बोकारो पावर सप्लाई कम्पनी (प्रा.) लिमिटेड
(सेल एवं डी.वी.सी. का एक संयुक्त उपक्रम)
हॉल सं.–एम–01, पुराना प्रशासनिक भवन,
इस्पात भवन, बोकारो स्टील सिटी–827001
दूरभाष : 06542-223747 (का. एवं प्र.) 240380 (क्र. एवं सं.)
फैक्स : 06542-247062, 246101 (पावर प्लान्ट)

CIN : U40300DL2001PTC112074

Bokaro Power Supply Company (P) Ltd.
(A Joint Venture of SAIL & DVC)
Hall No. M-01, Old ADM Building,
Ispat Bhawan, Bokaro Steel City - 827001
Tel : 06542-223747 (P&A), 240380 (P&C)
Fax : 06542-247062, 246101 (Power Plant)

कार्यालय मुख्य महाप्रबन्धक, पावर प्लान्ट ★ बी.पी.एस.सी.एल., बी.एस.सिटी ★
245
20-01-21

BPSCL/GM (PP)/EMD/06/245

Date: 20.01.2021

To

The RO-MOEFCC

Bungalow No. A-2, Shyamali Colony,

Doranda, Ranchi,

Jharkhand 834002

Sub: Compliance of Environment Clerance

Sir,

Enclosed please find herewith the compliance report of Environmental Clerance for the six monthly report of 2020-21 for your kind perusal.

Regards.

For & on behalf of BPSCL
Yours sincerely

(M S Mondal)
Sr. mgr (Env)

Cc:

1. O/C

BOKARO POWER SUPPLY COMPANY (P) LIMITED
COMPLIANCE REPORT

Ref: MOEF, New Delhi Environment Clearance F.No. J 13012/74/2010-IA II (T) dated 03rd. April, 2012.

STIPULATED CONDITION		COMPLIANCE STATUS
(i)	Scheme for implementation for harnessing solar power within the premises of the plant particularly at available roof tops shall be formulated and status of implementation shall be submitted to the Regional Office of the Ministry from time to time.	**2x50 KW of Solar Power** on the roof-top of BPSCL's two office buildings was commissioned (**In Welfare Building -1 &Welfare Building-2**) in the year 2016 and is in continuous service. **02 MW solar power** on rooftop of BSL buildings such as Hospital buiding, Administrative building, Bokaro Niwas etc and have been commissioned in the year 2018 and are in continuous service. COMPLIED.
(ii)	A stack of 180 m height with flue gas velocity not less than 22 m/s shall be installed and provided with continuous online monitoring equipments for SO_x, NO_x and $PM_{2.5}$& PM_{10}. Mercury emissions from stack may also be monitored on periodic basis.	A stack of height 180m is constructed and is under operation with online monitoring system of SOX, NOX and particulate matter which are functional. COMPLIED.
(iii)	Coal transportation to plant site shall be undertaken by rail and no road transportation shall be permitted.	Coal is being transported by Indian railways and unloaded through wagon tippler. No. road transportation of coal is involved. COMPLIED
(iv)	A detailed study on chemical composition of coal used particularly heavy metal and radio activity contents shall be carried out through a reputed institute and report shall be submitted to Regional Office of the ministry. Only after ascertaining its radioactive level shall fly ash be supplied to end user.	Analysis has been carried out by **M/s. R.V. Briggs & Co. pvt. ltd** and the report is being submitted. COMPLIED
(v)	The project proponent shall carry out a long term R&D on Boiler efficiency vis-à-vis large variation on ash content of coal and submit its findings to the Ministry at a large.	**To be done**
(vi)	High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission dose not exceeds 50mgNm^3.	High efficiency ESP is operational with the steam generating unit and the emission of particulate matter is maintained within the prescribed norm of 50mg/Nm^3. COMPLIED
(vii)	Adequate dust extraction system such as cyclones/ bag filters and water spray system such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	Water spray system in coal yard and ash pond area is in service. Besides it, dry fog dust suppression system is also installed in coal handling plant. COMPLIED

(viii)	Utilization of 100% Fly Ash generated shall be made from 4th year of operation as per the fly Ash Utilization, Notification, 1999 and its subsequent amendments, Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	1. MOU has been signed with NHAI for utilization of Fly Ash in further stretches of road construction within 100 Km range for which transportation cost will be borne by M/S BPSCL. 2. M/S Ashoka buildcon and M/S Dilip Buildcon had already utilized 1.50 Lakh MT of Ash for Ramgarh-Chas-Dhanbad section. 3. M/S Dalmia cement is using our Dry fly ash for cement manufacturing. 4. Ash is being used to fill up low lying areas, abandoned quarries and Hazardous waste pit with in BSL premises and in & around Bokaro Township. 5. One semi automatic and one Manual brick manufacturing machine has been commissioned for in-house brick manufacturing. 6. Fly ash is being supplied to local brick manufacturing units for brick production. 7. 02 nos. of Fly ash bagging machine has been installed and a 330 mtr. Long platform has been constructed to transport fly ash through railway wagons. 8. M/S Ashtech have been engaged to transport fly ash through railway wagons and clearance has also been obtained from Indian railways. 9. M/S Ashtech have been also engaged to transport dry fly ash from our silos to different cement manufacturing units in Jharkhand. 10. Also already dumped Fly ash is being stabilized by biological process to reclaim the land. Quantity wise utilization and further action Plan attached. **COMPLIED**
(ix)	Fly ash shall be collected in dry form and storage facility (Silos) shall be provided. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry from. Mercury and other heavy metals (As, Hg, Cr, Pb, etc) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying area.	Silo is installed and is functioning. 02 nos. Fly ash bagging machine has been installed for transportation through railway and roadway. Fly ash brick machine is also installed inside plant for use of dry fly ash. Unutilized fly ash is being transported through pipelines as slurry into the ash ponds and analysis being carried out by third party. **COMPLIED**
(x)	Land and water requirement shall be restricted as per latest CEA norms	Proper study had been carried out during the planning and

	issued.	commissioning by Bokaro Steel Plant and at the time of extension through an EIA and EMP report by Mecon Ltd. EIA and EMP report already submitted. COMPLIED
(xi)	Ash pond water shall be re-circulated and utilized.	Ash pond water comes out into the BSL cooling pond from where it is recirculated for plant use. COMPLIED
(xii)	Ash pond shall be lined with HDP/LDPE lining or any other suitable impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	Regular maintenance of ash dyke is being carried out with boulders and slag for its protection. Also height of the dyke is raised as per requirement COMPLIED
(xiii)	Sulphur and ash contents in the coal to be used in the project shall not exceed 0.5% and <34 % respectively at any given time. In case of variation of coal quality at any point of time fresh reference shall be made to the Ministry for suitable amendments to environmental clearance condition wherever necessary.	Coal quality with respect to ash and volatility is regularly checked in plant lab and is within limit. Quarterly third Party test is also carried out through **M/s. R.V. Briggs & Co. pvt. ltd** . Coal analysis report attached. COMPLIED
(xiv)	Hydrogeology of the area shall be reviewed annually from an institute / organization of repute to assess impact of surface water and ground regime (especially around ash dyke). In case any deterioration is observed specific mitigation measures shall be undertaken and reports / date of water quality monitored regularly and maintained shall be submitted to the Regional Office of the Ministry.	The specific tests are being carried out by NABL approved vendor **M/s. R.V. Briggs & Co. pvt. ltd** . COMPLIED Sample report attached.
(xv)	No ground water shall be extracted for use in operation of the power plant even in lean season.	No ground water is extracted in power Plant area for any operational use. COMPLIED
(xvi)	No water bodies (including natural drainage system) in the area shall be disturbed due to activities associated with the setting up /operation of the power plant.	The project work is completed without affecting any of the water bodies of the area. COMPLIED
(xvii)	Minimum required environmental flow suggested by the Competent Authority of the State Govt. shall be maintained in the Channel /Rivers (as applicable) even in lean season.	Already in place through BSL infrastructure COMPLIED

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(xviii)	COC (Cycles of Concentration) of 5.0 shall be adopted.	Cycles of Concentration is being maintained through Re-Circulation Pump House. COMPLIED
(xix)	Regular monitoring of ground water level shall be carried out by establishing a network wells and constructing new piezometers. Monitoring around the ash pond area shall be carried out particularly for heavy metals (hg, Cr, As, Pb) and records maintained and submitted to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Done through **M/s. R.V. Briggs & Co. pvt. ltd** which is an approved lab of NABL. COMPLIED Sample report attached.
(xx)	Monitoring surface water quality in the area shall also be regularly conducted and records maintained. The monitored data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of flow of ground water shall be undertaken.	Necessary water test and analysis is done through **M/s. R.V. Briggs & Co. pvt. ltd** COMPLIED
(xxi)	Waste water generated from the plant shall be treated before discharge to comply limits prescribed by the SPCB / CPCB.	Water is treated before discharge and an online effluent analysis system is installed for regular monitoring. COMPLIED
(xxii)	The project proponent shall undertake rain water harvesting measures and shall develop water storage for use in operation of the plant. Rain water harvesting system shall be put in place which shall comprise of rain water collection from the built up and open area in the plant premises, Action plan for implementation shall be submitted to the Regional Office of the Ministry.	Rain water harvesting is done through different drain channels network connected to water Reservoir of SAIL/BSL known as cooling ponds of BSL. RWH for individual building is in proposal stage work to commence soon. COMPLIED.
(xxiii)	Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.	All efforts have been made for an effective natural drainage system and there is no accumulation of water inside plant premises. COMPLIED
(xxiv)	At least three nearest village shall be adopted and basic amenities like development of roads, drinking water supply, primary health centre, primary school etc shall be developed in co-ordination with the district administration.	a) Mobile medical unit has been started in collaboration with PSMRI for nearby village costing approx 12 Lakhs b) Community sanitation facility has been constructed at village bansgora through an NGO, SHRI. COMPLIED.
(xxv)	CSR schemes should address public hearing issues and shall be undertaken based on need assessment in and around the village's within 5 km of the	a) Sponsorship of 5 girl for skill development through Private ITI for Rs. 2 lacks

site and in constant consultation with the village Panchyat and the District Administration. As part of CSR employment of local youth after imparting relevant training, as may be necessary, shall be undertaken as committed.	b) BPSCL is supporting education of children with disability by bearing cost towards annual fee of 50 students of Asha-Lata Viklang Vikas Kendra, B.S.City. c) MoA entered for 'Swavalamban'-Employment linked training programme for unemployed youth with Construction Industry Development Council (CIDC) d) Gift Milk" scheme to address the issue of Malnutrition for one year under which 7 Government school students are receiving 200 ml flavoured milk pouches was launched in association with NDDB Foundation for Nutrition on 1st February'2018 and the project is operational on regular basis. e) A detailed work and expenditure has been uploaded on our website; www.bpscl.com. **COMPLIED.**
(xxvi) An amount of Rs 1.40 Crores shall be earmarked as one time capital cost for CSR program as committed by the project proponent. Subsequently a recurring expenditure of Rs 0.30 Crores per annum till the life of the planet shall be earmarked as recurring expenditure for CSR activities. Details of the activities to be undertaken shall be submitted within six month along with road map for implementation.	a) Rs. 41,86,740/- for construction of Pucca Road connecting two nearby villages i.e. Bhatua and Chophan under CSR activities has started and we will continue further with viable projects. b) Rs. 35 lac has been contributed to PM national relief fund. c) 115 Tracksuits have been distributed to players participating in PVKM sponsored for. d) Supplying and installing 50 nos of seating chair units (3 seater) in Bokaro General Hospital for Patients visiting the Hospital under National Health Program. e) Water ATMs at Bokaro **Civil** Courts (03), & Bokaro City College (02) has been installed for project JAL AMRIT in collaboration with Eureka Forbes Institute of Environment (EFIE) f) Financial Assistance of Rs. 19.66 Lakhs was given to JREDA for installation of a 30 KV Solar Power Plant with underground cabling connected to 150 Nos. LED –based solar street lights within 3Kms of Chandankiyari Chowk, in Chandankiyari. g) Swasthya Kiran project, under which a Mobile Medical Unit (MMU) is operating successfully 5-Days a week in peripheral villages. Special health camps are being also observed. h) "Gift Milk" scheme to address the issue of Malnutrition for one year under which 7 Government school students are receiving 200

2011

	ml flavoured milk pouches was launched in association with NDDB Foundation for Nutrition on 1st February'2018 and the project is operational on regular basis. i) P.O. placed for supply and installation of one 62.5KVA Diesel Generator set (Kirloskar make) for Indian Red Cross Society Blood Bank, B.S.City. The DG set has been installed. **COMPLIED.**
(xxvii) It shall be insured that an in-built monitoring mechanism for the CSR schemes identified is in place and annual social audit shall be got done for the nearest government institute of repute in the region. The project proponent shall also submit the status of implementation of the scheme from time to time. The achievements should be put on company's website.	BPSCL P&A section is looking after CSR of BPSCL. A senior level committee is present to monitor the progress of CSR activities. The achievements have been put on company's **website-www.bpscl.com** **COMPLIED.**
(xxviii) Green Belt consisting of 3 tiers of plantations of native species around planet comprising of 33% of planet area shall be raised (except in areas not feasible). The density of trees shall not less than 2500 per ha with survival rate not less than 80%.	1. Eco-friendly garden has been developed inside plant premises. Plantation works has been done on big scale. 2. More than 15000 trees were planted in and around the plant area. 3. The density of trees is more than 2500 and the survival rate is about 85%. 4. 150 kg of grass seed (Estilo Hamata) planted in ash pond area for environment protection. Additionally, samplings of Kadam and bamboo trees are planted to develop the greenery. Regular plantation in and around peripheral areas are being carried out. 5. 5000 tree saplings have been planted in ash pond and peripheral villages in this rainy season. 6. Power Plant is committed to maintain an eco-friendly environment. It is a continuous process and plant is adhering to this principle. 7. It is proposed to plant Vetiver grass in our ash pond area.
(xxix) An Environmental Cell shall be created at the project site itself and shall be headed by an officer of appropriate seniority and qualification. It shall be ensured that the head of the Cell shall directly report to the Head of the Organization.	A proper environment cell has been created and working accordingly. **COMPLIED**
(i) The treated effluents confirming to the prescribed standards only shall be re-circulated and reused within the plant. Arrangements shall be made that	Effluent and storm water are linked to BSL system through separate channels and re-circulated for plant use through cooling ponds. ZLD

	effluents and storm water do not get mixed.	is operational. COMPLIED
(ii)	A sewage treatment plant shall be provided. (As applicable) and the treated sewage shall be used for raising greenbelt / plantation.	Already in practice in our existing plant through BSL system. COMPLIED.
(iii)	Adequate safety measures shall be provided in the plant area to check / minimize spontaneous fires in coal yard especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	a) Sufficient number of Fire Hydrants in conveyer gallery as well as in yard area has been provided. b) Static water tank at the distance of 15 m from coal yard which act as a reservoir for firefighting purpose. c) Fire station also available within the plant premises of Bokaro Steel Plant under common sharing basis. d) Regular watering and water sprinkling have been done in summer season. e) 2 Nos Dry Fog Dust Separation systems have already been commissioned and working. One was in CHP package of unit#9 and other was separately installed for better environment. Documents have already been submitted. COMPLIED.
(iv)	Storage facilities for auxiliary fuel such as LDO / HFO /LSHS shall be made in the plant area in consultation with department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	Permission has obtained from Petroleum and Explosive safety Organization for Petroleum class C installation and disaster Management Plan has been prepared. A copy of the Disaster Management Plan and Details of analysis of liquid fuel have been already submitted. COMPLIED.
(v)	First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	First Aid medical help, health Centre is available inside plant premises for all contract workers and employees. COMPLIED.
(vi)	Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 85 dB (A) from source. For people working in the high noise area, Requisite personal protective equipment like earplugs / ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressor etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non noisy / less noisy areas.	Noise level at turbine hall, compressor room and other area is monitored regularly and protective equipments like ear plugs and muffs are made available for regular use. COMPLIED.
(vii)	Regular monitoring of ambient air ground level concentration of SO_2 , NOx,	Regular monitoring of ambient air ground level concentration of SO_2,

	$PM_{2.5}$& PM_{10} and Hg shall be carried out in the impact zone and records maintained. If any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional office of this Ministry. The data shall also be put on the website of the company.	NOx, $PM_{2.5}$& PM10 are being monitored and data is displayed at plant premises. Our plant is integral part of Bokaro Steel plant and its ambient air and Bokaro steel City are being displayed all data at factory main gate and township. The same is applicable to us as being in the same premises. The data have been putted on the website of the company **www.bpscl.com** COMPLIED.
(viii)	Provision shall be made for the housing of construction labour (as applicable) within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP , safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	No such provisions were needed during the execution of project as the project site is near to township and all temporary structure are removed. COMPLIED.
(ix)	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the state Pollution control Board / Committee and may also be seen at website of the Ministry of Environment and forests at http:// envfor.nic.in.	The advertisements regarding environmental clearance accorded for the projects are published in newspapers including local ones. COMPLIED.
(x)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilaparisad / Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions / representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Public hearing was conducted for suggestion and representation of local bodies for environment clearance of the project. The Environment Clearance letter have been put on the website of the company www.bpscl.com COMPLIED.
(xi)	The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored date on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM ($PM_{2.5}$& PM_{10}), SO_2, NOx (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	Report of Pollutant parameters like SPM, SO_2, NOx for ambient and stack are sent to MOEF regional office, JSPCB and SPCB. The SPM, RSPM ($PM_{2.5}$& PM_{10}), SO_2, NOx have been displayed at the main gate of the company in the public domain. COMPLIED

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(xii)	The environment statement for each financial year ending 31st March in From-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the environmental (Protection) Rules, 1986, as amended subsequently, shall also **be put on the website of the company** along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail	Environment statement for each financial year ending 31st March in From-V is being sent to state Pollution Control Board and Regional offices of MOEF. Also the report is put on the website. COMPLIED.
(xiii)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of environment and Forests, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the stats of compliance of the environment of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, Ministry of Environment and Forests.	Reports are being sent to regional office and pollution board office regularly. COMPLIED.
(xiv)	Regional Office of the Ministry of environment & Forests will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact assessment Report and Environmental Management plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up-date the same from time to time at least six monthly basis. Criteria Pollutants levels including NOx (from stack & ambient air) shall be displayed at the main gate of the power plant.	Six monthly reports are being sent to the regional office of ministry with documents in support including EMP and EIA. Ambient Pollution parameters are displayed at factory main gate where the power plant is situated. COMPLIED.
(xv)	Separate funds shall be allocated for implementations of environmental protection measures along with item wise break-up. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Separate budgetary allocation is being made for environment protection measures. COMPLIED.
(xvi)	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	Plant already commissioned in Sept 2014.Financial closure is yet to be done. Regional office and ministry will be informed accordingly. COMPLIED.
(xvii)	Full cooperation shall be extended to the Scientists / Officers from the Ministry /Regional Office of the Ministry /CPCB/SPCB who would be	All sorts of cooperation to different agencies being extended at all times. Further Cooperation is assured as and when required for

monitoring the compliance of environmental status.	monitoring of compliance of environment status. COMPLIED.

20/1/21

Sr. mgr./Environment

R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

TAHER MANSION, 1ST FLOOR

9, BENTINCK STREET, KOLKATA - 700 001

Ph. : (BSNL) 2248-3661/2698/7803, 2262-4153/4154, Fax : 33 2248-0447

Ph. : **(Airtel) 4044-3380/3381/3382/3383**

E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

TEST REPORT

No.C(D)/20-21/66 **Date : 12 January 2021** **Page 1 of 1**

Issued to	:	**M/s. BOKARO POWER SUPPLY COMPANY (P) LTD.** Hall No.M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City-827001
Your Ref. No.	:	W.O. no.BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 8.11.19
Description of sample	:	Coal
Mark on Sample	:	CHP Area
Sample Handedover by the Party on:		05.01.2021
Analysis Completed on	:	11.01.2021

TEST FINDINGS:

ANALYSIS ON AIR DRIED BASIS

Sl. No.	Test Parameters	Test Method	Unit	Results
01.	Ash content	IS :1350 (Part-I)-1984	% (w/w)	48.59
02.	Sulphur	IS :1350 (Part-III)-1969	% (w/w)	0.37
03.	Fixed Carbon	IS:1350 (Part-IV,Sec.I)-1974	% (w/w)	34.48
04.	Mercury as Hg	Mercury Analyser	mg/kg	3.53
05.	Lead as Pb	By A.A.S.	mg/kg	20.9
06.	Chromium as Cr	By A.A.S.	mg/kg	25.8
07.	Arsenic as As	By A.A.S.	mg/kg	0.47

(T. NANDI)
Technical Manager
Authorised Signatory

R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

(AN ISO 9001:2015 CERTIFIED COMPANY)

TAHER MANSION, 1ST FLOOR

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E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

NABL ACCREDITED LABORATORY

Certificate No. TC-7815

TEST REPORT

ULR NO. TC781521000000158F

No. W(D)/20-21/1824 **Date : January 12, 2021**

Issued to : **M/S, BOKARO POWER SUPPLY COMPANY (P) LTD.**
Hall No. M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City - 827001

Your Ref No. : BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 08.11.2019

Sample Description : Drinking Water/Potable Water

Collection Source : Modidih Village Tubewell Water

Sample Drawn by us On : 05.01.2021

Test Completed on : 11.01.2021

Parameters Tested:
Chemical Parameters
Aluminium,Barium,Copper,Magnesium,Zinc,Lead, Manganese,Selenium,Sulphate,Cadmium,Nickel, Mercury,Arsenic,Total Chromium

Method of Sampling : IS : 1622 : 1981 & IS : 3025 (Part - 1) 1987

Mode of Sampling : Grab

Chemical Test Findings :

Sl No.	Test parameters	Test Method	Unit	Result	Norms as per IS: 10500, 2012 (2nd Rev.)	
					Acceptable Limit	Permissible Limit
1	Aluminium as Al	IS: 3025 (Part-55): 2003	mg/l	<0.03	0.03 Max.	0.2 Max.
2	Barium as Ba	IS: 13428: Annex F	mg/l	<0.5	0.7 Max.	No Relaxation
3	Copper as Cu	IS: 3025 (Part-42): 1992 Reaff. 2009	mg/l	<0.05	0.05 Max.	1.5 Max.
4	Magnesium as Mg	IS: 3025 (Part-46): 1994 Reaff. 2009	mg/l	17	30 Max.	100 Max.
5	Manganese as Mn	IS: 3025 (Part-59): 2006 Reaff. 2012	mg/l	< 0.05	0.1 Max.	0.3 Max.
6	Selenium as Se	IS: 3025 (Part-56): 2003 Reaff. 2009	mg/l	<0.01	0.01 Max.	No Relaxation
7	Sulphate as SO_4	IS: 3025 (Part-24): 1986 Reaff. 2009	mg/l	81.3	200 Max.	400 Max.
8	Zinc as Zn	IS: 3025 (Part-49): 1994 Reaff. 2009	mg/l	< 0.05	5 Max.	15 Max.
9	Cadmium as Cd	IS: 3025 (Part-41): 1992 Reaff. 2009	mg/l	<0.002	0.003 Max.	No Relaxation
10	Lead as Pb	IS: 3025 (Part-47): 1994 Reaff. 2009	mg/l	<0.01	0.01 Max.	No Relaxation
11	Mercury as Hg	IS: 3025 (Part-48): 1994 Reaff. 2009	mg/l	<0.001	0.001 Max.	No Relaxation
12	Nickel as Ni	IS: 3025 (Part - 54) 2003	mg/l	<0.01	0.02 Max.	No Relaxation
13	Arsenic as As	IS: 3025 (Part-37): 1988 Reaff. 2009	mg/l	<0.002	0.01 Max.	0.05 Max.
14	Total Chromium as Cr	IS: 3025 (Part-52): 2003 Reaff. 2009	mg/l	<0.05	0.05 Max.	No Relaxation

Minimum detection limit :

i) Aluminium : 0.03mg/l (ii) Barium : 0.5mg/l (iii) Copper : 0.05mg/l (iv) Selenium : 0.01mg/l (v) Lead : 0.01mg/l vi) Cadmium :0.002mg/l (vii) Mercury : 0.001mg/l (viii) Nickel : 0.01mg/l (ix) Arsenic : 0.002mg/l (x) Tota Chromium : 0.05mg/l (xi) Magnesium : 0.05mg/l (xii) Zinc : 0.05mg/l.

Remarks on Chemical Test Report :

i) The above mentioned sample of drinking water complies with IS: 10500, 2012 (2nd Rev.) & Satisfactory for drinking purpose, in respect of the above mentioned parameters.

: END OF TEST REPORT :

J. Mukherjee
Quality Manager
Authorized Signatory
For R.V.BRIGGS & CO. PRIVATE LTD.

nb

R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

TAHER MANSION, 1ST FLOOR

9, BENTINCK STREET, KOLKATA - 700 001

Ph. : (BSNL) 2248-3661/2698/7803, 2262-4153/4154, Fax : 33 2248-0447

Ph. : **(Airtel) 4044-3380/3381/3382/3383**

E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

TEST REPORT

ULR NO. TC781521000000158F

No. W(D)/20-21/1824 **Date : January 12, 2021**

Issued to : **M/S, BOKARO POWER SUPPLY COMPANY (P) LTD.**
Hall No. M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City - 827001

Your Ref No. : BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 08.11.2019

Sample Description : Drinking Water/Potable Water

Collection Source : Modidih Village Tube Well Water

Sample Drawn by us On : 05.01.2021

Test Completed on : 11.01.2021

Parameters Tested:
Chemical Parameters
Radioactive Parameters
Alpha emitters, Beta emitters

Method of Sampling : IS : 1622 : 1981 & IS : 3025 (Part - 1) 1987

Mode of Sampling : Grab

Chemical Test Findings :

Radioactive Parameters

Sl No.	Test parameters	Test Method	Unit	Result	Norms as per IS: 10500, 2012 (2nd Rev.)	
					Acceptable Limit	Permissible Limit
1a)	Alpha emitters	APHA 22nd Edn. 7110B	Bq/l	Not detectable	0.1 Max.	No Relaxation
1b)	Beta emitters	APHA 22nd Edn. 7110B	Bq/l	Not detectable	1.0 Max.	No Relaxation

Remarks on Chemical Test Report :

The above mentioned sample of drinking water complies with IS: 10500, 2012 (2nd Rev.) & Satisfactory for drinking purpose, in respect of the above mentioned parameters.

: END OF TEST REPORT :

J. Mukherjee
Quality Manager
Authorized Signatory
For R.V.BRIGGS & CO. PRIVATE LTD.

nb

R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

(AN ISO 9001:2015 CERTIFIED COMPANY)

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E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

NABL ACCREDITED LABORATORY

Certificate No. TC-7815

TEST REPORT

ULR NO. TC781521000000159F

No. W(D)/20-21/1825 **Date : January 12, 2021**

Issued to : **M/S, BOKARO POWER SUPPLY COMPANY (P) LTD.**
Hall No. M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City - 827001

Your Ref No. : BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 08.11.2019

Sample Description : Drinking Water/Potable Water

Collection Source : Mouhura Village Tubewell Water

Sample Drawn by us On : 05.01.2021

Test Completed on : 11.01.2021

Parameters Tested:
Chemical Parameters
Aluminium,Barium,Copper,Magnesium,Zinc,Lead, Manganese,Selenium,Sulphate,Cadmium,Nickel, Mercury,Arsenic,Total Chromium

Method of Sampling : IS : 1622 : 1981 & IS : 3025 (Part - 1) 1987

Mode of Sampling : Grab

Chemical Test Findings :

Sl No.	Test parameters	Test Method	Unit	Result	Norms as per IS: 10500, 2012 (2nd Rev.)	
					Acceptable Limit	Permissible Limit
1	Aluminium as Al	IS: 3025 (Part-55): 2003	mg/l	<0.03	0.03 Max.	0.2 Max.
2	Barium as Ba	IS: 13428: Annex F	mg/l	<0.5	0.7 Max.	No Relaxation
3	Copper as Cu	IS: 3025 (Part-42): 1992 Reaff. 2009	mg/l	<0.05	0.05 Max.	1.5 Max.
4	Magnesium as Mg	IS: 3025 (Part-46): 1994 Reaff. 2009	mg/l	7	30 Max.	100 Max.
5	Manganese as Mn	IS: 3025 (Part-59): 2006 Reaff. 2012	mg/l	0.083	0.1 Max.	0.3 Max.
6	Selenium as Se	IS: 3025 (Part-56): 2003 Reaff. 2009	mg/l	<0.01	0.01 Max.	No Relaxation
7	Sulphate as SO_4	IS: 3025 (Part-24): 1986 Reaff. 2009	mg/l	30.3	200 Max.	400 Max.
8	Zinc as Zn	IS: 3025 (Part-49): 1994 Reaff. 2009	mg/l	< 0.05	5 Max.	15 Max.
9	Cadmium as Cd	IS: 3025 (Part-41): 1992 Reaff. 2009	mg/l	<0.002	0.003 Max.	No Relaxation
10	Lead as Pb	IS: 3025 (Part-47): 1994 Reaff. 2009	mg/l	<0.01	0.01 Max.	No Relaxation
11	Mercury as Hg	IS: 3025 (Part-48): 1994 Reaff. 2009	mg/l	<0.001	0.001 Max.	No Relaxation
12	Nickel as Ni	IS: 3025 (Part - 54) 2003	mg/l	<0.01	0.02 Max.	No Relaxation
13	Arsenic as As	IS: 3025 (Part-37): 1988 Reaff. 2009	mg/l	<0.002	0.01 Max.	0.05 Max.
14	Total Chromium as Cr	IS: 3025 (Part-52): 2003 Reaff. 2009	mg/l	<0.05	0.05 Max.	No Relaxation

Minimum detection limit :

i) Aluminium : 0.03mg/l (ii) Barium : 0.5mg/l (iii) Copper : 0.05mg/l (iv) Selenium : 0.01mg/l (v) Lead : 0.01mg/l vi) Cadmium :0.002mg/l (vii) Mercury : 0.001mg/l (viii) Nickel : 0.01mg/l (ix) Arsenic : 0.002mg/l (x) Tota Chromium : 0.05mg/l (xi) Magnesium : 0.05mg/l (xii) Zinc : 0.05mg/l.

Remarks on Chemical Test Report :

i) The above mentioned sample of drinking water complies with IS: 10500, 2012 (2nd Rev.) & Satisfactory for drinking purpose, in respect of the above mentioned parameters.

: END OF TEST REPORT :

J. Mukherjee
Quality Manager
Authorized Signatory
For R.V.BRIGGS & CO. PRIVATE LTD.

nb

R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

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Ph. : **(Airtel) 4044-3380/3381/3382/3383**

E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

TEST REPORT

ULR NO. TC781521000000159F

No. W(D)/20-21/1825 **Date : January 12, 2021**

Issued to	**: M/S, BOKARO POWER SUPPLY COMPANY (P) LTD.** Hall No. M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City - 827001
Your Ref No.	: BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 08.11.2019
Sample Description	: Drinking Water/Potable Water
Collection Source	: Mouhura Village Tube Well Water
Sample Drawn by us On	: 05.01.2021
Test Completed on	: 11.01.2021
Method of Sampling	: IS : 1622 : 1981 & IS : 3025 (Part - 1) 1987
Mode of Sampling	: Grab

Parameters Tested:
Chemical Parameters
Radioactive Parameters
Alpha emitters, Beta emitters

Chemical Test Findings :

Radioactive Parameters

Sl No.	Test parameters	Test Method	Unit	Result	Norms as per IS: 10500, 2012 (2nd Rev.)	
					Acceptable Limit	Permissible Limit
1a)	Alpha emitters	APHA 22nd Edn. 7110B	Bq/l	Not detectable	0.1 Max.	No Relaxation
1b)	Beta emitters	APHA 22nd Edn. 7110B	Bq/l	Not detectable	1.0 Max.	No Relaxation

Remarks on Chemical Test Report :

The above mentioned sample of drinking water complies with IS: 10500, 2012 (2nd Rev.) & Satisfactory for drinking purpose, in respect of the above mentioned parameters.

: END OF TEST REPORT :

J. Mukherjee
Quality Manager
Authorized Signatory
For R.V.BRIGGS & CO. PRIVATE LTD.

nb

R. V. BRIGGS & CO. PRIVATE LTD.

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(AN ISO 9001:2015 CERTIFIED COMPANY)

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E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

NABLACCREDITED LABORATORY Certificate No. TC-7815

TEST REPORT

ULR NO. TC781521000000160F

No. W(D)/20-21/1826 **Date : January 12, 2021**

Issued to : **M/S, BOKARO POWER SUPPLY COMPANY (P) LTD.**
Hall No. M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City - 827001

Your Ref No. : BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 08.11.2019

Sample Description : Drinking Water/Potable Water

Collection Source : Chatatard Village Tubewell Water

Sample Drawn by us On : 05.01.2021

Test Completed on : 11.01.2021

Parameters Tested:
Chemical Parameters
Aluminium,Barium,Copper,Magnesium,Zinc,Lead, Manganese,Selenium,Sulphate,Cadmium,Nickel, Mercury,Arsenic,Total Chromium

Method of Sampling : IS : 1622 : 1981 & IS : 3025 (Part - 1) 1987

Mode of Sampling : Grab

Chemical Test Findings :

Sl No.	Test parameters	Test Method	Unit	Result	Norms as per IS: 10500, 2012 (2nd Rev.)	
					Acceptable Limit	Permissible Limit
1	Aluminium as Al	IS: 3025 (Part-55): 2003	mg/l	<0.03	0.03 Max.	0.2 Max.
2	Barium as Ba	IS: 13428: Annex F	mg/l	<0.5	0.7 Max.	No Relaxation
3	Copper as Cu	IS: 3025 (Part-42): 1992 Reaff. 2009	mg/l	<0.05	0.05 Max.	1.5 Max.
4	Magnesium as Mg	IS: 3025 (Part-46): 1994 Reaff. 2009	mg/l	12	30 Max.	100 Max.
5	Manganese as Mn	IS: 3025 (Part-59): 2006 Reaff. 2012	mg/l	0.224	0.1 Max.	0.3 Max.
6	Selenium as Se	IS: 3025 (Part-56): 2003 Reaff. 2009	mg/l	<0.01	0.01 Max.	No Relaxation
7	Sulphate as SO_4	IS: 3025 (Part-24): 1986 Reaff. 2009	mg/l	38.7	200 Max.	400 Max.
8	Zinc as Zn	IS: 3025 (Part-49): 1994 Reaff. 2009	mg/l	< 0.05	5 Max.	15 Max.
9	Cadmium as Cd	IS: 3025 (Part-41): 1992 Reaff. 2009	mg/l	<0.002	0.003 Max.	No Relaxation
10	Lead as Pb	IS: 3025 (Part-47): 1994 Reaff. 2009	mg/l	<0.01	0.01 Max.	No Relaxation
11	Mercury as Hg	IS: 3025 (Part-48): 1994 Reaff. 2009	mg/l	<0.001	0.001 Max.	No Relaxation
12	Nickel as Ni	IS: 3025 (Part - 54) 2003	mg/l	<0.01	0.02 Max.	No Relaxation
13	Arsenic as As	IS: 3025 (Part-37): 1988 Reaff. 2009	mg/l	<0.002	0.01 Max.	0.05 Max.
14	Total Chromium as Cr	IS: 3025 (Part-52): 2003 Reaff. 2009	mg/l	<0.05	0.05 Max.	No Relaxation

Minimum detection limit :

i) Aluminium : 0.03mg/l (ii) Barium : 0.5mg/l (iii) Copper : 0.05mg/l (iv) Selenium : 0.01mg/l (v) Lead : 0.01mg/l vi) Cadmium :0.002mg/l (vii) Mercury : 0.001mg/l (viii) Nickel : 0.01mg/l (ix) Arsenic : 0.002mg/l (x) Tota Chromium : 0.05mg/l (xi) Magnesium : 0.05mg/l (xii) Zinc : 0.05mg/l.

Remarks on Chemical Test Report :

i) The above mentioned sample of drinking water complies with IS: 10500, 2012 (2nd Rev.) & Satisfactory for drinking purpose, in respect of the above mentioned parameters.

: END OF TEST REPORT :

J. Mukherjee
Quality Manager
Authorized Signatory
For R.V.BRIGGS & CO. PRIVATE LTD.

nb

R. V. BRIGGS & CO. PRIVATE LTD.

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E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

TEST REPORT

ULR NO. TC781521000000160F

No. W(D)/20-21/1826 **Date : January 12, 2021**

Issued to	: **M/S, BOKARO POWER SUPPLY COMPANY (P) LTD.** Hall No. M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City - 827001
Your Ref No.	: BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 08.11.2019
Sample Description	: Drinking Water/Potable Water
Collection Source	: Chatatard Village Tube Well Water
Sample Drawn by us On	: 05.01.2021
Test Completed on	: 11.01.2021
Method of Sampling	: IS : 1622 : 1981 & IS : 3025 (Part - 1) 1987
Mode of Sampling	: Grab

Parameters Tested:
Chemical Parameters
Radioactive Parameters
Alpha emitters, Beta emitters

Chemical Test Findings :

Radioactive Parameters

Sl No.	Test parameters	Test Method	Unit	Result	Norms as per IS: 10500, 2012 (2nd Rev.)	
					Acceptable Limit	Permissible Limit
1a)	Alpha emitters	APHA 22nd Edn. 7110B	Bq/l	Not detectable	0.1 Max.	No Relaxation
1b)	Beta emitters	APHA 22nd Edn. 7110B	Bq/l	Not detectable	1.0 Max.	No Relaxation

Remarks on Chemical Test Report :
The above mentioned sample of drinking water complies with IS: 10500, 2012 (2nd Rev.) & Satisfactory for drinking purpose, in respect of the above mentioned parameters.

: END OF TEST REPORT :

J. Mukherjee
Quality Manager
Authorized Signatory
For R.V.BRIGGS & CO. PRIVATE LTD.

nb

R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

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Ph. : **(Airtel) 4044-3380/3381/3382/3383**

E-mail : rvbriggs.kolkata@gmail.com, Website : www.rvbriggs.com

CIN : U51109WB1931PTC007007

TEST REPORT

No.C(D)/20-21/67 **Date : 12 January 2021** **Page 1 of 1**

Issued to	:	**M/s. BOKARO POWER SUPPLY COMPANY (P) LTD.** Hall No.M-01, Old ADM Building, Ispat Bhawan, Bokaro Steel City-827001
Your Ref. No.	:	W.O. no.BPSCL/P&C/19-20/C-059/LTE/50135/3711 dtd. 8.11.19
Description of sample	:	Ash
Mark on Sample	:	Sialo Area
Sample Handedover by the Party on:		05.01.2021
Analysis Completed on	:	11.01.2021

TEST FINDINGS:

Sl. No.	Test Parameters	Unit	Results
01.	Unburnt Carbon (Dry Basis)	% (w/w)	3.45
02.	Sulphur	% (w/w)	0.14
03.	Mercury as Hg	mg/kg	2.45
04.	Lead as Pb	mg/kg	3.02
05.	Chromium as Cr	mg/kg	3.0
06.	Arsenic as As	mg/kg	< 0.2

(T. NANDI)
Technical Manager
Authorised Signatory

TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/01
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 05-03-2020
		Time of Sampling	: 10:10 A.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/01
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #2	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #2
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 1.5 X 1.3
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Gas
2	Fuel used	: B.F.Gas
3	Fuel consumption	: --
4	Calorific value (k-cal/kg)	: --
5	Sulphur content (% by wt)	: --
6	Ash content (% by wt)	: --
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 220.0 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 161
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 21.3
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 97914.6
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 49.5
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 54
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 106
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 124
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3^{rd} Edition) Method -134	: 9
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3^{rd} Edition) Method -134	: 11
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3^{rd} Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

Pollution And Project Consultants * Kolkata *

Tanmoy Chakrabarty
Quality Manager
Authorized Signatory
For Pollution and Project Consultants

TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/02
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 05-03-2020
		Time of Sampling	: 12:40 P.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/02
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #3	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #3
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: --
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 1.5 X 1.3
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Gas
2	Fuel used	: B.F.Gas
3	Fuel consumption	: --
4	Calorific value (k-cal/kg)	: --
5	Sulphur content (% by wt)	: --
6	Ash content (% by wt)	: --
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 220.0 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

7 Whether Stack is provided with permanent Platform/Ladder : Yes

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 173
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 21.8
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 99548.5
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 36
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 40
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 96.5
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 124
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 9.2
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 10.8
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

Pollution And Project Consultants * Kolkata *

Tanmoy Chakrabarty
Quality Manager
Authorized Signatory
For Pollution and Project Consultants

TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/03
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 05-03-2020
		Time of Sampling	: 02:10 P.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/03
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #9	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #9
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 4.5 X 2.25
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Coal
2	Fuel used	: Coal
3	Fuel consumption	: 850 Ton/day
4	Calorific value (k-cal/kg)	: 3500
5	Sulphur content (% by wt)	: 0.65
6	Ash content (% by wt)	: 35
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 300 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 118
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 16.52
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 419438.5
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 41
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 43.2
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 296
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 282
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 8.6
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 11.4
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

Pollution And Project Consultants * Kolkata *

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TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/04
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 06-03-2020
		Time of Sampling	: 10:15 A.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/04
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #4	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #4
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 1.5 X 1.3
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Gas
2	Fuel used	: B.F.Gas
3	Fuel consumption	: --
4	Calorific value (k-cal/kg)	: --
5	Sulphur content (% by wt)	: --
6	Ash content (% by wt)	: --
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 220.0 Ton/Hr.
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 168
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 21.86
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 100954.2
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 58
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 64.4
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 122
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 131
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 9.2
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 10.8
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

Pollution And Project Consultants * Kolkata *

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TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/05
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 06-03-2020
		Time of Sampling	: 12:20 P.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/05
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #7	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #7
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 3.6 X 1.8
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Coal
2	Fuel used	: Coal
3	Fuel consumption	: 850 Ton/day
4	Calorific value (k-cal/kg)	: 3500
5	Sulphur content (% by wt)	: 0.65
6	Ash content (% by wt)	: 35
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 260 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 121
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 16.4
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 270210.7
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 65
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 68.5
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 343
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 280
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 8.6
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 11.4
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

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TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/06
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 06-03-2020
		Time of Sampling	: 02:40 P.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/06
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #8	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #8
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 3.6 X 1.8.
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Coal
2	Fuel used	: Coal
3	Fuel consumption	: 850 Ton/day
4	Calorific value (k-cal/kg)	: 3500
5	Sulphur content (% by wt)	: 0.65
6	Ash content (% by wt)	: 35
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 260 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 117
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 16.3
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 274203.8
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 67
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 75.8
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 306
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 276
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 9.4
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 10.6
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

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TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/07
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 07-03-2020
		Time of Sampling	: 11:20 A.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/07
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #5	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #5
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: : 1.5 X 1.3
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: ...
	b) From Lower Disturbing Zone (M)	: ...
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Gas
2	Fuel used	: B.F.Gas
3	Fuel consumption	: --
4	Calorific value (k-cal/kg)	: --
5	Sulphur content (% by wt)	: --
6	Ash content (% by wt)	: --
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 220 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 141
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 21.7
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 108929.5
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 38
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 41.5
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 108
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 116
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 9
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 11
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

Pollution And Project Consultants * Kolkata *

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TEST REPORT
STACK GAS

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/08
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Date of Sampling	: 07-03-2020
		Time of Sampling	: 02:15 P.M.
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GS/20(03)/08
Type of Sample	: Stack Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Boiler Unit #8	**Test End Date**	: 14-03-2020

A : GENERAL INFORMATION ABOUT STACK :

1	Stack connected to	: Boiler Unit #8
2	a) Material of construction of the Stack	: R.C.C.
	b) Material of construction of the Duct	: M.S.
3	a) Shape of the stack	: Circular
	b) Shape of the duct	: Rectangular
4	Height of the stack :	
	a) From Ground Level (M)	: 180
	b) From Roof Level (M)	: --
5	Dimension of the duct :	
	a) Top (M)	: --
	b) Bottom (M)	: --
	c) Sampling Point (M)	: 3.6 X 1.8
6	Height of the Sampling Port :	
	a) From Ground Level (M)	: --
	b) From Lower Disturbing Zone (M)	: --
7	Whether Stack is provided with permanent Platform/Ladder	: Yes

C : ANALYSIS/CHARACTERISTICS OF FUEL :

1	Emission due to	: Combustion of Coal
2	Fuel used	: Coal
3	Fuel consumption	: 850 Ton/day
4	Calorific value (k-cal/kg)	: 3500
5	Sulphur content (% by wt)	: 0.65
6	Ash content (% by wt)	: 35
7	Air flow	: --

D : STEAM GENERATION CAPACITY:

	a) Rated	: 260 Ton/Hr
	b) Running	: --
Load:		
	a) Rated	: --
	b) Running	: --

E : Pollution control device : ESP

B : Result of Sampling

Sl. No.	Parameters tested	Unit	Method of Test (Reference)	Result
1	TEMPERATURE OF EMISSION	deg C	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 123
2	BAROMETRIC PRESSURE	mmHg	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 755
3	VELOCITY OF GAS FLOW	M/Sec	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 16.54
4	QUANTITY OF GAS FLOW	$Nm^3/Hr.$	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 282678.9
5	CONCENTRATION OF PARTICULATE MATTER	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 59
6	PARTICULATE MATTER NORMALISED TO 12% CO_2	mg/Nm^3	IS:11255 (Part 1):1985 RA 2014 & (Part 3) 2008	: 64.4
7	CONCENTRATION OF SULPHER DIOXIDE	mg/Nm^3	IS 11255 (Part 2): 1985 (RA 2014)	: 298
8	CONCENTRATION OF NITROGEN DIOXIDE	mg/Nm^3	IS 11255 (Part 7): 2005 (RA 2017)	: 267
9	CONCENTRATION OF OXYGEN	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 9
10	CONCENTRATION OF CARBON DIOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: 11
11	CONCENTRATION OF CARBON MONOXIDE	% v/v	APHA (Air Analysis) (3rd Edition) Method -134	: <0.2

The results relate only to the parameter

.....end of report .....

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POLLUTION AND PROJECT CONSULTANTS

ENVIRONMENTAL POLLUTION CONTROL - Air, Effluent, Pharmaceuticals
& Chemical Project Engineers. EIA & Disaster Management Study

TEST REPORT

AMBIENT AIR

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	Report No.	: G/20(03)/09
Address	: Bokaro Steel City, Bokaro, Jharkhand	Report Date	: 14-03-2020
		Sampling Date	: 05-06/03/2020
		Sample Received Date	: 10-03-2020
Type of Sample	: Ambient Air	Sample Id No.	: GA/20(03)/09
Sampling Location	: Near ESP Control Room	Test Start Date	: 10-03-2020
		Test End Date	: 14-03-2020

: Environmental Condition : Clear

Average Temperature (°C) : 26 Average Relative Humidity (%) : 66 Barometric Pressure (mm Hg) : 755

Sl. No.	Parameters	Unit	Standard	Result	Standard Ref. Methods	Time Weighted Average
1	Particulate Matter $_{10}$ (PM_{10})	($\mu g/m^3$)	100	62.0	IS:5182 (Part –23):2006 (RA 2017)	24 Hours
2	Particulate Matter $_{2.5}$ ($PM_{2.5}$)	($\mu g/m^3$)	60	46.0	In house method SOP No. SOP/02/02, Issue No. 02 Dated. 02/04/2015 (prepared based on CPCB Guidelines)	24 Hours
3	Sulpher Di-Oxides (SO_2)	($\mu g/m^3$)	80	21.0	IS:5182 (Part –2):2001 (RA 2017)	24 Hours
4	Nitrogen Di-Oxides (NO_2)	($\mu g/m^3$)	80	39.0	IS:5182 (Part – 6):2006 (RA 2017)	24 Hours

The results relate only to the parameters tested

....end of report...

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FORMAT NO.: PPC/FM/68 ISSUE NO.: 03 ISSUE Dt.: 01/01/2017 (Rev No.:02 Rev. Dt.: 28/05/2018)

TEST REPORT

AMBIENT AIR

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/10
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Sampling Date	: 05-06/03/2020
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GA/20(03)/10
Type of Sample	: Ambient Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Near WCTP Area	**Test End Date**	: 14-03-2020

: Environmental Condition : Clear

Average Temperature (°C) : 26 **Average Relative Humidity (%) :** 66 **Barometric Pressure (mm Hg) :** 755

Sl. No.	Parameters	Unit	Standard	Result	Standard Ref. Methods	Time Weighted Average
1	Particulate Matter $_{10}$ (PM_{10})	($\mu g/m^3$)	100	52.0	IS:5182 (Part –23):2006 (RA 2017)	24 Hours
2	Particulate Matter $_{2.5}$ ($PM_{2.5}$)	($\mu g/m^3$)	60	38.0	In house method SOP No. SOP/02/02, Issue No. 02 Dated. 02/04/2015 (prepared based on CPCB Guidelines)	24 Hours
3	Sulpher Di-Oxides (SO_2)	($\mu g/m^3$)	80	24.0	IS:5182 (Part –2):2001 (RA 2017)	24 Hours
4	Nitrogen Di-Oxides (NO_2)	($\mu g/m^3$)	80	44.0	IS:5182 (Part – 6):2006 (RA 2017)	24 Hours

The results relate only to the parameters tested

....end of report...

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TEST REPORT

AMBIENT AIR

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: G/20(03)/11
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Sampling Date	: 06-07/03/2020
		Sample Received Date	: 10-03-2020
		Sample Id No.	: GA/20(03)/11
Type of Sample	: Ambient Air	**Test Start Date**	: 10-03-2020
Sampling Location	: Near CHP Area	**Test End Date**	: 14-03-2020

: Environmental Condition : Clear

Average Temperature (°C) : 27 **Average Relative Humidity (%) :** 65 **Barometric Pressure (mm Hg) :** 755

Sl. No.	Parameters	Unit	Standard	Result	Standard Ref. Methods	Time Weighted Average
1	Particulate Matter $_{10}$ (PM_{10})	($\mu g/m^3$)	100	73.0	IS:5182 (Part –23):2006 (RA 2017)	24 Hours
2	Particulate Matter $_{2.5}$ ($PM_{2.5}$)	($\mu g/m^3$)	60	54.0	In house method SOP No. SOP/02/02, Issue No. 02 Dated. 02/04/2015 (prepared based on CPCB Guidelines)	24 Hours
3	Sulpher Di-Oxides (SO_2)	($\mu g/m^3$)	80	30.0	IS:5182 (Part –2):2001 (RA 2017)	24 Hours
4	Nitrogen Di-Oxides (NO_2)	($\mu g/m^3$)	80	47.0	IS:5182 (Part – 6):2006 (RA 2017)	24 Hours

The results relate only to the parameters tested

....end of report...

Pollution And Project Consultants Kolkata

Tanmoy Chakrabarty
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TEST REPORT FOR NOISE MONITORING

Name of the Customer	: M/s. Bokaro Power Supply Company (P) Ltd.,		
Address	: Bokaro Steel City, Bokaro, Jharkhand		
Location of Sampling	: Near ESP Control Room	**Report No.**	: G/20(03)/01
Type of Sample	: Noise	**Date of Reporting**	: 14-03-2020
Date of Monitoring	: 05-03-2020	**Starting Time**	: 10:10 A.M.
Sample Received Date	: 10-03-2020	**Distance from the Machine**	: 3.5(m)
Interval (dt) : 60 min.	**Total time :** 8 hrs.	**Height from Ground Level**	: 1.5 (m)

DAY TIME

SL. NO.	SOUND LEVEL (Li) (Hourly data)	ft. = dt/T	ft. x 10^(Li/10)	SUM OF ft. x 10^(Li/10)	RESULT dB(A)
1	72.9	0.1	2437305.749698	23408346.643756	Leq = 73.69
2	73.2	0.1	2611620.163568		
3	73.8	0.1	2998541.148774		
4	72.5	0.1	2222849.262549		
5	73.9	0.1	3068386.144606		
6	74.3	0.1	3364418.504909		
7	74.8	0.1	3774939.650503		
8	73.7	0.1	2930286.019150		

results relate only to the parameters tested. ....end of report.....

Limit in 90 dB(A) Leq (8 hrs./day Exposure)

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TEST REPORT FOR NOISE MONITORING

Name of the Customer	: M/s. Bokaro Power Supply Company (P) Ltd.,		
Address	: Bokaro Steel City, Bokaro, Jharkhand		
Location of Sampling	: Near WCT Plant	**Report No.**	: G/20(03)/02
Type of Sample	: Noise	**Date of Reporting**	: 14-03-2020
Date of Monitoring	: 05-03-2020	**Starting Time**	: 10:45 A.M.
Sample Received Date	: 10-03-2020	**Distance from the Machine**	: 3.5(m)
Interval (dt) : 60 min.	**Total time :** 8 hrs.	**Height from Ground Level**	: 1.5 (m)

DAY TIME

SL. NO.	SOUND LEVEL (Li) (Hourly data)	ft. = dt/T	ft. x 10^(Li/10)	SUM OF ft. x 10^(Li/10)	RESULT dB(A)
1	76.2	0.125000	5210867.293379	38620390.320456	Leq = 75.87
2	75.9	0.125000	4863064.312429		
3	74.8	0.125000	3774939.650503		
4	73.7	0.125000	2930286.019150		
5	76.8	0.125000	5982876.154033		
6	74.7	0.125000	3689011.533333		
7	77.3	0.125000	6712897.454628		
8	76.4	0.125000	5456447.903002		

results relate only to the parameters tested. ....end of report.....

Limit in 90 dB(A) Leq (8 hrs./day Exposure)

Pollution And Project Consultants * Kolkata *

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FORMAT NO.: PPC/FM/66 ISSUE ON.: 03 ISSUE Dt.: 01/01/2017 (Rev No.:02 Rev. Dt.: 28/05/2018)

TEST REPORT FOR NOISE MONITORING

Name of the Customer	: M/s. Bokaro Power Supply Company (P) Ltd.,		
Address	: Bokaro Steel City, Bokaro, Jharkhand		
Location of Sampling	: Near Admn. Building	**Report No.**	: G/20(03)/03
Type of Sample	: Noise	**Date of Reporting**	: 14-03-2020
Date of Monitoring	: 06-03-2020	**Starting Time**	: 10:25 A.M.
Sample Received Date	: 10-03-2020	**Distance from the Machine**	: 3.5(m)
Interval (dt) : 60 min.	**Total time :** 8 hrs.	**Height from Ground Level**	: 1.5 (m)

DAY TIME

SL. NO.	SOUND LEVEL (Li) (Hourly data)	ft. = dt/T	ft. x 10^(Li/10)	SUM OF ft. x 10^(Li/10)	RESULT dB(A)
1	58.4	0.125000	86478.871365	414561.021941	Leq = 56.18
2	57.7	0.125000	73605.456919		
3	56.9	0.125000	61222.352421		
4	55.5	0.125000	44351.673654		
5	54.8	0.125000	37749.396505		
6	54.3	0.125000	33644.185049		
7	53.8	0.125000	29985.411488		
8	55.8	0.125000	47523.674540		

results relate only to the parameters tested. ....end of report.....

Limit in 90 dB(A) Leq (8 hrs./day Exposure)

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FORMAT NO.: PPC/FM/66 ISSUE ON.: 03 ISSUE Dt.: 01/01/2017 (Rev No.:02 Rev. Dt.: 28/05/2018)

TEST REPORT FOR NOISE MONITORING

Name of the Customer	: M/s. Bokaro Power Supply Company (P) Ltd.,		
Address	: Bokaro Steel City, Bokaro, Jharkhand		
Location of Sampling	: Turbine Area	**Report No.**	: G/20(03)/03
Type of Sample	: Noise	**Date of Reporting**	: 14-03-2020
Date of Monitoring	: 07-03-2020	**Starting Time**	: 11:05 A.M.
Sample Received Date	: 10-03-2020	**Distance from the Machine**	: 3.5(m)
Interval (dt) : 60 min.	**Total time :** 8 hrs.	**Height from Ground Level**	: 1.5 (m)

DAY TIME

SL. NO.	SOUND LEVEL (Li) (Hourly data)	ft. = dt/T	ft. x 10^(Li/10)	SUM OF ft. x 10^(Li/10)	RESULT dB(A)
1	87.5	0.125000	70292665.648794	656952681.612807	Leq = 88.18
2	86.2	0.125000	52108672.933792		
3	85.8	0.125000	47523674.540070		
4	87.8	0.125000	75319948.259295		
5	89.7	0.125000	116656787.599624		
6	90.2	0.125000	130891068.506363		
7	87.3	0.125000	67128974.546282		
8	88.9	0.125000	97030889.578587		

results relate only to the parameters tested. ....end of report.....

Limit in 90 dB(A) Leq (8 hrs./day Exposure)

Pollution And Project Consultants * Kolkata *

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FORMAT NO.: PPC/FM/69 ISSUE NO.: 03 ISSUE Dt.: 01/01/2017 (Rev No.: 02 Rev.Dt.:28/05/2018)

TEST REPORT

Water Sample

Customer Name	: M/s. Bokaro Power Supply Company (P) Ltd.,	**Report No.**	: W/20(03)/02
Address	: Bokaro Steel City, Bokaro, Jharkhand	**Report Date**	: 14-03-2020
		Sampling Date	: 07-03-2020
		Sample Received Date	: 10-03-2020
		Sample Id No.	: E/02/2020
Type of Sample	: Effluent Water	**Test Start Date**	: 10-03-2020
Sampling Location	: Water Chemical Treatment Plant	**Test End Date**	: 14-03-2020

SL. No.	Chemical Test Parameter	Unit	Results	Methods of Test (Reference)
1	Temperature (Collection Time)	°C	21.0	APHA (23rd Edition) 2550 B : 2017
2	pH	--	7.75	APHA (23rd Edition) 4500 H+B:2017
3	Total Suspended Solid (as TSS)	mg/l	51.0	APHA (23rd Edition) 2540 D:2017
4	Chemical Oxygen Demand (as COD)	mg/l	60.0	APHA (23rd Edition) 5220 B:2017
5	Bio-Chemical Oxygen Demand (as BOD)	mg/l	22.0	IS 3025 (Part 44): 1993 (RA 2014)
6	Oil & Grease	mg/l	<5.0	APHA (23rd Edition) 5520 B:2017

The results relate only to the parameters tested.

....end of report...

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