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|       | and no char shall be used for briquette making or disposed off anywhere else. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner.   | properly disposed without effecting the environment.  |
| x.    | All internal roads shall be black topped. The roads shall be regularly cleaned with mechanical sweepers. A 3-tier avenue plantation using native species shall be developed along the roads. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit. | This compliance condition is maintained with proper attention.  |
| xi.   | The Standards issued by the Ministry vide G.S.R. No. 277(E) dated 31st March, 2012 regarding integrated iron and steel plant shall be followed.   | It will be followed.  |
| xii.  | The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed   | NAAQ standard is followed with proper emphasis.   |
| xiii. | Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008 and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.    | All the secondary sources of fugitive emission are monitored properly to control the air pollution.   |
| xiv.  | Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the Environment (Protection) Act, 1986 whichever are more stringent.                      | According to this condition all the kind of water is analysed and it has been found that pollution level is within the prescribed limit. The report is annexed. |
| xv.   | Proper handling, storage, utilization and disposal of all   | Emphasis is given on proper   |

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|        |   |  |
|--------|---|--|
|        | the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to the Ministry's Regional Office, SPCB and CPCB.  | handling, storage & utilization of all the solid wastes generated within the plant. Any toxic metal found will be notified to the authorized body. |
| xvi.   | A time bound action plan shall be submitted to reduce solid waste generated due to the project related activity, its proper utilization and disposal.   | An efficient plan is implemented to reduce the solid waste generation within the plant.  |
| xvii.  | Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 1999 and subsequent amendment in 2003 and 2009. All the fly ash shall be provided to cement and brick manufacturers for further utilization and Memorandum of Understanding shall be submitted to the Ministry's Regional Office. | It is noted and will be followed.  |
| xviii. | A Risk and Disaster Management Plan shall be prepared and a copy submitted to the Ministry's Regional Office, SPCB and CPCB within 3 months of issue of environment clearance letter.   | Risk & Disaster management plan is under preparation process. The plan will be submitted to the concerned Govt. body.                              |
| xix.   | Green belt shall be developed in at least 33% of the project area by planting native and broad leaved species in consultation with local DFO and local communities as per the CPCB guidelines.  | Green belt area is developed within the plant and it consists of 33% of the total plant area.  |
| xx.    | All the commitments made to the public during Public Hearing/public consultation meeting shall be satisfactorily implemented and adequate budget provision shall be made accordingly.   | It is under implementation stage.  |
| xxi.   | At least 2.5% of the total cost of the project shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues, locals need and item-  | Mentioned amount is reserved towards the duty of Enterprise Social Commitment.   |

|        |  |   |
|--------|--|---|
|        | <p>wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office. Implementation of such program shall be ensured by constituting a Committee comprising of the proponent, representatives of village Panchayat and District Administration. Action taken report in this regard shall be submitted to the Ministry's Regional Office.</p>   |   |
| xxii.  | <p>The proponent shall prepare a detailed CSR Plan for every year for the next 5 years for the existing-cum-expansion project, which includes village-wise, sector-wise (Health, Education, Sanitation, Health, Skill Development and infrastructure requirements such as strengthening of village roads, avenue plantation, etc) activities in consultation with the local communities and administration. The CSR Plan will include the amount of 2% retain annual profits as provided for in Clause 135 of the Companies Act, 2013 which provides for 2% of the average net profits of previous 3 years towards CSR activities for life of the project. A separate budget head shall be created and the annual capital and revenue expenditure on various activities of the Plan shall be submitted as part of the Compliance Report to RO. The details of the CSR Plan shall also be uploaded on the company website and shall also be provided in the Annual Report of the company.</p> | <p>Details of CSR is attached with this report.</p> |
| xxiii. | <p>The Company shall submit within three months their</p>  | <p>This condition is noted &amp; will be</p>        |

|                                   |   |  |
|-----------------------------------|---|--|
|                                   | <p>policy towards Corporate Environment Responsibility which shall inter-alia address (i) Standard operating process/procedure to bring into focus any infringement/deviation/ violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the Company to deal with environmental issues and ensuring compliance to the environmental clearance conditions and (iii) System of reporting of noncompliance/ violation environmental norms to the Board of Directors of the company and/or stakeholders or shareholders.</p> | <p>maintained.</p>   |
| xxiv.                             | <p>The project proponent shall provide for solar light system for all common areas, street lights, villages, parking around project area and maintain the same regularly.</p>   | <p>Agreed</p>  |
| xxv.                              | <p>The project proponent shall provide for LED lights in their offices and residential areas.</p>   | <p>The project proponent has taken necessary course of action to comply with this condition.</p> |
| xxvi.                             | <p>Provision shall be made for the housing of construction labour 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.</p>  | <p>There will be provision for labour hutment including all the necessary infrastructure.</p>    |
| <p><b>GENERAL CONDITIONS:</b></p> |   |  |
| i.                                | <p>The project authorities must strictly adhere to the stipulations made by the West Bengal State Pollution</p>   | <p>The proponent strictly adheres to the stipulation made by the West</p>                        |



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|      | Control Board and the State Government  | Bengal State Pollution Control Board.  |
| ii.  | No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).   | Any further modification or expansion will not be done without the approval of MoEF&CC.  |
| iii. | At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum round level concentration of PM10, PM2.5, SO2 and NOx are anticipated in consultation with the PCB data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months. | Ambient air quality monitoring is done to determine the concentration level of PM10, PM2.5, SO2, NOx. The monitoring report is sent to the ministry and annexed with the report. |
| iv.  | Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May, 1993 and 31st December 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.  | Industrial wastewater is collected properly and no waste water is discharged.  |
| v.   | The overall noise levels in and around the plant area shall be kept well within the standards (85 dB(A)) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75dB(A) during day time and 70 dB(A) during night time.                      | Agreed, Action has been taken during design stage.   |
| vi.  | Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per  | Occupational health surveillance is done on a timely basis.  |

|       |   |  |
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|       | the Factories Act.  |  |
| vii.  | The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.  | It is noted & will be implemented very soon.   |
| viii. | The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.  | Action in this regard is being taken to implement the EMP suggested in the EIA report. |
| ix.   | Requisite funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change (MoEF&CC) as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhubaneswar. The funds so provided shall not be diverted for any other purpose. | It will be taken care of.  |
| x.    | A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.  | This condition is complied.  |
| xi.   | The project proponent shall upload the status of  | The proponent follows this   |

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|       | <p>compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF&amp;CC at Bhubaneswar. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; PM10,SO2,NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.</p> | <p>condition strictly.</p>   |
| xii.  | <p>The project proponent shall also submit six monthly report status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF&amp;CC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar/ CPCB/SPCB shall monitor the stipulated conditions.</p>   | <p>Six monthly compliance report is submitted to MoEF&amp;CC regarding the status of compliance.</p> |
| xiii. | <p>The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MoEF&amp;CC at Bhubaneswar by e-mail.</p>  | <p>It is noted and will be followed.</p>   |

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|------|---|--|
| xiv. | The project proponent shall inform the public that the project has been accorded environment clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at website of the Ministry of Environment, Forest and Climate Change (MoEF&CC) at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local news paper that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and copy of the same should be forwarded to the Regional Office at Bhubaneswar | The project proponent complies this condition. |
| xv.  | Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.  | It is agreed and followed.                     |

# ANNEXURE 1

## DETAILS OF ENVIRONMENTAL MONITORING

### 1. AMBIENT AIR QUALITY MONITORING

#### Ambient Air Quality Monitoring Stations

Ambient air quality monitoring has been carried out on 15<sup>th</sup> March in four location to assess the ambient air quality of Project Site. This will enable to have an analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. The location of the ambient air quality monitoring station is given in **Table 1.1**.

**Table 1.1 Details of Ambient Air Quality Monitoring Stations**

| Sl. No. | Location Code | Location Name/ Description       | Environmental Setting |
|---------|---------------|----------------------------------|-----------------------|
| 1.      | AAQ-1         | Near Main Gate                   | Steel & Power Unit    |
| 2.      | AAQ-2         | Madandih Village                 | Steel & Power Unit    |
| 3       | AAQ-3         | Roof of Power Plant Control Room | Steel & Power Unit    |
| 4       | AAQ-4         | Roof of Laboratory               | Steel & Power Unit    |

#### Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

- Particulate Matter 2.5 (PM<sub>2.5</sub>)
- Particulate Matter 10 (PM<sub>10</sub>)
- Sulphur Dioxide (SO<sub>2</sub>)
- Oxides of Nitrogen (NO<sub>x</sub>)

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB) and IS: 5182. The techniques used for ambient air quality monitoring and minimum detectable levels are given in **Table 1.2**.

Fine Particulate Sampler APM 550 instruments have been used for monitoring Particulate Matter 2.5 (PM<sub>2.5</sub> i.e. <2.5 microns), and Respirable Dust Sampler APM 450 was used for sampling Respirable fraction (<10 microns), gaseous pollutants like SO<sub>2</sub>, and NO<sub>x</sub>.

**Table 1.2 Techniques used for Ambient Air Quality Monitoring**

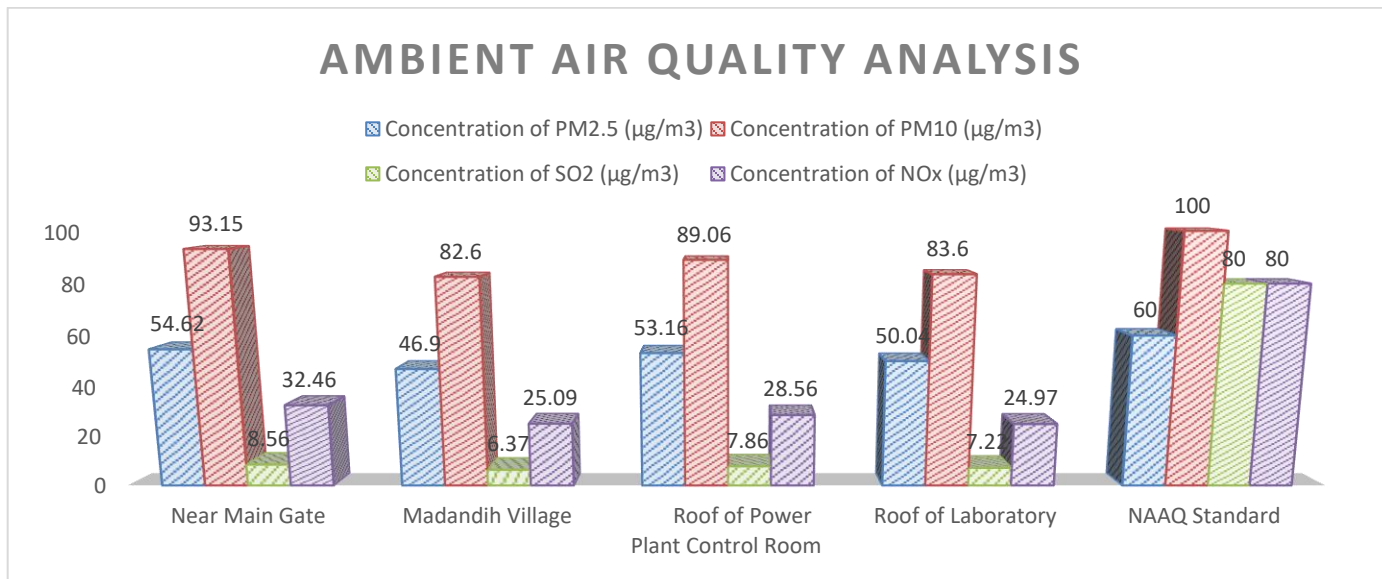
| S. No. | Parameter                                   | Technique   | Technical Protocol |
|--------|---|---|--------------------|
| 1      | Particulate Matter 2.5 (PM <sub>2.5</sub> ) | USEPA 1997a, 40 CFR Part 50, Appendix L   | IS-5182 (Part-IV)  |
| 2      | Particulate Matter 10 (PM <sub>10</sub> )   | IS 5182 (PART 23) : 2006  | IS-5182 (Part-23)  |
| 3      | Sulphur dioxide                             | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011 | IS-5182 (Part- II) |
| 4      | Nitrogen dioxide                            | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011 | IS-5182 (Part-VI)  |

### Ambient Air Quality Monitoring Results

The detailed on-site monitoring results of PM 2.5, PM 10, SO<sub>2</sub> and NO<sub>x</sub> are presented in Table 1.3.

**Table 1.3 Ambient Air Quality Monitoring Results**

|                   | 15.03.2019<br>-16.03.2019                             | Near Main Gate | Madandih Village | Roof of Power Plant<br>Control Room | Roof of Laboratory | NAAQ Standard |
|-------------------|---|----------------|------------------|-------------------------------------|--------------------|---------------|
| Oct 18 – March 19 | Concentration of PM2.5 (µg/m <sup>3</sup> )           | 54.62          | 46.90            | 53.16                               | 50.04              | 60            |
|                   | Concentration of PM10 (µg/m <sup>3</sup> )            | 93.15          | 82.60            | 89.06                               | 83.60              | 100           |
|                   | Concentration of SO <sub>2</sub> (µg/m <sup>3</sup> ) | 8.56           | 6.37             | 7.86                                | 7.22               | 80            |
|                   | Concentration of NO <sub>x</sub> (µg/m <sup>3</sup> ) | 32.46          | 25.09            | 28.56                               | 24.97              | 80            |



### Discussion on Ambient Air Quality in the Study Area

The level of PM10 and PM2.5, SO<sub>2</sub> and NO<sub>x</sub> near Main Gate is under the permissible limit (for residential, rural and other areas as stipulated in the National Ambient Air Quality Standards).

## 2. STACK GAS MONITORING

Stack gas is generated from many combustion sources, including incinerators, kilns and thermal oxidizers. A thermal oxidizer is a process for the treatment of air exhaust and is commonly used during the incineration of waste. When the stack is mixed with air, the exhausting gas is cool enough to be measured by a thermal mass flow meter, thereby getting the benefit of the fast response and wide turn down of the device. Measuring the flow rate of stack gas is required in order to calculate the overall mass of gas over time. This is a requirement for many environmental regulations.

The stacks are attached to Rotary Kiln and AFBC. The sample was taken on 12<sup>th</sup> March, 2019.

The details of the stack attached to Rotary Kiln No 1 & 2 are given in tabular form in Table 2.1:

| PARAMETERS  | METHOD NO.  | RESULTS  |
|---|---|----------|
| Flue Gas Temperature (0C)   | IS : 11255 (Part 1)   | 127.0    |
| Barometric Pressure (mm of Hg.)   | --  | 757.0    |
| Velocity of Gas flow (m/s)  | IS : 11255 (Part 3)   | 10.99    |
| Quantity of Gas flow (Nm <sup>3</sup> /hr.)   | IS : 11255 (Part III)   | 90409.33 |
| Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )                                  | IS 11255 (Part 2) 1985 RA 2003  | 811.58   |
| Concentration of CO <sub>2</sub> % (v/v)  | IS 13270 1992 RA 2003   | 9.6      |
| Concentration of CO % (v/v)   | IS 13270 1992 RA 2003   | <1.0     |
| a) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 9.6% CO <sub>2</sub> ) | IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011 | 30.87    |
| b) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 12% CO <sub>2</sub> )  |   | 38.58    |

Results of the stack attached to Rotary Kiln (No 3)

| PARAMETERS  | METHOD NO.  | RESULTS  |
|---|---|----------|
| Flue Gas Temperature (0C)   | IS : 11255 (Part 1)   | 133.0    |
| Barometric Pressure (mm of Hg.)   | --  | 757.0    |
| Velocity of Gas flow (m/s)  | IS : 11255 (Part 3)   | 11.16    |
| Quantity of Gas flow (Nm <sup>3</sup> /hr.)   | IS : 11255 (Part III)   | 90451.14 |
| Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )                                  | IS 11255 (Part 2) 1985 RA 2003  | 706.38   |
| Concentration of CO <sub>2</sub> % (v/v)  | IS 13270 1992 RA 2003   | 9.0      |
| Concentration of CO % (v/v)   | IS 13270 1992 RA 2003   | <1.0     |
| a) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 9.0% CO <sub>2</sub> ) | IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011 | 24.70    |
| b) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 12% CO <sub>2</sub> )  |   | 32.93    |

Results of the stack attached to AFBC Boiler-

| PARAMETERS   | METHOD NO.  | RESULTS   |
|--|---|-----------|
| Flue Gas Temperature (0C)  | IS : 11255 (Part 1)   | 126.0     |
| Barometric Pressure (mm of Hg.)  | --  | 757.0     |
| Velocity of Gas flow (m/s)   | IS : 11255 (Part 3)   | 9.19      |
| Quantity of Gas flow (Nm <sup>3</sup> /hr.)  | IS : 11255 (Part III)   | 172230.40 |
| Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )                                   | IS 11255 (Part 2) 1985 RA 2003  | 839.20    |
| Concentration of CO <sub>2</sub> % (v/v)   | IS 13270 1992 RA 2003   | 11.4      |
| Concentration of CO % (v/v)  | IS 13270 1992 RA 2003   | <1.0      |
| a) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 11.4% CO <sub>2</sub> ) | IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011 | 37.76     |
| b) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 12% CO <sub>2</sub> )   |   | 39.74     |



### 3. WORK ZONE AIR QUALITY MONITORING

Fugitive emissions are emissions of gases or vapors from pressurized equipment due to leaks and other unintended or irregular releases of gases, mostly from industrial activities. As well as the economic cost of lost commodities, fugitive emissions contribute to air pollution and climate change.

The sampling was done on 15<sup>th</sup> March, 2019 for fugitive analysis. The results are given in tabular form  
Results of Fugitive Air Analysis near raw material stock yard

| PARAMETERS   | METHOD NO.  | RESULTS |
|--|---|---------|
| Concentration of SPM ( $\mu\text{g}/\text{m}^3$ )              | NIOSH 0500 : 1994   | 610.45  |
| Concentration of *RPM ( $\mu\text{g}/\text{m}^3$ )             | IS 5182 (PART 23) : 2006  | 212.80  |
| Concentration of *SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011 | 8.92    |
| Concentration of *NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011 | 29.97   |

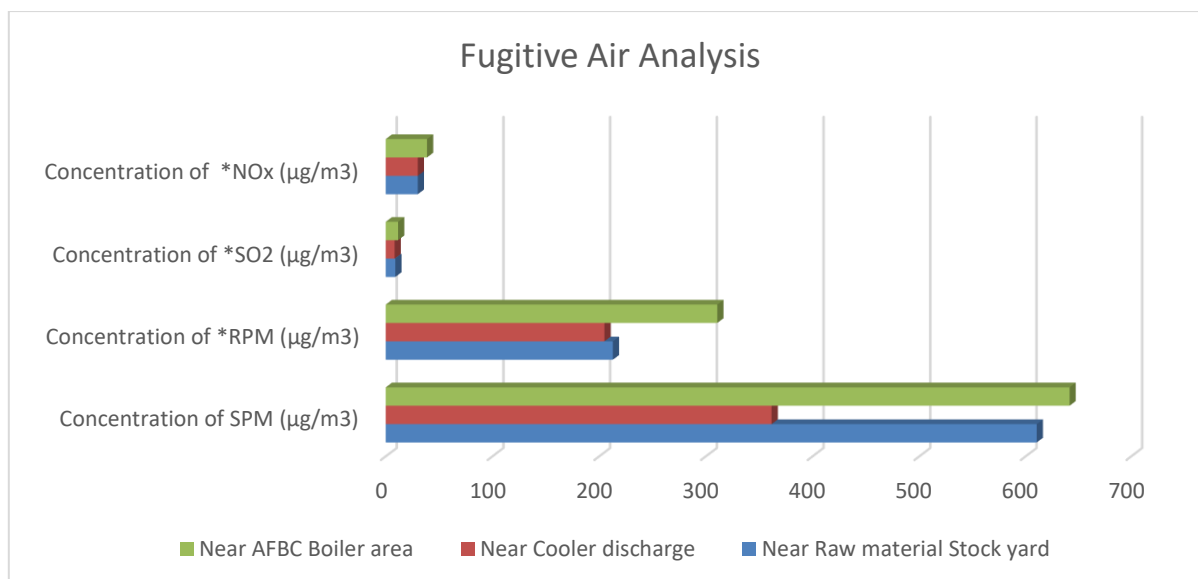
Results of Fugitive Air analysis near Cooler Discharge –

| PARAMETERS   | METHOD NO.  | RESULTS |
|--|---|---------|
| Concentration of SPM ( $\mu\text{g}/\text{m}^3$ )              | NIOSH 0500 : 1994   | 361.57  |
| Concentration of *RPM ( $\mu\text{g}/\text{m}^3$ )             | IS 5182 (PART 23) : 2006  | 204.89  |
| Concentration of *SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011 | 8.29    |
| Concentration of *NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011 | 29.97   |

Results of Fugitive Air Analysis near AFBC Boiler area-

| PARAMETERS   | METHOD NO.  | RESULTS |
|--|---|---------|
| Concentration of SPM ( $\mu\text{g}/\text{m}^3$ )              | NIOSH 0500 : 1994   | 641.52  |
| Concentration of *RPM ( $\mu\text{g}/\text{m}^3$ )             | IS 5182 (PART 23) : 2006  | 310.70  |
| Concentration of *SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011 | 11.48   |
| Concentration of *NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011 | 38.63   |

The comparison are given in graphical form



#### 4. Effluent Water Quality Monitoring

Effluent Water sample was collected from waste water storage tank. The sample was analyzed for various parameters. The details of water sampling locations are given in **Table 4.1**.

**Table 4.1 Details of Effluent Water Quality Monitoring Station**

| S. No. | Location Code  | Location Name/ Description     |
|--------|----------------|--------------------------------|
| 1.     | Effluent Water | Domestic Effluent Water (Grab) |

#### Methodology of Effluent Water Quality Monitoring

Sampling of effluent water was carried out on 13<sup>th</sup> March, 2019. Samples were collected as grab sample and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard operating procedures (SOP) and stored immediately in ice boxes, which were ensured for appropriate temperatures. Sample for chemical analysis was collected in polyethylene carboys.

Proper care was taken during packing and transportation of samples. All the samples reached the laboratory within the holding times for different parameters. After ensuring the same the samples were forwarded immediately for analysis.

The samples were analyzed as per the standard procedures specified in 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA) and CPCB.

#### Effluent Water Quality Monitoring Results

The detailed effluent water quality monitoring results are presented in **Table 4.2**.

| <u>PARAMETERS</u>                 | <u>TEST METHODS</u>                          | <u>RESULTS</u> | <u>LIMIT*</u> |
|-----------------------------------|--|----------------|---------------|
| 1. pH                             | APHA 23 <sup>rd</sup> Ed., 4500-H+B : 2017   | : 6.86         | 5.5-9.0       |
| 2. Total Suspended Solids (mg./l) | APHA 23 <sup>rd</sup> Ed., 2540 D : 2017     | : 30.0         | 100.0         |
| 3. Oil and Grease (mg./l)         | APHA 23 <sup>rd</sup> Ed., 5520 B/D : 2017   | : 4.5          | 10.0          |
| 4. COD (mg./l)                    | APHA 23 <sup>rd</sup> Ed., 5220 B/C/D : 2017 | : 60.0         | 250.0         |
| 5. BOD [3 days, 27°C] (mg./l)     | APHA 23 <sup>rd</sup> Ed., 5210-B : 2017     | : 23.0         | 30.0          |

# ANNEXURE 2



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## STACK GAS ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
| 1. | Name of the Industry  | : | Shakambhari Ispat & Power Ltd.                                      |
| 2. | Address               | : | Vill. – Madandih, P.O. – Bartoria, P.S. – Nituria, Purulia – 723121 |
| 3. | Date of sampling      | : | 12.03.2019  |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/I/18-19                                       |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |

### A. GENERAL INFORMATION ABOUT STACK

|                       |   |     |   |
|-----------------------|---|-----|---|
| 1.                    | Stack attached to                         | :   | Rotary Kiln (No.1 & 2) (100 TPD – each)             |
| 2.                    | Shape of Stack                            | :   | Circular  |
| 3.                    | Material of Construction                  | :   | M.S.  |
| 4.                    | Height of Stack from G. L. (mtr.)         | :   | 35.0  |
| 5.                    | Stack I.D. at sampling point (mtr.)       | :   | 2.0   |
| 6.                    | Height of sampling port from G. L. (mtr.) | :   | 15.0  |
| 7.                    | Capacity                                  | :   | 6.42 MT/hr. (Kiln – 1), 6.29 MT/hr. (Kiln – 2)      |
| 8.                    | Emission due to                           | :   | Oxidation of Coal & Reduction of Fe-Ore             |
| (a) Type of Fuel Used |   | :   | Coal  |
| (b) Fuel Consumption  |   | :   | Rated – 5.63 MT/hr./Kiln Working – 5.12 MT/hr./Kiln |
| 9.(a)                 | Permanent ladder & platform               | Yes | (b) Pollution Control Device                        |
|                       |   |     | WHRB and E.S.P                                      |

### B. RESULTS OF SAMPLING

| SL. NO. | PARAMETERS  | METHOD NO.  | RESULTS  |
|---------|---|---|----------|
| 1.      | Flue Gas Temperature (°C)   | IS : 11255 (Part 1)   | 127.0    |
| 2.      | Barometric Pressure (mm of Hg.)   | --  | 757.0    |
| 3.      | Velocity of Gas flow (m/s)  | IS : 11255 (Part 3)   | 10.99    |
| 4.      | Quantity of Gas flow (Nm <sup>3</sup> /hr.)   | IS : 11255 (Part III)   | 90409.33 |
| 5.      | Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )                                  | IS 11255 (Part 2) 1985 RA 2003  | 811.58   |
| 6.      | Concentration of CO <sub>2</sub> % (v/v)  | IS 13270 1992 RA 2003   | 9.6      |
| 7.      | Concentration of CO % (v/v)   | IS 13270 1992 RA 2003   | <1.0     |
| 8.      | a) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 9.6% CO <sub>2</sub> ) | IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec | 30.87    |
|         | b) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 12% CO <sub>2</sub> )  | 11 (Vol. 3 11.07) : 2011  | 38.58    |

Remarks : All the information under column A are supplied by the respective industry.  
 : During monitoring both kilns were in operation.

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## STACK GAS ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
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| 2. | Address               | : | Vill. – Madandih, P.O. – Bartoria, P.S. – Nituria, Purulia – 723121 |
| 3. | Date of sampling      | : | 12.03.2019  |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/II/18-19                                      |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |

### A. GENERAL INFORMATION ABOUT STACK

|                       |   |     |  |
|-----------------------|---|-----|--|
| 1.                    | Stack attached to                         | :   | Rotary Kiln (No.3) (100 TPD)                 |
| 2.                    | Shape of Stack                            | :   | Circular                                     |
| 3.                    | Material of Construction                  | :   | M.S.   |
| 4.                    | Height of Stack from G. L. (mtr.)         | :   | 32.0   |
| 5.                    | Stack I.D. at sampling point (mtr.)       | :   | 2.0  |
| 6.                    | Height of sampling port from G. L. (mtr.) | :   | 15.0   |
| 7.                    | Capacity                                  | :   | 6.38 MT/hr.                                  |
| 8.                    | Emission due to                           | :   | Oxidation of Coal & Reduction of Fe-Ore      |
| (a) Type of Fuel Used |   | :   | Coal   |
| (b) Fuel Consumption  |   | :   | Rated – 5.63 MT/hr.<br>Working – 5.12 MT/hr. |
| 9.(a)                 | Permanent ladder & platform               | Yes | (b) Pollution Control Device                 |
|                       |   |     | WHRB and E.S.P                               |

### B. RESULTS OF SAMPLING

| SL. NO. | PARAMETERS  | METHOD NO.  | RESULTS  |
|---------|---|---|----------|
| 1.      | Flue Gas Temperature (°C)   | IS : 11255 (Part 1)   | 133.0    |
| 2.      | Barometric Pressure (mm of Hg.)   | --  | 757.0    |
| 3.      | Velocity of Gas flow (m/s)  | IS : 11255 (Part 3)   | 11.16    |
| 4.      | Quantity of Gas flow (Nm <sup>3</sup> /hr.)   | IS : 11255 (Part III)   | 90451.14 |
| 5.      | Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )                                  | IS 11255 (Part 2) 1985 RA 2003  | 706.38   |
| 6.      | Concentration of CO <sub>2</sub> % (v/v)  | IS 13270 1992 RA 2003   | 9.0      |
| 7.      | Concentration of CO % (v/v)   | IS 13270 1992 RA 2003   | <1.0     |
| 8.      | a) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 9.0% CO <sub>2</sub> ) | IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec | 24.70    |
|         | b) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 12% CO <sub>2</sub> )  | 11(Vol. 3 11.07) : 2011   | 32.93    |

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## STACK GAS ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
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| 2. | Address               | : | Vill. – Madandih, P.O. – Bartoria, P.S. – Nituria, Purulia – 723121 |
| 3. | Date of sampling      | : | 12.03.2019  |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/III/18-19                                     |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |

### A. GENERAL INFORMATION ABOUT STACK

|                       |   |     |                                      |
|-----------------------|---|-----|--------------------------------------|
| 1.                    | Stack attached to                         | :   | AFBC Boiler                          |
| 2.                    | Shape of Stack                            | :   | Circular                             |
| 3.                    | Material of Construction                  | :   | Concrete                             |
| 4.                    | Height of Stack from G. L. (mtr.)         | :   | 50.0                                 |
| 5.                    | Stack I.D. at sampling point (mtr.)       | :   | 3.0                                  |
| 6.                    | Height of sampling port from G. L. (mtr.) | :   | 20.0                                 |
| 7.                    | Capacity                                  | :   | 12 MW (Running – 8.0 MW)             |
| 8.                    | Emission due to                           | :   | Oxidation of Coal & Dolochar         |
| (a) Type of Fuel Used |   | :   | Coal & Dolochar                      |
| (b) Fuel Consumption  |   | :   | Coal – 150 TPD<br>Dolochar – 132 TPD |
| 9.(a)                 | Permanent ladder & platform               | Yes | (b) Pollution Control Device         |
|                       |   |     | E.S.P                                |

### B. RESULTS OF SAMPLING

| SL. NO. | PARAMETERS   | METHOD NO.  | RESULTS     |
|---------|--|---|-------------|
| 1.      | Flue Gas Temperature (°C)  | IS : 11255 (Part 1)   | : 126.0     |
| 2.      | Barometric Pressure (mm of Hg.)  | --  | : 757.0     |
| 3.      | Velocity of Gas flow (m/s)   | IS : 11255 (Part 3)   | : 9.19      |
| 4.      | Quantity of Gas flow (Nm <sup>3</sup> /hr.)  | IS : 11255 (Part III)   | : 172230.40 |
| 5.      | Concentration of SO <sub>2</sub> (mg/Nm <sup>3</sup> )                                   | IS 11255 (Part 2) 1985 RA 2003  | : 839.20    |
| 6.      | Concentration of CO <sub>2</sub> % (v/v)   | IS 13270 1992 RA 2003   | : 11.4      |
| 7.      | Concentration of CO % (v/v)  | IS 13270 1992 RA 2003   | : <1.0      |
| 8.      | a) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 11.4% CO <sub>2</sub> ) | IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011 | : 37.76     |
|         | b) Concentration of Particulate Matter (mg/Nm <sup>3</sup> ) (at 12% CO <sub>2</sub> )   |   | : 39.74     |

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## AMBIENT AIR ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
| 1. | Name of the Industry  | : | Shakambhari Ispat & Power Ltd.                                      |
| 2. | Address               | : | Vill. – Madandih, P.O. – Bartoria, P.S. – Nituria, Purulia – 723121 |
| 3. | Date of sampling      | : | 12.03.2019 – 13.03.2019   |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/IV/18-19                                      |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |                                   |
|----|----------------------|---|-----------------------------------|
| 1. | Location of Sampling | : | Near Main Gate (Southern Side)    |
| 2. | Duration of Sampling | : | 24 hrs. (09:00 a.m. – 09:00 a.m.) |

### B] METEOROLOGICAL INFORMATION

|    |                                |   |                     |
|----|--------------------------------|---|---------------------|
| 1. | Average Temperature (°C)       | : | 36.0                |
| 2. | Average Relative Humidity (%)  | : | 80.0                |
| 3. | Barometric Pressure (mm of Hg) | : | 757.0               |
| 4. | Smell or Odour                 | : | No Remarkable Smell |
| 5. | Weather Condition              | : | Clear sky           |

### C] RESULTS

| SL. NO. | PARAMETERS  | METHOD NO.  | RESULTS |
|---------|---|---|---------|
| 1.      | Concentration of PM <sub>2.5</sub> (µg/m <sup>3</sup> )       | USEPA 1997a, 40 CFR Part 50, Appendix L   | 54.62   |
| 2.      | Concentration of PM <sub>10</sub> (µg/m <sup>3</sup> )        | IS 5182 (PART 23) : 2006  | 93.15   |
| 3.      | Concentration of SO <sub>2</sub> (µg/m <sup>3</sup> )         | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved :<br>2007 : Sec 11 (Vol. 11.07) : 2011                    | 8.56    |
| 4.      | Concentration of NO <sub>x</sub> (µg/m <sup>3</sup> )         | IS 5182 (Part 6) 2006 & ASTM D 1607-91<br>reapproved 2005 : Sec 11 (Vol. 11.07) : 2011                      | 32.46   |
| 5.      | Concentration of CO (mg/m <sup>3</sup> )                      | IS 5182 (Part 10): 1999 reaffirmed 2005 & ASTM D<br>3162-94 reapproved 2005 : Sec 11 (Vol. 11.07) :<br>2011 | 0.38    |
| 6.      | Concentration of Pb (µg/m <sup>3</sup> )                      | IS 5182 (Part 22) 2004  | <0.01   |
| 7.      | Benzo (a) Pyrene (BaP) (ng/m <sup>3</sup> )                   | IS 5182 (Part 12) : 2004 & ASTM D 6209-98<br>reapproved 2004 : Sec 11 (Vol. 11.07) : 2011                   | <0.36   |
| 8.      | Benzene (C <sub>6</sub> H <sub>6</sub> ) (µg/m <sup>3</sup> ) | IS 5182 (Part 11) 2006 & ASTM D 5466-01<br>reapproved 2007 : Sec 11 (Vol. 11.07) : 2011                     | <0.74   |
| 9.      | Ozone (O <sub>3</sub> ) (µg/m <sup>3</sup> )                  | IS 5182 (Part-IX) : 1974  | <10.0   |
| 10.     | Ammonia (NH <sub>3</sub> ) (µg/m <sup>3</sup> )               | NIOSH Manual of Analytical Method, 4 <sup>th</sup> Edition<br>1994, Method 6015, issue 2                    | <4.18   |
| 11.     | Nickel (Ni) (ng/m <sup>3</sup> )                              | EPA IO 3.2, 1999  | <0.02   |
| 12.     | Arsenic (As) (ng/m <sup>3</sup> )                             | EPA IO 3.2, 1999, APHA 23 <sup>rd</sup> Ed 3114C : 2017   | <0.01   |

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## AMBIENT AIR ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
| 1. | Name of the Industry  | : | Shakambhari Ispat & Power Ltd.                                      |
| 2. | Address               | : | Vill. - Madandih, P.O. - Bartoria, P.S. - Nituria, Purulia - 723121 |
| 3. | Date of sampling      | : | 12.03.2019 - 13.03.2019   |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/V/18-19                                       |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |   |
|----|----------------------|---|---|
| 1. | Location of Sampling | : | Madandih Village (0.5 K.M. from Plant) (Eastern Side) |
| 2. | Duration of Sampling | : | 24 hrs. (09:30 a.m. - 09:30 a.m.)                     |

### B] METEOROLOGICAL INFORMATION

|    |                                     |   |                     |
|----|-------------------------------------|---|---------------------|
| 1. | Average Temperature ( $^{\circ}$ C) | : | 36.0                |
| 2. | Average Relative Humidity (%)       | : | 80.0                |
| 3. | Barometric Pressure (mm of Hg)      | : | 757.0               |
| 4. | Smell or Odour                      | : | No Remarkable Smell |
| 5. | Weather Condition                   | : | Clear sky           |

### C] RESULTS

| SL. NO. | PARAMETERS  | METHOD NO.   | RESULTS |
|---------|---|--|---------|
| 1.      | Concentration of PM <sub>2.5</sub> ( $\mu$ g/m <sup>3</sup> ) | USEPA 1997a, 40 CFR Part 50, Appendix L  | 46.90   |
| 2.      | Concentration of PM <sub>10</sub> ( $\mu$ g/m <sup>3</sup> )  | IS 5182 (PART 23) : 2006   | 82.60   |
| 3.      | Concentration of SO <sub>2</sub> ( $\mu$ g/m <sup>3</sup> )   | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved<br>2007 : Sec 11 (Vol. 11.07) : 2011 | 6.37    |
| 4.      | Concentration of NO <sub>x</sub> ( $\mu$ g/m <sup>3</sup> )   | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved<br>2005 : Sec 11 (Vol. 11.07) : 2011 | 25.09   |

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## AMBIENT AIR ANALYSIS REPORT

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| 2. | Address               | : | Vill. - Madandih, P.O. - Bartoria, P.S. - Nituria, Purulia - 723121 |
| 3. | Date of sampling      | : | 12.03.2019 - 13.03.2019   |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/VI/18-19                                      |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |  |
|----|----------------------|---|--|
| 1. | Location of Sampling | : | On the Roof of Power Plant Control Room (Western Side) |
| 2. | Duration of Sampling | : | 24 hrs. (10:00 a.m. - 10:00 a.m.)                      |

### B] METEOROLOGICAL INFORMATION

|    |                                     |   |                     |
|----|-------------------------------------|---|---------------------|
| 1. | Average Temperature ( $^{\circ}$ C) | : | 36.0                |
| 2. | Average Relative Humidity (%)       | : | 80.0                |
| 3. | Barometric Pressure (mm of Hg)      | : | 757.0               |
| 4. | Smell or Odour                      | : | No Remarkable Smell |
| 5. | Weather Condition                   | : | Clear sky           |

### C] RESULTS

| SL. NO. | PARAMETERS  | METHOD NO.   | RESULTS |
|---------|---|--|---------|
| 1.      | Concentration of PM <sub>2.5</sub> ( $\mu$ g/m <sup>3</sup> ) | USEPA 1997a, 40 CFR Part 50, Appendix L  | 53.16   |
| 2.      | Concentration of PM <sub>10</sub> ( $\mu$ g/m <sup>3</sup> )  | IS 5182 (PART 23) : 2006   | 89.06   |
| 3.      | Concentration of SO <sub>2</sub> ( $\mu$ g/m <sup>3</sup> )   | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved<br>2007 : Sec 11 (Vol. 11.07) : 2011 | 7.86    |
| 4.      | Concentration of NO <sub>x</sub> ( $\mu$ g/m <sup>3</sup> )   | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved<br>2005 : Sec 11 (Vol. 11.07) : 2011 | 28.56   |

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## AMBIENT AIR ANALYSIS REPORT

|    |                       |   |   |
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| 2. | Address               | : | Vill. - Madandih, P.O. - Bartoria, P.S. - Nituria, Purulia - 723121 |
| 3. | Date of sampling      | : | 12.03.2019 - 13.03.2019   |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/VII/18-19                                     |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |  |
|----|----------------------|---|--|
| 1. | Location of Sampling | : | On the Roof of Laboratory Building (SMS Section) (Northern Side) |
| 2. | Duration of Sampling | : | 24 hrs. (10:30 a.m. - 10:30 a.m.)                                |

### B] METEOROLOGICAL INFORMATION

|    |                                     |   |                     |
|----|-------------------------------------|---|---------------------|
| 1. | Average Temperature ( $^{\circ}$ C) | : | 36.0                |
| 2. | Average Relative Humidity (%)       | : | 80.0                |
| 3. | Barometric Pressure (mm of Hg)      | : | 757.0               |
| 4. | Smell or Odour                      | : | No Remarkable Smell |
| 5. | Weather Condition                   | : | Clear sky           |

### C] RESULTS

| SL. NO. | PARAMETERS  | METHOD NO.   | RESULTS |
|---------|---|--|---------|
| 1.      | Concentration of PM <sub>2.5</sub> ( $\mu$ g/m <sup>3</sup> ) | USEPA 1997a, 40 CFR Part 50, Appendix L  | 50.04   |
| 2.      | Concentration of PM <sub>10</sub> ( $\mu$ g/m <sup>3</sup> )  | IS 5182 (PART 23) : 2006   | 83.60   |
| 3.      | Concentration of SO <sub>2</sub> ( $\mu$ g/m <sup>3</sup> )   | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved<br>2007 : Sec 11 (Vol. 11.07) : 2011 | 7.22    |
| 4.      | Concentration of NO <sub>x</sub> ( $\mu$ g/m <sup>3</sup> )   | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved<br>2005 : Sec 11 (Vol. 11.07) : 2011 | 24.97   |

Date : 18.03.2019

Authorised Signatory :



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Email : envcheck@cal2.vsnl.net.in / info@envirocheck.org, Website : www.envirocheck.org

## WORK ZONE (FUGITIVE) AIR ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
| 1. | Name of the Industry  | : | Shakambhari Ispat & Power Ltd.                                      |
| 2. | Address               | : | Vill. - Madandih, P.O. - Bartoria, P.S. - Nituria, Purulia - 723121 |
| 3. | Date of sampling      | : | 12.03.2019  |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/IX/18-19                                      |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |                                   |
|----|----------------------|---|-----------------------------------|
| 1. | Location of Sampling | : | Raw Material Yard (Coal Yard)     |
| 2. | Duration of Sampling | : | 08 hrs. (09:40 a.m. - 05:40 p.m.) |

### B] METEOROLOGICAL INFORMATION

|    |                                |   |                     |
|----|--------------------------------|---|---------------------|
| 1. | Average Temperature (°C)       | : | 41.0                |
| 2. | Average Relative Humidity (%)  | : | 83.0                |
| 3. | Barometric Pressure (mm of Hg) | : | 757.0               |
| 4. | Smell or Odour                 | : | No Remarkable Smell |

### C] RESULTS

| SL. NO. | PARAMETERS   | METHOD NO.   | RESULTS |
|---------|--|--|---------|
| 1.      | Concentration of SPM ( $\mu\text{g}/\text{m}^3$ )              | NIOSH 0500 : 1994  | 610.45  |
| 2.      | Concentration of *RPM ( $\mu\text{g}/\text{m}^3$ )             | IS 5182 (PART 23) : 2006   | 212.80  |
| 3.      | Concentration of *SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved<br>2007 : Sec 11 (Vol. 11.07) : 2011 | 8.92    |
| 4.      | Concentration of *NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved<br>2005 : Sec 11 (Vol. 11.07) : 2011 | 29.97   |

Note : The ( \* ) marked parameters are not in NABL Scope.

Date : 18.03.2019

Authorised Signatory :



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Email : envcheck@cal2.vsnl.net.in / info@envirocheck.org, Website : www.envirocheck.org

## WORK ZONE (FUGITIVE) AIR ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
| 1. | Name of the Industry  | : | Shakambhari Ispat & Power Ltd.                                      |
| 2. | Address               | : | Vill. - Madandih, P.O. - Bartoria, P.S. - Nituria, Purulia - 723121 |
| 3. | Date of sampling      | : | 12.03.2019  |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/VIII/18-19                                    |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |                                     |
|----|----------------------|---|-------------------------------------|
| 1. | Location of Sampling | : | Near Cooler Discharge (DRI Section) |
| 2. | Duration of Sampling | : | 08 hrs. (10:05 a.m. - 06:05 p.m.)   |

### B] METEOROLOGICAL INFORMATION

|    |                                |   |                     |
|----|--------------------------------|---|---------------------|
| 1. | Average Temperature (°C)       | : | 38.0                |
| 2. | Average Relative Humidity (%)  | : | 83.0                |
| 3. | Barometric Pressure (mm of Hg) | : | 757.0               |
| 4. | Smell or Odour                 | : | No Remarkable Smell |

### C] RESULTS

| SL. NO. | PARAMETERS   | METHOD NO.   | RESULTS |
|---------|--|--|---------|
| 1.      | Concentration of SPM ( $\mu\text{g}/\text{m}^3$ )              | NIOSH 0500 : 1994  | 361.57  |
| 2.      | Concentration of *RPM ( $\mu\text{g}/\text{m}^3$ )             | IS 5182 (PART 23) : 2006   | 204.89  |
| 3.      | Concentration of *SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved<br>2007 : Sec 11 (Vol. 11.07) : 2011 | 8.29    |
| 4.      | Concentration of *NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved<br>2005 : Sec 11 (Vol. 11.07) : 2011 | 29.97   |

Note : The ( \* ) marked parameters are not in NABL Scope.

Date : 18.03.2019

Authorised Signatory :



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## WORK ZONE (FUGITIVE) AIR ANALYSIS REPORT

|    |                       |   |   |
|----|-----------------------|---|---|
| 1. | Name of the Industry  | : | Shakambhari Ispat & Power Ltd.                                      |
| 2. | Address               | : | Vill. - Madandih, P.O. - Bartoria, P.S. - Nituria, Purulia - 723121 |
| 3. | Date of sampling      | : | 12.03.2019  |
| 4. | Report No.            | : | 102A/EC/M/March/TR(A)/X/18-19                                       |
| 5. | Analysis completed on | : | 15.03.2019  |
| 6. | Reporting Date        | : | 18.03.2019  |
| 7. | Particular of Plant   | : | Steel & Power Unit  |

### A] GENERAL INFORMATION

|    |                      |   |                                   |
|----|----------------------|---|-----------------------------------|
| 1. | Location of Sampling | : | Near AFBC Boiler (CPP Section)    |
| 2. | Duration of Sampling | : | 08 hrs. (10:35 a.m. - 06:35 p.m.) |

### B] METEOROLOGICAL INFORMATION

|    |                                |   |                     |
|----|--------------------------------|---|---------------------|
| 1. | Average Temperature (°C)       | : | 42.0                |
| 2. | Average Relative Humidity (%)  | : | 84.0                |
| 3. | Barometric Pressure (mm of Hg) | : | 757.0               |
| 4. | Smell or Odour                 | : | No Remarkable Smell |

### C] RESULTS

| SL. NO. | PARAMETERS   | METHOD NO.   | RESULTS |
|---------|--|--|---------|
| 1.      | Concentration of SPM ( $\mu\text{g}/\text{m}^3$ )              | NIOSH 0500 : 1994  | 641.52  |
| 2.      | Concentration of *RPM ( $\mu\text{g}/\text{m}^3$ )             | IS 5182 (PART 23) : 2006   | 310.70  |
| 3.      | Concentration of *SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved<br>2007 : Sec 11 (Vol. 11.07) : 2011 | 11.48   |
| 4.      | Concentration of *NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ ) | IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved<br>2005 : Sec 11 (Vol. 11.07) : 2011 | 38.63   |

Note : The ( \* ) marked parameters are not in NABL Scope.

Date : 18.03.2019

Authorised Signatory :

# ANNEXURE 3



## EFFLUENT WATER ANALYSIS REPORT

1. Name of the Industry : Shakambhari Ispat & Power Ltd.
2. Address : Vill. – Madandih, P.O. – Bartoria, P.S. – Nituria,  
Purulia – 723121
3. Report No. : Env/49A/E/M/March/18-19
4. Date of sampling : 13.03.2019
5. Date of analysis : 15.03.2019 – 18.03.2019
6. Reporting date : 13.03.2019
7. Type of sample : Domestic Effluent Water (Grab)
8. Location of sample : Cooling Water Settling Tank
9. Collection & Preservation of sample : APHA 23<sup>rd</sup> Ed., 1060 : 2017
10. Sample collected in presence of : Mr. Krishna Pada Ankure

| PARAMETERS                        | TEST METHODS                                 | RESULTS |
|-----------------------------------|--|---------|
| 1. pH                             | APHA 23 <sup>rd</sup> Ed., 4500-H+B : 2017   | : 6.86  |
| 2. Total Suspended Solids (mg./l) | APHA 23 <sup>rd</sup> Ed., 2540 D : 2017     | : 30.0  |
| 3. Oil and Grease (mg./l)         | APHA 23 <sup>rd</sup> Ed., 5520 B/D : 2017   | : 4.5   |
| 4. COD (mg./l)                    | APHA 23 <sup>rd</sup> Ed., 5220 B/C/D : 2017 | : 60.0  |
| 5. BOD [3 days, 27°C] (mg./l)     | APHA 23 <sup>rd</sup> Ed., 5210-B : 2017     | : 23.0  |

Authorised Signatory :

Dr. AJOY PAUL  
Quality Manager

# PICTORIAL EVIDENCE



# Plant Premises :



# Labour Hutment :



# Monitoring in the Plant



# Plant Glimpses :



# Dust Suppression System



# Safety Awareness :

