



To,  
Shri. A. N. Sharan, IFS  
Addl. PCCF. MoEFCC,  
Regional Office (ECZ),  
Bungalow No. A-2, Shyamali Colony,  
Ranchi – 834002.

Ref No. - JMB/115/ 001622 /2016

May 20, 2016


SUB: Half Yearly Compliance Report of the conditions of EC issued by MoEFCC, New Delhi to Jamadoba Coal Washery, Tata Steel Limited, Dhanbad for the period October'15 to March'16.

Dear Sir,

We are enclosing herewith compliance report for the period October'15 to March'16 for the EC granted vide letter no.- J-11015/203/2011-IA.II(M) dated- 3<sup>rd</sup> March 2014 issued by Ministry of Environment, Forest and Climate Change, New Delhi. This is for your kind perusal.

Thanking you,

Yours faithfully,

  
General Manager (Jharia)  
Email I.D.- skumar.singh@tatasteel.com

Encl: As above.

Copy to: Member Secretary, CPCB Zonal Office, Southend Conclave, 502, 5<sup>th</sup> Floor 1582, Rajdanga Main Road, Kolkata-700107.

Copy to: Member Secretary, JSPCB, T.A. Division Building (Ground Floor), H.E.C, Dhurwa, Ranchi -834004.

**TATA STEEL LIMITED**

Jharia Collieries Jamadoba 828 112 Dhanbad India  
Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268  
Regd. Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001  
Tel 91 22 66658282 Fax 91 22 66657724  
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

**HALF YEARLY COMPLIANCE REPORT**  
**(PERIOD: OCTOBER'15 – MARCH'16)**

**JAMADOBA COAL WASHERY**  
**(CAPACITY: EXPANSION FROM 1 TO 2 MTPA RAW COAL**  
**THROUGHPUT)**  
**TEHSIL: JHARIA, DIST: DHANBAD, JHARKHAND**



**TATA STEEL LIMITED, JHARIA DIVISION**

**P.O.- JAMADOBA, DIST. - DHANBAD,**  
**STATE- JHARKHAND, PIN CODE – 828112.**

**ENVIRONMENTAL CLEARANCE GRANTED VIDE LETTER NO. - J-11015/203/2011-  
IA.II(M) DATED- 03.03.2014 ISSUED BY GOVT. OF INDIA, MINISTRY OF  
ENVIRONMENT, FOREST AND CLIMATE CHANGE, NEW DELHI.**

**A. SPECIFIC CONDITIONS:**

- (i) Adequate green belt shall be provided around coal handling and other areas.
- **Greenbelt has been developed in many areas around the washery premises. Now a comprehensive green belt development plan to cover the entire washery campus area is being outlined. The expansion work is still in progress and is expected to be completed at the end of FY17. Therefore the plantation activities will be initiated from next year monsoons only as plant survival rate could be affected during construction phase.**
- (ii) Action plan be developed and implemented for abandoned tailing ponds and for their restoration to the original land use.
- **All the existing tailing ponds are in operation since the washery expansion is yet to be completed. Once the Mechanized Tailing Dewatering System will be installed, the number of ponds will be reduced. Accordingly, the restoration of the abandoned ponds to its original land use will be taken up.**
- (iii) Fly ash generated from the captive power plant of the washery be utilized for house construction, roads and such uses, strictly complying to the timeline in the EIA Notification, 2006 and maintaining proper records.
- **This is not applicable as we have ceased the operation of our captive Jamadoba power plant since April'2015.**
- (iv) No use of fly ash with sand will take place for stowing in underground mines.
- **This will be strictly followed for our captive underground mines.**
- (v) Transportation of fly ash to be done properly by mechanically covered trucks.
- **There is no fly ash being generated since April'15. Hence it is not applicable.**
- (vi) The proponent shall connect all the villages in the leasehold area with water pipeline connection.
- **All the villages in the leasehold areas will be supplied safe drinking water through pipeline connection. In last two years, nearly 22000 metres of pipeline connection was established along with 33 water tanks (each having capacity of 4500 litres). More pipeline connections are proposed to be undertaken this year also.**

(vii) The proponent shall expedite and implement the pilot plant to convert mine water into drinking/ domestic water to supply the same to the population of Dhanbad and surrounding areas and shall continue to carry out this activity.

- **Mine water is already being converted by Tata Steel into potable water in the WTPs. (about 8000 KL/D being treated) and supplied to our colonies and leasehold villages. This will continue in future too.**

(viii) Tanks/ponds shall be regularly cleaned and maintained. Plantation activities shall be intensified in the mine areas.

- **Tanks/ ponds are regularly cleaned and maintained by TSRDS. Some of the glimpses of the activities are shown below. Plantation activities are undertaken every year in the barren mine leasehold areas. Further, TSRDS engages with the villagers for plantation in the village lands.**



(ix) The proponent shall expedite the activities undertaken by TSRDS in over 30 villages in the leasehold area over 15000 households covering a population of about 1.4 lakh.

- **CSR activities of TSRDS are managed by a team of experts who are dedicatedly involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner.**

(x) The CSR cost should be Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.

- **The proposed CSR expenditure for the entire company is decided as per the new Company Rules. Once the CSR budget is fixed, a share of that amount is dedicated and utilized for implementing the CSR activities at our division level.**

- (xi) Cost for additional environmental protection measures shall be not less than Rs. 503.00 lakhs. The status of implementation including costs incurred shall be regularly reported to this Ministry and its respective Regional Office in the region as part of the compliance report and also uploaded on the company website.
- **The status of implementation of environmental protection measures including costs will be regularly submitted and the compliance uploaded on company website.**
- (xii) The slope of the embankment towards the river shall be at least 1:3 for stability and shall be stabilized with plantation using native species selected from the study area.
- **The washery is about 1.5 kms away from the Damodar River. Hence it is not applicable.**
- (xiii) Top soil shall be stored in the earmarked area and used within a year of its generation for green belt development and for plantation/reclamation.
- **There are no top soil dumps hence it is not applicable.**
- (xiv) No external OB dump shall be created for the expansion project. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its respective Regional Office on yearly basis.
- **Not applicable as this is a washery project.**
- (xv) Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.
- **There are no soil or OB dumps in the washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within 2-3 days.**
- (xvi) Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.
- **Garland drains of adequate size and gradient already exist around the washery area to channelize the surface runoff. The runoff is diverted to the tailing ponds and utilized in the washery.**
- (xvii) Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
- **Not applicable as we do not have any opencast mines.**

- (xviii) Crushers at the CHP shall be operated with high efficiency bag filters/water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system which shall be closed, haulage roads, transfer points, etc.
- **The following measures have been implemented:**
    - i) **Dry-fog system at all transfer points of CHP.**
    - ii) **Enclosures around crushers.**
    - iii) **Belts have been covered on top and both sides. These arrangements will protect the coal mass moving on belt from blowing wind. In this way the dust generation would be minimized.**
    - iv) **Fixed water sprinklers on the haulage roads.**
- (xix) Drills shall be wet operated only.
- **Not applicable.**
- (xx) Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.
- **Not applicable.**
- (xxi) The Washery shall be a zero-discharge and no wastewater shall be discharged from the washery into the drains/natural watercourses. No groundwater shall be used for washery operations. Recycled water shall be used for development and maintenance of green belt and in the plant operations.
- **Washery is already operating on a zero-discharge principle. No waste-water is discharged into the drains/ natural water systems. Only mine water is utilized for the washery operations. The recycled water is again used for plant operations and green-belt development.**
- (xxii) The raw coal, washed coal and middling and coal wastes (rejects) shall be stacked properly at earmarked site(s) within sheds/stockyards fitted with wind breakers/shields. Adequate measures shall be taken to ensure that the stored minerals do not catch fire. The storage period shall be not more than 2-3 days.
- **The material is being stacked properly at stockyards located within the washery. We have a well-established system for disposal of rejects/ tailings to consumers so that storage period is not more than 2-3 days.**
- (xxiii) The proponent shall maintain proper records of the ash content of raw (ROM) coal, clean coal, middling and coal rejects along with quantum of raw coal obtained and washed and dispatched every month and the same shall be uploaded on the company website every month.
- **Proper records are already maintained.**

- (xxiv) All internal roads shall be concreted or black topped and the approach roads used for the project shall be blacked topped. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.
- **All the internal roads have been concreted while the approach roads are black-topped. The trucks carrying coal to the washery have their parking within the washery premises.**
- (xxv) Roads used for coal transportation to the linked DRI/TPP shall be developed with 3-tier avenue plantation using a mix of native species. The trucks used for coal transportation shall be high capacity trucks. Drivers of trucks for coal transportation shall be engaged based on past records of road safety and compliance of safety regulations and shall be suitably sensitized about road safety and maintenance of vehicles to keep vehicular emissions to be within prescribed limits.
- **The coal dispatch rail yard is all close to the washery premises. The clean coal is kept in storage bins and directly transferred to the rail wagons by coal conveying system. As for the trucks moving within the washery, which are utilized for evacuation of tailings and shifting of rejects to reject yard, all the given provisions related to road safety and driver competence are being strictly complied with.**
- (xxvi) The roads (internal/approach and roads used for the project) shall be regularly cleaned with mechanical sweepers and with water sprinklers. A 3-tier avenue plantation shall be developed along the major approach roads, internal roads and nearby roads used by the company.
- **Water sprinklers have already been installed in the washery premises. The details of plantation activities have been discussed earlier. Development of avenue plantation will be completed by next year.**
- (xxvii) Green belt shall be developed along the areas such as the washery unit, crushing unit, and stockyards and at transfer points and in between mine operations and habitations.
- **Tree plantation has been done in the washery premises. Green belt will be developed all around the washery as per plan.**
- (xxviii) Hoppers of the coal crushing unit at the crushing shed and washery unit shall be fitted with high efficiency bag filters/Dust extractors and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of belt conveyor systems which shall be closed and from transportation roads.
- **Dry-fog system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems and is operated at all times to check fugitive emissions. Fixed-type water sprinklers are also installed at the internal roads of the washery.**

(xxix) The proponent shall ensure that coal such as stones, shale and other wastes of an ash content of 77% or more only shall be dumped into the mine voids. Coal rejects with an ash content of 76% or less shall be fully utilized for power generation in linked TPP.

- **It is being followed.**

(xxx) Regular monitoring of groundwater level and quality including levels of heavy metals such as Hg, Cd, Cr, Se, etc shall be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity and quality of ground water as per IS: 10500 shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons. Proper records of the data thus collected shall be maintained submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.

- **The monitoring of groundwater level is done four times a year. The hydro-geological study of the area being done by Indian School of Mines, Dhanbad has been completed.**

**The groundwater quality report & groundwater level for the post-monsoon (October) and winter (January) are provided in Annexure-I.**

(xxxi) As the entire mine water is proposed to be used for the mine-cum-washery operations, measures shall be taken for recharging ground water in and around the mine in the study area. A Plan for water conservation and recharge measures of ground water along with budgetary provisions be prepared and implemented in consultation with the Central/State Ground Water Board to mitigate the adverse impact of mining which may lead to depletion of ground water in the area. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring of groundwater levels indicate decline of water table. Any additional water requirement for mining operation shall be met from rainwater use only. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

- **There are a number of ponds existing in the surface of the mining lease which act as natural reservoirs for recharging ground water. Mining is being practiced along with backfilling by stowing using sand which is having the porosity to hold the underground water thus helping aquifer to retain the underground water. The variation in the ground water level is only seasonal.**

**The water requirement of the nearby villages is being met by the company already. Now piped drinking water is being provided.**



(xxxii) ETP shall also be provided for treatment of effluents from workshop, CHP and an STP shall be provided in the colony and the treated effluents shall be used for green belt development. Outflow of rainfall, if any, from the mine shall meet prescribed norms and the water quality of such discharge including levels of heavy metals such as Hg, Cd, Cr., Se, etc shall be monitored at the exit points and records maintained thereof and also uploaded on the company website. Online monitoring equipment shall be installed by the proponent to ensure that the water quality parameters of mine water discharge are well within the General Discharge Standards under EP, Rules, 1986.

- **No effluent is discharged outside of the washery. There is no separate workshop in the washery premises. A central workshop exists in Jamadoba Colliery with adequate Oil and Grease Trap. A Sewage Treatment Plant (STP) has been installed in one of the colonies of Jharia Division and its treated water used for gardening. Other colonies will also be covered with STPs in the near future.**

(xxxiii) Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through a recognised agency found in the district, and the results reported to this Ministry and to DGMS.

- **Not applicable. Though PME is done for washery workers periodically at our OH centre.**

(xxxiv) For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its concerned Regional Office in the region.

- **Not applicable.**

(xxxv) Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.

- **Not applicable.**

(xxxvi) A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration and for development of grasslands.

- **Not applicable.**

**(xxxvii) Corporate Environment Responsibility:**

- a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.
- b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
- c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.
- d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

- **The Company already has an Environment Policy approved by the Managing Director and it addresses all the issues mentioned.**

**Every month, the environmental legal compliance is submitted by Jharia Division to VP (Raw Materials) for onward submission and further review to MD and Head Office, Mumbai. Therefore, the status of adherence to the policy and compliance to Environmental laws and regulations is regularly discussed at higher levels. Any non-compliance noticed is corrected at divisional level. If any issue is beyond our control, it is brought to the notice of higher management through the above channel.**

**B. GENERAL CONDITIONS:**

- (i) No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.
  - **The points mentioned in the EC letter will be strictly followed.**
- (ii) No change in the calendar plan of production for quantum of mineral coal shall be made.
  - **It will be strictly followed.**
- (iii) Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM2.5, SO2 and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.
  - **The Air quality monitoring stations are:**
    - (i) **Jamadoba Group Office (Core Zone)**
    - (ii) **New Village Colony, Jamadoba (Buffer Zone)**
    - (iii) **Digwadih 12 No. Colony (Buffer Zone)**
    - (iv) **6&7 Pits Kalimandir area (Buffer Zone)**

**Monitoring of heavy metals in ambient air is being performed by an independent laboratory (accredited by NABL) once in six months. The results are enclosed as Annexure-II.**

- (iv) Data on ambient air quality (PM10, PM 2.5, SO2 and NOx) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.
- **Ambient air quality report (PM10, PM 2.5, SO2 and NOx) for the period from October'15 to March'16 is attached as Annexure-I. Additionally, M/s SGS India Pvt Ltd (an NABL accredited Laboratory) has done monitoring on ambient air quality (PM10, PM 2.5, SO2 and NOx) and heavy metals in the month of March'16. The results are enclosed as Annexure-II.**
- (v) Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- **Regular noise survey is being conducted in the underground work environment. Workers are provided with ear-plugs/ muffs in high noise areas. The noise levels monitored in the month of December'15 is given below:**

| Sl. No. | Equipment/ Location  | Distance in mtr. | Leq (in dB "A") | Working Hours |
|---------|--|------------------|-----------------|---------------|
| 1.      | Foreign coal: C H P control room                           | -                | 76.6            | 8 hrs         |
| 2.      | Conveyer – 6 discharge Conveyer - 1                        | 2                | 81.4            |               |
| 3.      | P T S control room.  | -                | 69.0            |               |
| 4.      | Primary magnetic separator No – 1&2                        | 2                | 81.5            |               |
| 5.      | Stand – I floor dense pump pit                             | -                | 81.8            |               |
| 6.      | Stand – II screen floor vibrating screen - 211-1 to 211- 4 | 6                | 81.6            |               |
| 7.      | Loco shed & Diesel shed                                    | -                | 77.0            |               |
| 8.      | Centrifuge section screen bowl                             | 2                | 82.6            |               |
| 9.      | Foreign coal: C H P control room                           | -                | 76.6            |               |

- (vi) Industrial wastewater (workshop and wastewater from the mine) 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 before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.
- **No waste-water is discharged outside the washery premises. 100% water is recirculated back for re-use in the washery. There is a central workshop and garage in Jamadoba where oil and grease trap has been provided.**
- (vii) Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.
- **Only the vehicles having valid PUC certificates are being allowed to operate. Coal transportation through trucks is done only from BCCL mines till washery and it is ensured that only trucks with proper tarpaulin cover and optimally loaded be allowed into the washery premises.**

- (viii) Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with SPCB and data got analysed through a laboratory recognized under EP Rules, 1986.
- **We have a fully equipped Environment Cell Laboratory with qualified personnel. Laboratory has been recognized and registered with the Jharkhand State Pollution Control Board vide letter ref no. B-3922, dated-30.08.2012. The monitoring and analysis is also done at regular intervals by a NABL accredited laboratory. We have also installed a Continuous Ambient Air Quality Monitoring Station at Jamadoba for online monitoring with data transfer to JSPCB, Ranchi.**
- (ix) Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.
- **Persons working in dusty area have been provided with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are being done.**
- (x) Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.
- **The occupational health surveillance programme of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where annually 20 % of the workers identified from workforce engaged in active mining operations are subjected to full medical checkup including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules. Contractual workers health examination is also done by PME centre**
- (xi) A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
- **We have a separate Environmental Management Cell with three qualified personnel. (one Head (Safety & Env't) and two Manager (Env't)). The reporting of Environmental Cell is directly to General Manager of the Division.**

(xii) The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.

- **The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The annual environmental expenditure for the financial year 2015-16 is Rs. 186.79 lakhs. The details are given below-**

| S.No. | Environment Management Activity   | Expenditure in Lakhs |
|-------|---|----------------------|
| 1     | Tailings Management System  | 102                  |
| 2     | Dust suppression system   | 4.8                  |
| 3     | Housekeeping measures includes removing spillage, improvement of roads                            | 16                   |
| 4     | Spillage control measures   | 2                    |
| 5     | Mechanical dewatering system  | 3                    |
| 6     | Water spraying on roads for dust control  | 5                    |
| 7     | Chemical Dewatering   | 5                    |
| 8     | Augmentation of recycling pump house  | 5                    |
| 9     | Making potable water in Water Treatment Plant & Supply to colonies                                | 33.76                |
| 10    | Horticultural activities including green belt development and regular lawn and garden maintenance | 9.34                 |
| 11    | Plantation of saplings and maintenance  | 0.89                 |
|       | <b>Total Cost incurred</b>  | <b>186.79</b>        |

(xiii) The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at <http://envfor.nic.in>.

- **The details have been advertised in two local newspapers as required.**

(xiv) A copy of the environmental clearance letter shall be marked to concerned Panchayat/Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website.

- **It has been complied with.**

(xv) A copy of the clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.

- **To be done by SPCB and other bodies as mentioned.**

- (xvi) The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as PM10, PM2.5, SO2 and NOx (ambient and stack if any) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.
- **The clearance letter has been uploaded on the company's website. The compliance status will be uploaded every time as required. The display of information near the washery's office has been complied with.**
- (xvii) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MOEF, the respective Zonal offices of CPCB and the SPCB.
- **It will be complied with.**
- (xviii) The Regional Office of this Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
- **It will be complied with.**
- (xix) The environmental statement for each financial year ending 31st March in Form-V 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 uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MOEF by E-mail.
- **The environmental statement and this compliance report is sent to JSPCB every year and uploaded on the company website as well as sent to MOEF by email.**

  
General Manager (Jharia)

**AIR QUALITY REPORT**  
**Core zone & Buffer zone**

Period- January'16 to March'16

| Core zone (as per Air quality standards for coal mines in EPA Notification, 1988) |                               |            |                      |   |  |   |  |
|---|-------------------------------|------------|----------------------|---|--|---|--|
| Location  | Latitude/<br>Longitude        | Date       | Weather<br>Condition | SPM<br>24 Hourly<br>Limit- 700<br>µg/m <sup>3</sup> | RSPM<br>24 Hourly<br>Limit- 300<br>µg/m <sup>3</sup> | SO <sub>2</sub><br>24 Hourly<br>Limit- 120<br>µg/m <sup>3</sup> | NO <sub>x</sub><br>24 Hourly<br>Limit-120<br>µg/m <sup>3</sup> |
| Jamadoba Group<br>Office  | 23°42'15.3" N/<br>86°24'11" E | 12.01.2016 | Clear                | 223.1   | 131.7  | 28.8  | 31.1   |
|   |                               | 12.02.2016 | Clear                | 256.6   | 142.6  | 32.7  | 27.7   |
|   |                               | 10.03.2016 | Clear                | 266.9   | 149.5  | 35.6  | 24.4   |
| Buffer zone (as per NAAQS 2009 for ambient air quality standards)                 |                               |            |                      |   |  |   |  |
| Location  | Latitude/<br>Longitude        | Date       | Weather<br>Condition | PM10<br>24 Hourly<br>Limit-<br>100µg/m <sup>3</sup> | PM2.5<br>24 Hourly<br>Limit-<br>60µg/m <sup>3</sup>  | SO <sub>2</sub><br>24 Hourly<br>Limit-80µg/m <sup>3</sup>       | NO <sub>2</sub><br>24 Hourly<br>Limit-80µg/m <sup>3</sup>      |
| Digwadih 12 No.<br>Colony   | 23°41'42" N/<br>86°24'45.3" E | 08.01.2016 | Clear                | 87.4  | 36.8   | 19.8  | 17.7   |
|   |                               | 02.02.2016 | Clear                | 95.6  | 48.2   | 21.1  | 18.9   |
|   |                               | 15.03.2016 | Clear                | 85.7  | 39.4   | 24.3  | 21.1   |
| New Village<br>Colony,<br>Jamadoba  | 23°41'51" N/<br>86°23'19" E   | 09.01.2016 | Clear                | 82.5  | 41.1   | 16.9  | 16.4   |
|   |                               | 10.02.2016 | Clear                | 92.7  | 42.2   | 17.3  | 22.1   |
|   |                               | 12.03.2016 | Clear                | 83.7  | 43.2   | 22.5  | 19.9   |
| 6&7 Pits<br>Kalimandir<br>colony  | 23°43'15" N/<br>86°24'12" E   | 11.01.2016 | Clear                | 98.4  | 52.3   | 23.2  | 19.5   |
|   |                               | 11.02.2016 | Clear                | 88.1  | 47.7   | 19.3  | 17.8   |
|   |                               | 11.03.2016 | Clear                | 98.4  | 51.1   | 26.6  | 19.9   |

  
Manager (Environment)

**AIR QUALITY REPORT****Core zone & Buffer zone****Period-** October'15 to December'15

| <b>Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)</b> |                                |             |                              |   |   |   |  |
|--|--------------------------------|-------------|------------------------------|---|---|---|--|
| <b>Location</b>  | <b>Latitude/<br/>Longitude</b> | <b>Date</b> | <b>Weather<br/>Condition</b> | <b>SPM<br/>24 Hourly<br/>Limit- 700<br/>µg/m<sup>3</sup></b>            | <b>RSPM<br/>24 Hourly<br/>Limit- 300<br/>µg/m<sup>3</sup></b>           | <b>SO<sub>2</sub><br/>24 Hourly<br/>Limit- 120<br/>µg/m<sup>3</sup></b> | <b>NO<sub>x</sub><br/>24 Hourly<br/>Limit-120<br/>µg/m<sup>3</sup></b> |
| Jamadoba Group<br>Office   | 23°42'15.3" N/<br>86°24'11" E  | 16.10.2015  | Clear                        | 245.7   | 126.6   | 25.6  | 31.8   |
|  |                                | 19.11.2015  | Clear                        | 222.8   | 114.5   | 21.9  | 27.7   |
|  |                                | 08.12.2015  | Clear                        | 246.9   | 144.6   | 38.8  | 36.6   |
| <b>Buffer zone (as per NAAQS 2009 for ambient air quality standards)</b>                 |                                |             |                              |   |   |   |  |
| <b>Location</b>  | <b>Latitude/<br/>Longitude</b> | <b>Date</b> | <b>Weather<br/>Condition</b> | <b>PM<sub>10</sub><br/>24 Hourly<br/>Limit-<br/>100µg/m<sup>3</sup></b> | <b>PM<sub>2.5</sub><br/>24 Hourly<br/>Limit-<br/>60µg/m<sup>3</sup></b> | <b>SO<sub>2</sub><br/>24 Hourly<br/>Limit-80µg/m<sup>3</sup></b>        | <b>NO<sub>2</sub><br/>24 Hourly<br/>Limit-80µg/m<sup>3</sup></b>       |
| Digwadih 12 No.<br>Colony  | 23°41'42" N/<br>86°24'45.3" E  | 14.10.2015  | Clear                        | 81.9  | 42.9  | 10.9  | 23.7   |
|  |                                | 04.11.2015  | Clear                        | 63  | 28.5  | 13.5  | 19   |
|  |                                | 11.12.2015  | Cloudy                       | 61.9  | 27.7  | 8.4   | 18.7   |
| New Village<br>Colony,<br>Jamadoba   | 23°41'51" N/<br>86°23'19" E    | 19.10.2015  | Clear                        | 92.7  | 41.2  | 13.5  | 19.8   |
|  |                                | 02.11.2015  | Clear                        | 95.6  | 32.7  | 18.9  | 15.8   |
|  |                                | 22.12.2015  | Cloudy                       | 71.2  | 35.2  | 11.3  | 21.1   |
| 6&7 Pits<br>Kalimandir<br>colony   | 23°43'15" N/<br>86°24'12" E    | 15.10.2015  | Clear                        | 83.5  | 38.5  | 10.5  | 22.5   |
|  |                                | 30.11.2015  | Clear                        | 96.3  | 38.5  | 10.5  | 22.5   |
|  |                                | 07.12.2015  | Clear                        | 61.5  | 26.5  | 18.4  | 17.9   |

  
Manager (Environment)



**Ground Water Quality Analysis (Hand Pump & Dugwell)  
Winter Season- January 2016**

| S. No. | Location                                 | Date of Sampling | Sample Parameter |                 |           |  |                           |
|--------|--|------------------|------------------|-----------------|-----------|--|---------------------------|
|        |  |                  | pH               | Temperature' °C | TDS, mg/l | Total Hardness (as CaCO <sub>3</sub> ), mg/l | Ground Water Table, Mtrs. |
| 1      | Lower Dungri (well)                      | 15.01.16         | 7.1              | 25              | 428       | 388  | 7.2                       |
| 2      | Upper Dungri Basti (well)                | 15.01.16         | 7.2              | 24              | 474       | 424  | 3.2                       |
| 3      | Jamadoba (Well)                          | 15.01.16         | 7.1              | 26              | 526       | 452  | 2.9                       |
| 4      | Jorapokhar (Tube Well)                   | 15.01.16         | 7.1              | 24              | 620       | 366  | -                         |
| 5      | Jorapokhar (well)                        | 15.01.16         | 6.9              | 27              | 576       | 408  | 4.9                       |
| 6      | Purnadih Basti (well)                    | 15.01.16         | 7                | 24              | 424       | 412  | 6.3                       |
| 7      | Bhowra 13 No. (well)                     | 15.01.16         | 7.1              | 26              | 624       | 466  | 7.9                       |
| 8      | Trilok Nath Madhya Vidyalaya (Tube well) | 15.01.16         | 7.2              | 24              | 438       | 394  | -                         |
| 9      | Mahulbani (Tube well)                    | 15.01.16         | 7                | 25              | 523       | 398  | -                         |
| 10     | Mahulbani Basti (well)                   | 15.01.16         | 7.1              | 22              | 525       | 432  | 7.3                       |
| 11     | Digwadih 12 No. Officers Colony (well)   | 15.01.16         | 7.2              | 27              | 387       | 388  | 7.5                       |
| 12     | Digwadih 10 No. F&J School (well)        | 15.01.16         | 7.3              | 24              | 627       | 456  | 8.15                      |
| 13     | Bhaga Anil Talkies (Hand Pump)           | 15.01.16         | 7.3              | 26              | 678       | 432  | -                         |
| 14     | 6 & 7 Pit Ayodhya Nagri (well)           | 15.01.16         | 7.1              | 24              | 624       | 412  | 4.5                       |
| 15     | Kendnadih Basti (well)                   | 15.01.16         | 7.1              | 21              | 768       | 474  | 2.2                       |
| 16     | Kendnadih Basti ( Tube well)             | 15.01.16         | 6.8              | 24              | 725       | 528  | -                         |
| 17     | Kalimela Kalimandir                      | 15.01.16         | 6.8              | 25              | 455       | 566  | 4.8                       |
| 18     | Kalimela Shiv Mandir                     | 15.01.16         | 6.9              | 27              | 567       | 468  | 4.2                       |
| 19     | Pattiya Basti (well)                     | 15.01.16         | 7                | 24              | 624       | 410  | 2.8                       |

  
Manager (Environment)

**Ground Water Quality Analysis (Hand Pump & Dugwell)  
Post-Monsoon Season- October 2015**

| S. No. | Location                                 | Date of Sampling | Sample Parameter |                 |           |  |                           |
|--------|--|------------------|------------------|-----------------|-----------|--|---------------------------|
|        |  |                  | pH               | Temperature' °C | TDS, mg/l | Total Hardness (as CaCO <sub>3</sub> ), mg/l | Ground Water Table, Mtrs. |
| 1      | Lower Dungri (well)                      | 22.10.15         | 7.1              | 24              | 396       | 424  | 6.5                       |
| 2      | Upper Dungri Basti (well)                | 22.10.15         | 7.3              | 25              | 498       | 456  | 2.5                       |
| 3      | Jamadoba (Well)                          | 22.10.15         | 6.9              | 26              | 615       | 576  | 1.7                       |
| 4      | Jorapokhar (Tube Well)                   | 22.10.15         | 6.8              | 28              | 530       | 460  | -                         |
| 5      | Jorapokhar (well)                        | 22.10.15         | 6.8              | 26              | 610       | 432  | 3.2                       |
| 6      | Purnadih Basti (well)                    | 22.10.15         | 6.7              | 25              | 452       | 524  | 4.3                       |
| 7      | Bhowra 13 No. (well)                     | 22.10.15         | 7.1              | 26              | 482       | 456  | 7.2                       |
| 8      | Trilok Nath Madhya Vidyalaya (Tube well) | 22.10.15         | 6.5              | 25              | 485       | 324  | -                         |
| 9      | Mahulbani (Tube well)                    | 22.10.15         | 7.5              | 26              | 454       | 384  | -                         |
| 10     | Mahulbani Basti (well)                   | 22.10.15         | 7.2              | 28              | 490       | 412  | 6.5                       |
| 11     | Digwadih 12 No. Officers Colony (well)   | 22.10.15         | 7.3              | 27              | 428       | 472  | 7.2                       |
| 12     | Digwadih 10 No. F&J School (well)        | 22.10.15         | 7.5              | 29              | 480       | 452  | 7.8                       |
| 13     | Bhaga Anil Talkies (Hand Pump)           | 22.10.15         | 7.2              | 27              | 624       | 408  | -                         |
| 14     | 6 & 7 Pit Ayodhya Nagri (well)           | 22.10.15         | 7.2              | 26              | 526       | 440  | 3.4                       |
| 15     | Kendnadih Basti (well)                   | 22.10.15         | 7.2              | 27              | 696       | 344  | 1.9                       |
| 16     | Kendnadih Basti ( Tube well)             | 22.10.15         | 6.5              | 25              | 625       | 366  | -                         |
| 17     | Kalimela Kalimandir                      | 22.10.15         | 6.7              | 25              | 525       | 410  | 4.2                       |
| 18     | Kalimela Shiv Mandir                     | 22.10.15         | 6.8              | 23              | 640       | 384  | 3.7                       |
| 19     | Pattiya Basti (well)                     | 22.10.15         | 6.8              | 25              | 746       | 356  | 2.2                       |

  
Manager (Environment)

SGS

Test Report

Print Date : 29/01/2016

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KE16-000336.001

JOE No : KE16-000336

Report Control No : KER0000028327  
Sample Described by Customer as : Ambient Air

Client Name : Tata Steel Limited  
 Client Address : Jharia Division  
 : Jamadoba, Jealgoma  
 City : Dhanbad  
 Postal Code : 828112  
 State : Jharkhand  
 Country : India  
 Received : 16/01/2016  
 Marks on Sample : Work Shop Area  
 Sampling Date : 11.01.2016 to 12.01.2016, time - 01.00 pm to 01.00 pm  
 Test Start/End Date : 16/01/2016 - 29/01/2016

| Analysis                                | Method                          | Result    | Unit              | Requirement/Limit NAAQS |     |
|---|---------------------------------|-----------|-------------------|-------------------------|-----|
|   |                                 |           |                   | Min                     | Max |
| Sulphur Dioxide (SO <sub>2</sub> )      | IS 5182 (Part 02) : Reaff. 2006 | BDL(DL:5) | ug/m <sup>3</sup> | -                       | 80  |
| Nitrogen Dioxide (NO <sub>2</sub> )     | IS 5182 (Part 06) : 2006        | BDL(DL:7) | ug/m <sup>3</sup> | -                       | 80  |
| Particulate Matter (PM <sub>10</sub> )  | IS 5182 (Part 23) : 2006        | 76.6      | ug/m <sup>3</sup> | -                       | 100 |
| Particulate Matter (PM <sub>2.5</sub> ) | USEPA CFR (40) Appendix - L     | 40.7      | ug/m <sup>3</sup> | -                       | 60  |
| Arsenic as As                           | 40CFR 50                        | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |
| Nickel as Ni                            | 40CFR 50                        | 3.7       | ng/m <sup>3</sup> | -                       | -   |
| Chromium (as Cr)                        | IS:5182 (Part-22):2004          | <5.00     | ng/m <sup>3</sup> | -                       | -   |
| Cadmium (as Cd)                         | IS:5182 (Part-22):2004          | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |

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Print Date : 29/01/2016

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KE16-000336.002

JOE No : KE16-000336

Report Control No : KER0000028327

Sample Described by Customer as : Ambient Air

Client Name : Tata Steel Limited  
 Client Address : Jharia Division  
 : Jamadoba, Jealghoma  
 City : Dhanbad  
 Postal Code : 828112  
 State : Jharkhand  
 Country : India  
 Received : 16/01/2016  
 Marks on Sample : Near G.M Office  
 Sampling Date : 11.01.2016 to 12.01.2016, time - 01.30 pm to 01.30 pm  
 Test Start/End Date : 16/01/2016 - 29/01/2016

| Analysis                                | Method                          | Result    | Unit              | Requirement/Limit NAAQS |     |
|---|---------------------------------|-----------|-------------------|-------------------------|-----|
|   |                                 |           |                   | Min                     | Max |
| Sulphur Dioxide (SO <sub>2</sub> )      | IS 5182 (Part 02) : Reaff. 2006 | BDL(DL:5) | ug/m <sup>3</sup> | -                       | 80  |
| Nitrogen Dioxide (NO <sub>2</sub> )     | IS 5182 (Part 06) : 2006        | 9.5       | ug/m <sup>3</sup> | -                       | 80  |
| Particulate Matter (PM <sub>10</sub> )  | IS 5182 (Part 23) : 2006        | 74.2      | ug/m <sup>3</sup> | -                       | 100 |
| Particulate Matter (PM <sub>2.5</sub> ) | USEPA CFR (40) Appendix - L     | 24.5      | ug/m <sup>3</sup> | -                       | 60  |
| Arsenic as As                           | 40CFR 50                        | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |
| Nickel as Ni                            | 40CFR 50                        | 5.7       | ng/m <sup>3</sup> | -                       | -   |
| Chromium (as Cr)                        | IS:5182 (Part-22):2004          | 5.70      | ng/m <sup>3</sup> | -                       | -   |
| Cadmium (as Cd)                         | IS:5182 (Part-22):2004          | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |

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## Test Report

Print Date : 29/01/2016

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KE16-000336.003

JOE No : KE16-000336

Report Control No : KER0000028327

Sample Described by Customer as : Ambient Air

Client Name : Tata Steel Limited  
Client Address : Jharia Division  
: Jamadoba, Jealgoma  
City : Dhanbad  
Postal Code : 828112  
State : Jharkhand  
Country : India  
Received : 16/01/2016  
Marks on Sample : Jamadoba Group Office  
Sampling Date : 12.01.2016 to 13.01.2016, time - 02.00 pm to 02.00 pm  
Test Start/End Date : 16/01/2016 - 29/01/2016

| Analysis                                | Method                          | Result    | Unit              | Requirement/Limit NAAQS |     |
|---|---------------------------------|-----------|-------------------|-------------------------|-----|
|   |                                 |           |                   | Min                     | Max |
| Sulphur Dioxide (SO <sub>2</sub> )      | IS 5182 (Part 02) : Reaff. 2006 | BDL(DL:5) | ug/m <sup>3</sup> | -                       | 80  |
| Nitrogen Dioxide (NO <sub>2</sub> )     | IS 5182 (Part 06) : 2006        | 8.0       | ug/m <sup>3</sup> | -                       | 80  |
| Particulate Matter (PM <sub>10</sub> )  | IS 5182 (Part 23) : 2006        | 83.7      | ug/m <sup>3</sup> | -                       | 100 |
| Particulate Matter (PM <sub>2.5</sub> ) | USEPA CFR (40) Appendix - L     | 50.5      | ug/m <sup>3</sup> | -                       | 60  |
| Arsenic as As                           | 40CFR 50                        | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |
| Nickel as Ni                            | 40CFR 50                        | 2.0       | ng/m <sup>3</sup> | -                       | -   |
| Chromium (as Cr)                        | IS:5182 (Part-22):2004          | <5.00     | ng/m <sup>3</sup> | -                       | -   |
| Cadmium (as Cd)                         | IS:5182 (Part-22):2004          | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |

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Print Date : 29/01/2016

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KE16-000336.004

JOE No : KE16-000336

Report Control No : KER0000028327

Sample Described by Customer as : Ambient Air

**Client Name** : Tata Steel Limited  
**Client Address** : Jharia Division  
 : Jamadoba, Jealgoma  
**City** : Dhanbad  
**Postal Code** : 828112  
**State** : Jharkhand  
**Country** : India  
**Received** : 16/01/2016  
**Marks on Sample** : Tata Steel Officer Colony  
**Sampling Date** : 12.01.2016 to 13.01.2016, time - 02.30 pm to 02.30 pm  
**Test Start/End Date** : 16/01/2016 - 29/01/2016

| Analysis                                | Method                          | Result    | Unit              | Requirement/Limit NAAQS |     |
|---|---------------------------------|-----------|-------------------|-------------------------|-----|
|   |                                 |           |                   | Min                     | Max |
| Sulphur Dioxide (SO <sub>2</sub> )      | IS 5182 (Part 02) : Reaff. 2006 | BDL(DL:5) | ug/m <sup>3</sup> | -                       | 80  |
| Nitrogen Dioxide (NO <sub>2</sub> )     | IS 5182 (Part 06) : 2006        | BDL(DL:7) | ug/m <sup>3</sup> | -                       | 80  |
| Particulate Matter (PM <sub>10</sub> )  | IS 5182 (Part 23) : 2006        | 46.9      | ug/m <sup>3</sup> | -                       | 100 |
| Particulate Matter (PM <sub>2.5</sub> ) | USEPA CFR (40) Appendix - L     | 33.2      | ug/m <sup>3</sup> | -                       | 60  |
| Arsenic as As                           | 40CFR 50                        | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |
| Nickel as Ni                            | 40CFR 50                        | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |
| Chromium (as Cr)                        | IS:5182 (Part-22):2004          | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |
| Cadmium (as Cd)                         | IS:5182 (Part-22):2004          | BDL(DL:2) | ng/m <sup>3</sup> | -                       | -   |

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